WRITING RESEARCH
PAPERS IN COMPUTER
ENGINEERING & IT
A PRACTICAL REFERENCE
FOR INTERNATIONAL RESEARCHERS
CHINESE SUPPORT VERSION
附 中文 解 釋

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Martin Kyle

Writing Research Papers in Computing Engineering & IT

A practical reference for international researchers

Chinese support version

附 中文 解 釋

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Contents

I think it is a shame when the worthy Homer nods:
but in so long a work it is allowable if drowsiness comes on.
Horace, De Ars Poetica

Acknowledgements

These notes were assembled subsequent to my time as a technical writer attached to The Department of Computing of The Hong Kong Polytechnic University but I would nonetheless like to express my deep gratitude to everyone in the department, academics and researchers, for their kind support over the years that I was there, and especially for their easy tolerance of someone who, at least at first, had not the least familiarity with even the most basic ideas in their fields.

My gratitude to the Department certainly also extends to all of the postgraduates and undergraduates with whom I worked. Their questions and quandaries concerning English for research writing made me see the need for a reference work such as this. In particular I should offer my thanks to Dr Chan Chun Lun, who provided the excellent cover design for the print version of this book .

Notwithstanding these debts of gratitude, I nonetheless must make, in all sincerity, the usual apology that I alone am responsible for this work, with all its flaws and omissions. It must be admitted that it makes many too-broad generalizations and too-simple simplifications and falls well short of describing or accounting for every writing situation associated with the highly varied research practices of computing and IT. But for want of an alternative, beginning researchers may refer to this book and find it helpful until something better comes along.

Finally, in the spirit that nowadays all versions are beta, I should say that I would be very glad indeed to hear from users of these notes who might wish to point out errors or omissions or suggest directions for changes or additions to this work. I can be contacted at mkylehk@gmail.com and thank all contributors and critics in advance.

*I*ntroduction

*I*t is the intention of this book to provide some guidance in research writing to researchers and students in computing and IT whose first language is not English, in particular, those from Chinese mother-tongue backgrounds. It is also intended to support teachers and editors who are working with beginning researchers to produce English-language research papers that are not just publishable but are also well-organized and persuasive.

It is on account of trying to serve both of these groups that these notes provide the variety of material that they do, some of interest to one group, some to the other, often redundant, but always with a focus on discourse-level issues and the aim of supporting new research writers in four areas where they commonly have difficulties.

Content and organisation. Writers may not be not sure what the various sections of a report are for and what should go in them.

Clarity and completeness. Writers may not be good judges of what readers can be assumed to know or understand and may overestimate the responsibility of readers in interpreting texts. Concepts may not be effectively defined or explained.

Coherence and logic. Discussions may be hard to follow or links in reasoning may be missing. Elements of a discourse may be missing or not adequately signalled.

Vocabulary. Too small a selection of words, phrases, and patterns are used to express too wide a range of meanings.
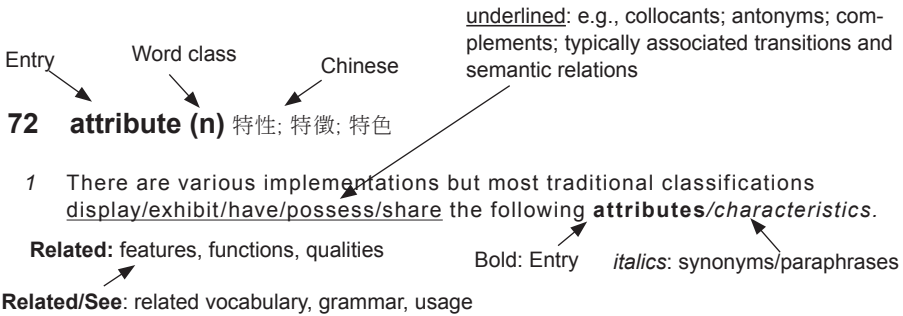
This book responds to these problems in three ways. First, it provides detailed descriptions of the purposes, content, organisation, and typical language of the various sections of computer engineering research reports. Second, it explains many basic issues of English usage, grammar, and style that are relevant to writing research reports in computing and IT. In particular, it offers writers useful generalizations and simplifications illustrated with numerous examples.

Third, Part 2 provides a reference, based on a 2,200,000 word corpus of computer engineering research papers, to the meaning, grammar and use of approximately 1700 non-technical words and phrasings that either are important in computing and IT research writing or are a common source of confusion or difficulties. Most of these items are frequent or very frequent in the corpus, where frequent is defined as a rate of occurrence above 40 per million words. Frequency information is provided where it might be of interest.

These notes are especially novel in the particular emphasis they put on synonymy and paraphrase. The chief motivation for this emphasis on alternatives is a desire to help writers develop greater flexibility in how they organize sentences and paragraphs for different informational, cohesive, and discourse goals. In this spirit, many examples are accompanied by *alternatives* and *rewrites*. In general, the alternatives provide other wordings and sentence organisations for positive examples while the rewrites typically illustrate strategies for dealing with the errors illustrated in negative examples

The examples that illustrate the entries are designed to be maximally realistic while still being focused enough to highlight the meaning and use of the particular word or phrasing. Long examples are sometimes used to ensure that we do not exclude important features of meaning and use such as collocations or typical semantic relations, even where these features are not the specified focus of the entry. On the other hand, for reasons of space, many entries are presented as truncated.

Entries and examples in this book are marked up as follows. Note that words that occur as synonyms or paraphrases within examples are not usually also listed at **Related**.

underlined: e.g., collocants; antonyms; complements; typically associated transitions and semantic relations

Entry   Word class   Chinese

72   attribute (n) 特性; 特徵; 特色

1   There are various implementations but most traditional classifications underlined/display/exhibit/have/possess/share the following **attributes**/*characteristics*.

Related: features, functions, qualities

Bold: Entry   *italics*: synonyms/paraphrases

Related/See: related vocabulary, grammar, usage

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Part I

Writing research

Entries, Part 1

*W*riting research

Measure with a micrometer, mark with chalk, cut with an axe.
−Engineering maxim

1 abstract nouns

Abstract nouns are nouns that refer to concepts or propositions, facts, and ideas that have no extent in time or space, for example *benefit, fact, insight, opinion, respect, solution, way,…*

1   Writer-independent handwriting recognition offers the **benefit that** users can simply start using an application without the need for any special interaction with the underlying recognizer.

2   One possible **solution would be to** restrict the choice of language to a subset of items with recognized computational **advantages such as**...

More broadly, abstract nouns can refer to activities, processes, and states, i.e., things that do occur or take place in space and time and that are more or less observable, for example, *implementation, project,* or *transition*.

3   Abstract: In the emerging wireless Internet m-commerce environment, an increasing number of users are using mobile applications to carry out mobile **transactions**. **These transactions** are of many types, must conform to diverse requirements, and demand significant network resources.

Abstract nouns of this type are quite common as *nominalizations*, i.e., as nouns phrases expressing an idea that earlier in the text may have been expressed as a clause.

4   <u>We simulated</u> <u>the proposed management scheme using MatLab</u>. **This simulation** made use of....

In this next example, the clause *the first constraint was changed to <FORMULA>* is nominalized as *modifications*.

5   The linear program that was used for AMR is the same as in Section 4.2 except that <u>**the first constraint was changed to**</u> <FORMULA>. Similar **modifications** were made to AMRD and its linear program.

Abstract nouns often appear as *terminologies* referring to established concepts in a field. In the following example *inheritance* is being used as a term with a particular meaning in the relevant field.

6   In object models, **inheritance** is handled by flattening the hierarchy.

Yet in the same example the abstract noun *hierarchy* is not being used as a term specific to the field. It could appear with the same meaning in many domains.

Abstract nouns also frequently appear in *noun phrases* which may have par-

ticular, narrow meanings in the papers they appear in.

7   The goal is to find the maximum shared weighted **rate** under a congestion-free forwarding **schedule**.

Finally, abstract nouns are common in *noun compounds* that are field terminologies. All of the following (including *key terms*) are noun compounds.

8   *Key terms:* update propagation; schema evolution; view maintenance; data transformation

2   abstract nouns: signalling nouns

Signalling nouns are abstract nouns such as *fact, idea, purpose, function, objective,* (or indeed potentially any abstract noun) which we can understand only with reference to some preceding or following part of the text, or with reference to the reader's background knowledge. Consider the following statement about the capacities of a *matched filter*.

1   **The matched filter** responds *not only to* lines *but also to* non-line edges.

This seems to be a very positive statement about *the matched filter* because it *not only* has one capacity *but also* has another. Yet the use of a signalling noun can give this statement a different meaning.

2   **One major problem of the matched filter is that** it responds not only to lines but also to non-line edges.

The abstract noun *problem* is signalling that the same content in fact means the opposite of what we might expect, that having both capacities is not *advantageous* but in fact is *problematic*, perhaps because it means that the filter is not sufficiently discriminating. Thus, *problem* as a signalling noun has both characterized this content and drawn attention to it.

The referent of a signalling noun (what it refers to) can precede it, follow it, or might be something outside the text. In this next example, the signalling noun precedes the referent (as they commonly do).

3   One major **problem [signalling noun]** of the matched filter **is that** it responds not only to lines but also non-line edges **[referent]**.

But a signalling noun can also come after the referent, as with *differences* in the following example, where the *differences* being referred to are the previously-mentioned *"all kinds of instruments and...tasks with different priorities."*

4   Up to this point, we have treated all sensors as being essentially the same but in fact sensors can be equipped with all kinds of instruments and have tasks with very different priorities **[referent]**. The proposed weighted assignment scheme is designed to represent **such differences [signalling noun]**.

Finally, signalling nouns may also refer to something that is not present in the text but is assumed to be part of reader knowledge. In the preceding example,

Figure 1. Abstract nouns: a problem-solution pattern

Another drawback of hierarchical approaches is that there is no relationship between the depth of an item in the taxonomy tree and access patterns [12]. As a result, items which are popular (frequently accessed) may be at the end of relatively long access paths while unpopular items can be found conveniently to hand. **The fundamental challenge in this is to** find a solution that leaves the taxonomy tree itself unchanged, since it is the taxonomy that the user finds meaningful and useful.

Drawback (problem)

Challenge (solution)

this is the case with the abstract noun *priorities*. It is not identified with anything else in the text but we suppose the reader will have some idea of what kind of content it suggests.

3 abstract nouns: characterizing and organizing

Abstract signalling nouns can help to make texts cohesive by characterizing the meaning of a stretch of text (as a *discourse element*) or its role in relation to some other stretch of text (when it enters into a *discourse relation* or is part of a *discourse frame*). They also have a role in organizing information for focus.

In the following example, the abstract noun tells us that *applying a thresholding technique* is an *alternative* to something discussed earlier. Similarly, the abstract noun *procedure* tells readers how the following details function in the broader discussion. Readers do not have to puzzle out or interpret the particular significance or role of these statements in the broader discussion while writers maintain more control of how readers will interpret content.

1   Yet another **alternative** accommodates larger SBs [11] by applying a thresholding technique. **The procedure is to** delete small coefficients between each round of decomposition, thereby reducing the memory requirement to no more than a working buffer.

Abstract nouns thus allow us to show our point of view on content or to signal changes in the direction or emphasis of a discussion. In the example in Figure 1 (over page), the word *drawback* announces the point of view from which *hierarchical approaches* will be discussed. And then in the final sentence, the abstract noun *challenge* signals a development of this topic.

In the case of Figure 1, the use of abstract nouns organizes the paragraph as two clear blocks of information, the 'drawback/problem' block and the 'challenge/solution' block. This emphasizes the pattern of organisation of the paragraph as problem-response/solution.

Abstract nouns are also used in managing the information focus of a clause or sentence. In the following example, the phrase *The fact that* is not just signalling that, in the author's opinion, what follows is a "fact". It is also acting in a

similar way to language items such as *there is/there are* and preparatory subject/object *it*, in that it is pushing new, longer, or more detailed content into a later, more focused position in the sentence.

1 **The fact that** <u>much architectural design revolves around composing architectural configurations</u> **[subject]** makes it a recurrent and potentially error-prone activity.

4 Abstracts

An abstract provides a summary of a report, providing the same information as the report, usually in the same order, and with the same emphasis. Abstracts are most often written as a single paragraph and can vary greatly in length but 150-200 words is common for a research paper.

An abstract may be published separately so both it and the paper it summarizes should be self-contained. That means that every idea that the abstract introduces, defines, or discusses must again be fully introduced, defined, or discussed in the Introduction—with the same words.

The Abstract, Title, Introduction, Methods, Experiments, and Conclusion must match. To this end, it is a good habit to check the Conclusion against both the Abstract and Introduction. Writers may not have the research problem fully formulated in their own minds as they sit down to write, but they usually have it worked out by the time they reach the Conclusion. Indeed, it is common for the Conclusion of a novice writer's paper to provide its best draft summary.

We should check that the same words appear consistently throughout the paper, especially the names of concepts and criteria. And if we wish to mention results or findings in the Abstract, the easiest way is to take the relevant words directly from the Results or the Conclusion and simply edit them for length and relevance.

5 Abstracts: indicative and informative

Abstracts are either *indicative* or *informative*. Research articles require *informative* abstracts.

6 Abstracts: indicative

Indicative abstracts provide guidance as to the topics covered in a report. They describe purpose or scope but do not specify content and do not offer conclusions or state results. They may appear before very long reports, in abstract indexes, or with any text where the emphasis is *not* on findings.

The abstract of a *research proposal* would be *indicative* as its focus is chiefly on objectives and proposed outcomes, not results or findings (a proposal would of course not have any findings to report).

Table 1. Abstracts: stages of an informative abstract	
1. Background	definition, background, importance of problem, current situation, current work, motivation (optional)
2. Problem	often critiques a current approach to some problem in the field. Mentions specific criteria.
3. Response	authors' proposed response to the problem (may include details of method)
4. Evaluation	testing or implementation (optional)
5. Outcome/ Results	mentions specific criteria
6. Conclusion	implications of the work or findings (optional)

7 Abstracts: informative

Informative abstracts provide specific details and briefly state conclusions and results. The emphasis is on the chief *contribution*, whether it is a method, results, or findings. Informative abstracts are commonly used for conference papers, journal articles, and case studies.

8 Abstracts: stages of an informative abstract

A research article abstract will introduce a problem (often there is something problematic about current approaches to a problem), suggest a way to deal with it, describe either an implementation or testing/evaluation, and then mention results or conclusions.

An abstract can have six stages (Table 1). Three of these stages are essential: *problem, response,* and *outcome/results*. The Conclusion is usually omitted and background may be omitted when the reader is assumed to be very familiar with the problem area.

9 Abstracts: ways to begin informative abstracts

The central task in writing an informative abstract is to clearly group and signal the three core elements—*problem, response/method,* and *outcome/results.* Beyond that, there can be some variation in the content or sequence. Normally however, an abstract will begin with the background/problem or, less commonly, with the proposed solution.

When an abstract begins with background or problem, the content is in the same order as the paper itself, making it easy to check against the paper for accuracy and completeness.

10 Abstracts: beginning with background: social and technical problems

Background introduces the problem area or a specific problem and allows us to understand its importance or significance. Background might include definitions or perhaps a summary of the current state of knowledge or of some state or affairs.

Often the background will start off at a general level, describing what we might call a 'social' problem. In the following example, there is a clear social problem motivating the work, the illness *diabetic retinopathya.* The description of the social problem is then followed by "what the field is doing about this now". This field response will later be critiqued.

1   Abstract—*Red lesions are symptomatic of diabetic retinopathy (DR), a complication of long-term diabetes which damages the retina and can lead to blindness.* **Current approaches to the automatic detection of red lesions…**

The example in Figure 2 provides even more social background (italics). The background seems slightly technical but it is a 'social' problem—in this case a problem faced by *many users of the internet.* As usual, this is followed by a description of the field or discipline's response to the social problem, *There has been a proposal put forward….* The abstract then introduces the technical problem (bold), i.e., what is wrong with the field response, *However, this is not possible for every domain name string as…* And so we arrive at the true focus of the paper, the core problem that it will address.

11 Abstracts: beginning with the problem

It is acceptable to begin an abstract with the problem, i.e., without any background, but this assumes that readers are familiar with the problem area and its terminologies. For example, readers of an abstract that begins as follows are assumed to know the meaning of the term *class imbalance.*

1   Abstract—**Class imbalance** leads to bias in the training of classifiers and reduces sensitivity to instances of minority classes.

12 Abstracts: beginning with the solution

An abstract might begin by describing a proposed solution, e.g., *In this paper we describe a model for….*but we can do this only when the readers are familiar with the problem area and require no background and, importantly, when the proposed solution is also the main contribution of the paper. In the following example, the proposed solution is a *framework.*

1   Abstract—*This paper presents a framework for implementing real-time scheduling algorithms over POSIX-compliant operating systems.* **The proposed meta-scheduler** supports pluggable real-time scheduling algorithms and offers flexible platform dependence for deployment in interoperable heterogeneous real-time environments.

Figure 2. Abstracts: from social problems to technical problems

Abstract—*Traditional domain names are composed of a restricted set of ASCII letters, digits, and hyphens (known as LDH), an arrangement which precludes many users of the internet from using their native language to name and access Internet hosts*. There has been a proposal put forward by the IETF IDN (Internationalized Domain Name) Working Group for a mechanism, the IDNA (Internationalizing Domain Names in Applications) in which pre-processing converts a Unicode IDN into an ACE (ASCII Compatible Encoding) string that uses only LDH. The result would be that applications could use the current DNS infrastructure to look up the relevant ACE string. **However, this is not possible for every domain name string as...**

This abstract first describes a social problem (italics), then the field's response to the social problem, and then enters into a critique of the response (bold). This all leads to the true focus of the paper, the particular technical problem of interest to researchers.

The proposed solution must address problems that are well-known or are obvious to the presumed reader. We cannot begin with the solution if the problem is *novel* or if potential readers are not knowledgeable in the area. If in doubt, it is always a safe choice to begin an abstract with either background or the problem.

13 Abstracts: general advice

1 Abstracts: start with words from the title
Start with words from the title. This will bring the paper quickly on-topic and avoid irrelevant background.

2 Abstracts: consider starting with relevant background
It is not essential to begin with background-problem but it does help in ensuring that we include all important information.

3 Abstracts: be specific
Use names and numbers. State criteria in terms that are *measurable* and *observable*. Even field experts may find phrases such as *performs well* and *very efficient* too vague unless they have been previously defined.

4 Abstracts: use suitable vocabulary
While readers know what an abstract *must* contain (a problem, method, and outcome) and what it *might* contain (e.g., background, a conclusion), they don't know with certainty which stages it *does* contain, in what order, at what length, or at what level of detail.

So the stages of an abstract should be signalled. The principal way to do this is simply to use a standard sequence (see Table 1) so that readers find stages where they expect them. But we also signal the staging of a discussion by using suitable vocabulary.

The vocabulary that signals the stages of an abstract will include, for the

problem stage, suitable abstract nouns such as *problem* or *difficulty* or adverbs and conjunctions such as *however, although, yet,* or *but.* Also common is the use of the preposition *due to* to signal that something is "to blame for a problem". Responses to problems might be signalled with abstract nouns such as *way, method,* or *solution.*

Also central are words and phrases that refer to abilities and capacities, constraints, and requirements, e.g., *allow, require, permit, prevent, not able to, cannot, insufficient, inadequate, insufficient,* and explicit words referring to criteria, *e.g., fast, slow, robust, expensive.*

Computing also uses a large selection of verbs to talk about problems, responses, solutions, sources of problems, good and bad results, good and bad activities, and good and bad change, e.g., *cope with, degrade, deteriorate, ensure, handle, improve, incur, lead to, permit, prevent, solve, suffer from,* etc. Some of the most common of these are listed in Table 27 *Verbs that refer to problems* and are among the abstract cause-effect verbs listed in Table 2.

5 Abstracts: simple present for procedures; simple past for recounts; time-step order for both

Abstracts often contain both *recounts* (reporting what we or someone else did) and *procedures* (saying how something is typically or ideally done). These two text-types should be clearly distinguishable from each other.

When writing *procedures,* we use the simple <u>present</u> tense. When *recounting* what *we/they/it/etc* did on some occasion, we correspondingly use *we/they/it/etc* and the simple <u>past</u> tense. The following example is thus signalled as a recount of what *we* did in our research activities.

1   **We implemented** the views in prototype software containing dynamic links and interactions and **refined** them for directional geographies.

Procedures and recounts should both be described in time order, so that what happens first appears first in a sentence and what happens next appears next.

For more on how to write recounts and procedures, see *text-types: procedure*s and *text-types: recounts.*

6 Abstracts: use standard comparison forms

When making a comparison between two items in a clause or sentence, we use adjectives and adverbs. Depending on the nature of the comparison, these can undergo changes in word forms, e.g., *fast, faster, fastest, quicker. more quickly, more than, less than, greater than, as fast as,* etc.

English seldom makes sentence-level comparisons using phrases such as *compared with, comparing with, when compared with,* etc.

Negative example 1

×   Hexagonal distribution ~~has the better accuracy rate compared with~~ other tessellations when the number of cells is between 5 and 11.

Table 2. Some common abstract cause-effect verbs

account for	說明	enhance	提高, 增加
affect	響; 對...發生作用	exacerbate	使惡化; 使加重
aggravate	加重; 增劇; 使惡化	explain	說明;
alleviate	減輕; 緩和	give rise to	引起
ameliorate	改善; 改良	harm	損害, 傷害; 危害
arise from	產生, 出現, 形成	impact	壓緊; 擠滿
associated with	有 關聯的	improve	改進, 改善; 增進
attribute, to	把...歸因於; 把...歸咎於	influence	影響
have a bearing on	關係, 關聯	inspire	鼓舞, 激勵, 驅使; 引起, 產生; 煽動
benefit	對...有益, 有益於	interfere with	妨礙; 衝突; 抵觸[
benefit from	得益, 受惠	lead to	導致
bring about	引起	mitigate	使緩和; 減輕
burden	加重壓於, 加負擔於, 煩擾	motivate	給...動機; 刺激; 激發
cause, to	導致, 使發生, 引起	obtain	得到, 獲得
come about from	發生	produce	生產, 出產; 製造; 創作
contribute to	促成	provide	提供
damage	損害, 毀壞	result in	導致, 結果是
decide	使下決心; 使決斷	result from	產生; 起因於
degrade	使降解	stem from	起源於; 由...造成
derive from	衍生出, 導出[	suffer from	**因...而更糟; 受...之苦**
deteriorate	惡化; 下降; 退化; 墮落	undermine	暗中破壞; 逐漸損害
determine	是...的決定因素; 形成; 影響	worsen	(使)更壞; (使)惡化
drive	迫使; 逼迫[	yield	出產 產生

Rewrite 1
1   Hexagonal distribution **is more accurate than** other tessellations when the number of cells is between 5 and 11.

Writers from some language backgrounds do have the habit of consistently trying to use such phrases to make comparisons. The resulting sentences are often not only ambiguous but may be poorly organized in terms of theme-rheme, given-new, and optimal focus. For a more detailed discusssion of the problems of *compare*-phrases, see page 54, *comparison: the compare-phrase problem*.

7 Abstracts: avoid unmotivated long themes

The passive is of course much used in research writing but it should not produce sentences with pointlessly long *themes* and uninformative *rhemes* (See *active and passive: long themes and trivial rhemes.)*

Roughly, the theme of a sentence (or clause) is the part up to the finite verb (the part of the verb that is marked for tense). The rheme is the remainder of the sentence or clause. Compare the lengthy theme (bold) in the following negative example and the much briefer theme in the more readable rewrite.

Negative example 1

× **To take into account the pose information, a weighted image averaging technique (WIAT) [theme]** is proposed first. **[rheme]**
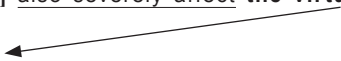
Rewrite 1

1 **We first** propose a weighted image averaging technique (WIAT) that take pose information into account.

14 active and passive: subject, object, agent

Any verb that has both a subject and an object (i.e., any *transitiv*e verb) can be written in both the active and the passive voice. When the verb is in the active voice, the subject of the verb is also its *agent*, the person or thing that performs the action of the verb. However, when the verb is in the passive voice, the subject is not the agent. Instead the agent is either placed in a *by* phrase or is omitted.

In the following examples, the verb group (underlined) is first written in the active voice. The subject of the verb is thus also the agent of the action. In the second sentence, written in the passive, the object has become the subject. The *agent*, however, remains *obstacles*.

1 Obstacles **[subject & agent]** also severely affect **the virtual coordinates [direct object]**.

2 **The virtual coordinates [subject]** are also severely affected by obstacles **[agent]**

And as noted, the passive cab also be used to omit the agent entirely.

3 **The virtual coordinates [subject]** are also severely affected.

15 active and passive: choosing between them

Researchers are sometimes given the too-general advice that they should write their papers in the passive voice. The rationale offered for this is that it will allow them to avoid personal subjects like *we* and thereby create an "objective" tone.

However, research writing in fact makes a fairly balanced use of both active and passive voice and, given that their appropriate use is a hugely important factor in the logic and readability of a research report, writers need to able to

Table 3. Three common motives for using the passive voice

1. To make ourselves less visible when making claims, i.e., in hedging

2. To omit agents that are of no interest in the context, e.g. in procedures

3. To achieve an alternative order of information in a sentence or clause, e.g., to support parallelism, or time-organized description, or to achieve a certain focus or emphasis.

choose between them in a more informed, case-by-case way.

Essentially, there are three motivations involved in choosing between active and passive (Table 3). First, we do indeed use the passive to make ourselves less visible in a discussion. This is part of hedging claims that readers might challenge. For example, rather than saying *We believe this is because...* we might say *This can be attributed to...*

A second motive for using the passive is to omit the agent (who did the action of the verb) when that information is of no interest. In the following example, the passive is used in part because "who demonstrated it" can be recovered from the references. So there is no need to name the authors or place them in a prominent position as the subject of the verb.

1   The effectiveness of this framework for use in image recognition **has been amply demonstrated** [22-26].

A third consideration is the impact of active and passive on the order of information in a sentence. This is important in a number of ways (See *active and passive: changing how a clause begins)*. For example it might influence what appears in focus position at the end of the sentence. In the following example, the passive has been used both because the agents are not relevant and because it places emphasis on the idea of *underestimated.*

2   The difficulties of ERP implementation **are often underestimated**.

16 active and passive: changing how a clause begins

The best way for a sentence to begin is so that it satisfies the sentence information order principles (See *information order: four principles)* and achieves our organisational objectives, for example, achieving a certain order of reason-result or ensuring that a comparison is parallel.

Active and passive support these objectives because they can determine issues such as whether a noun phrase occupies subject or object position. In the following examples, changing *represent* (active) to *is represented* (passive) changes where information appears in each sentence, and in particular how these sentences start, both in terms of what appears in forst place (*sentence intial)* and what elements will appear in the *theme* of the sentence (See *theme-rheme*). The

ability to manage the the organisation of sentence information in this way is a core research writing skill.

Example 1

1 The performance of the verification system when using VB7 is represented by **the ROC curves**, which plot the genuine acceptance rate against the false acceptance rate.

Alternative order 1

2 **The ROC curves**, which plot the genuine acceptance rate against the false acceptance rate, represent the performance of the verification system when using VB7.

17 active and passive: omitting agents

The passive allows us to omit agents (who did it) when, for various reasons, the agent is not relevant in the discussion. Sometimes this means leaving out a reference to a *personal* agent (that is, a reference to a person) or sometimes the omitted agent is something *impersonal.*

In Example 1, the subject of the second sentence is *We,* a personal pronoun that is also the agent of the verb. However, "who did it" is not very important in this discussion so in Alternative 1 we use the passive to omit *we* and use *CPU load shedding* as the subject.

Example 1

1 DSMSs require *CPU load shedding* in order to maintain high system throughput and timely responses. **We can broadly define** *CPU load shedding* **as** a mechanism for reducing the amount of processing involved in...

Alternative 1: the passive to omit agent and change subject

2 DSMSs require *CPU load shedding* in order to maintain high system throughput and timely responses. *CPU load shedding* **can be broadly defined as** a mechanism for reducing the amount of...

But as noted, it is not only *personal pronouns* that we can omit in this way. We can omit any irrelevant agent, whether it is a person or a thing. The example in Figure 3 talks about employing an algorithm but does not specify who or what would employ it (the computer?) for the simple reason that this information is not relevant.

18 active and passive: contributions and "an impersonal tone"

One of the chief purposes of a research paper is to tell people about our contribution–what we did, how we did it, and how what we did is better than or different from what others have done. This contrast between *our* proposed work/method/approach/etc. and the work of earlier researchers requires the use of personal pronouns such as *we* and *they*.

So, contrary to some commonly encountered advice, it is in fact necessary that we use personal pronouns in research papers. Indeed, if we omit all per-

Figure 3. The passive: omitting agents

Fig. 7 (a,b,c) shows what a user would see if the building were transparent (shaded blue). The unshaded areas are not visible so would not be sent to the rendering pipeline. Image 7a shows the entire model and what a computer would draw *if no visibility algorithms* **were employed**. Image 7b shows the portion of the model that would be rendered *if frustrum culling* **were employed.** Image 7c shows the portion of the model that would be rendered *if both frustrum and occlusion culling* **were employed.**

sonal pronouns, readers will find it hard to see our contribution and may have to struggle to work out if we are talking about what *we* did, what *someone else* did, or what is *usually or typically* done.

The following examples illustrate this problem. In Example 1, there might be some doubt as to who is making the argument in question, whether *It is also argued* means "it is argued *by us in this paper"* or "it is argued *by other people in other papers*". The rewrites clarify this simply by specifying *other authors* or using *we*.

Example 1

1   **It is also argued that** VEG can be used to specify and test voice interfaces and multimodal dialogs.

Alternative wording 1a

2   **Other authors have also argued that** VEG can be used to specify and test voice interfaces and multimodal dialogs.

Alternative wording 1b

3   **We also argue that** VEG can be used to specify and test voice interfaces and multimodal dialogs.

The unmotivated use of the passive produces sentences with unintended emphases. Negative example 1 has been written in the passive, no doubt simply to avoid having an agent as the subject of the sentence (although we might note that the authors still use the personal pronoun *our).*

However, by avoiding the use of an active subject, the authors have unintentionally put the verbs in focus (that is, in positions of emphasis) at the end of each clause. The result is that each clause ends abruptly, without giving the important information that this pattern usually promises.

Negative example 1

✗   In Section 4 <u>our</u> experiments **are described** and the results for the efficiency of the new algorithm **are given**.

But in any case there is no need for authors to rely on the passive/avoid the active in order to achieve an impersonal tone. As the following examples show, the use of the active voice by no means entails the use of personal pronouns.

Negative example 2

× **An overview of the gait recognition process is provided** which consists of gait detection, feature extraction and gait identification.

Rewrite 2

4 **This section provides** an overview of the gait recognition process, which consists of gait detection, feature extraction and gait identification.

Rewrite 2 has been written with an agent subject, i.e., in the active voice, yet still avoids using a personal pronoun and the result is definitely more readable because

1. It provides a better balance of theme and rheme, (see next article)
2. It places the relative clause after the noun phrase it describes (*...process, which...*)
3. Using *This section* as the subject of the sentence gives readers a clear idea of what the sentence will in fact be about (The sentence is <u>not</u> about *gait recognition;* it is about what readers can find in *this section*).

More on ways to avoid personal pronouns without using the passive can be found at *personal pronouns: avoiding the use of I and we.*

19 active and passive: long themes and trivial rhemes

A poor use of the passive may create a sentence with a long theme and a trivial or uninformative rheme. Consider Negative example 1. The theme is long and nothing follows the verb group (underlined).

Negative example 1

× **In addition, the preferred decision for each state at each decision epoch** [theme] <u>can also be determined.</u> [rheme]

The following rewrites produce a shorter theme/longer rheme.

Rewrite 1a

1 **In addition, we** [theme] <u>can determine</u> the preferred decision for each state at each decision epoch. [rheme]

Rewrite 1b

2 **In addition, the system** [theme] <u>can determine</u> the preferred decision for each state at each decision epoch. [rheme]

Rewrite 1c

3 **In addition, it** [theme] <u>is possible to determine</u> the preferred decision for each state at each decision epoch. [rheme]

In negative example 2, the theme is again very long relative to the rheme; detail is placed in the middle of the sentence; and, for no clear reason, the verb is in focus at the end of the sentence.

✗   **In the following experiments**, the order 2 and order 3 frameworks
    [theme] <u>are tested</u>. **[rheme]**

The following re-write is much better: theme-rheme is balanced and the sentence is arranged from background to detail, as readers most expect.

Rewrite 2

4   **The following experiments** **[theme]** <u>test</u> the order 2 and order 3 frameworks. **[rheme]**

20 active and passive: statives

Some things look like a passive voice with *by* + agent omitted, i.e., an agentless passive. but they may not be passives at all. They may in fact be *statives*, past participles acting as adjectives. In the following example, the phrase *are dated* looks like a passive but it is in fact a stative.

1   The most recent references are to our own recent work. The approaches of
    other authors **are relatively dated**.

In this example, *dated* does not refer to an actual activity but simply asserts a certain state of affairs, in this case that "other approaches" are *dated* (or *out-of-date*).

In the following example, we might wonder whether *are known* is a stative or an agentless passive. That is, is it describing a state of affairs/attribute or is it describing an activity?

2   Figure 3 shows the preferred actions when the remaining amount of band-
    width and the requested price **are known**.

In fact, *are known* is describing a state of affairs and so is stative.

In general, the passive/stative distinction does not produce many realistic ambiguities, except perhaps in the case of *is varied*. In the following, does *varied* refer to the state of the data or some interceding action of the researcher? We would probably guess from the context.

3   Figure 4 shows the threshold price for accepting a request **when y is
    varied.**

21 adverb clauses and phrases

Adverb (subordinate) clauses and phrases provide background for a main clause, commonly with reference to the ideas of place, time, cause, reason, means, purpose, concession and condition.

Adverb clauses may be introduced with a subordinating conjunction e.g., *as, after, although, because, if, since, when*

They can also be introduced with a preposition e.g., *as, because of, despite, due to, during, in order to, in spite of, instead of, once, upon, on, until, without.*

Some words, e.g., *as, after, as, before, once, since,* can act as both conjunctions and prepositions.

1 place
1   Strong spikes can be identified **wherever** the reflectance varies**.**

2   **In** globally distributed companies, collaborating teams can use wikis as platforms for informal knowledge-sharing.

2 time
1   **When** data converge toward a base station**,** there is congestion at sensors that receive more data than they can forward.

2   The input data is written to memory **prior to** execution.

3 reason
1   We chose this particular image **because i**t produced only a small region of parameter convergence.

4 means
1   The processing time was reduced **by splitting** the word-identification process into two steps**.**

5 purpose
1   **In order to** extract a feature from a sample, both KPCA and KFDA must calculate all the kernel functions of the sample and of all the training samples.

6 concession
1   **Although** these approaches are all promising, they are limited to cases where it is possible to obtain figure-background segmentation.

7 condition
1   However, **if** they are trained on small data sets, discriminative models can fail on nontypical inputs.

22 **adverb clauses and phrases: their mobility**

Adverb (subordinate) clauses can usually be placed both before and after the main clause. This flexibility gives them an important role in cohesion and theme management.

Example 1

1   **When data converge toward a base station,** there is congestion at sensors that receive more data than they can forward.

Alternative order 1

2   There is congestion at sensors that receive more data than they can forward **when data converge toward a base station.**

23 **adverb clauses and phrases: omitting subjects**

In certain circumstances we can shorten (reduce) an adverb clause by omitting its subject. We can do under two conditions:

1. The adverb clause begins with a conjunction that refers to time e.g., *after, before, once, when*

2. The adverb clause and main clause have the same subject.

Example 1: Two clauses with the same subject

1   When **the network** forwards data or control messages, **it** makes use of Greedy Perimeter Stateless Routing (GPSR) [5].

In this case the adverb clause begins with a time conjunction, *when,* and has the same subject as the main clause. So we can omit the subject and reduce the (active voice) adverb clause to an *ing* (present participle) clause.

Alternative 1: Reduced adverb clause: shared subject

2   **When forwarding** data or control messages, **the network** makes use of Greedy Perimeter Stateless Routing (GPSR) [5].

If the adverb clause is in the passive voice, it is reduced to a past participle. At that point it may be even be placed after the noun as a non-defining relative clause. The following diagrams this change of position and grammar.

3   **Once they have been specified,** the symbols are used in the freehand editing of visual sentences.

4   **Once specified**, the symbols are used in the freehand editing of visual sentences.

5   The symbols, **once specified,** are used in the freehand editing of visual sentences.

24 adverb clauses and phrases: omitting as/since/because + subject

Adverb clauses that begin with *as/since/because* + subject + verb can be replaced with a phrase using the *-ing* (present participle) form. This introduces a reason for the action of the main clause. It is quite formal in tone. In the following example, the present participle is *Being*.

1   **Being based on**/*As/Because/Since it is based on* black-box testing, there is no need for the implementation under test (IUT) to derive from instrumented code.

The reduction to *Having* suggests a hybrid of the ideas of sequence and reason-result. Note that it cannot not replace *because*, because *because* only suggests "cause-reason", not sequence.

2   **Having identified**/*As we have/Now that we have identified* an appropriate class of logics, we (now) proceed to develop our theory of multivalued checking.

25 causatively-used verbs

Certain verbs, e.g., *allow, avoid, cause, enable, ensure, make, permit, require* are commonly used to express causation, i.e., *indirect* cause, and so are called "causative verbs" although they can also function as transitive and what this book calls semi-causative verbs.

Indirect causation is where one thing indirectly *causes, enables, permits, hinders,* or *prevents* another thing from either changing in some way or from doing something. For example:

1   My boss **made me stay late** at work.

In this case, someone, *my boss,* is making someone else, *me*, do something, *stay late at work*. The causative verb is *make*.

The causative pattern features an *agent object*, i.e., the *object* of the causative verb is also simultaneously the *agent* for the following verb.

Thus, in our example, *me* is an *agent object* because it is both the object of the verb *made* and the agent of the verb *stay*.

2   My boss **made me [agent object] stay late** at work.

As mentioned above, a verb is not inherently causative. It is merely <u>used</u> causatively, in a causative pattern. Thus, in Example 1 *require* is a simple transitive verb, i.e., it is followed by an object.

Example 1

3   This clustering process **requires [transitive verb]** <u>correlation coefficients between keytoken pairs</u> **[direct object]**.

In Example 2 *require* is used causatively, i.e., it is followed with an agent object.

Example 2
4   This clustering process **requires us [agent object] to identify** correlation coefficients between keytoken pairs.

In Example 3 *require* is semi-causative, i.e., it is followed with a nominalization that implies an agent.

Example 3
5   This clustering process **requires the identification of [nominalization]** correlation coefficients between keytoken pairs.

26 causatives: four common patterns

Verbs are most commonly used causatively in four basic patterns. Some verbs appear in more than one pattern. In the following the term *bare infinitive* refers to the base form of the verb without *to*.

1 Verb + agent object + bare infinitive

have, help, let, make

1   Fines et al. [22] have provided a set of basic operations supported by groupware systems that **help** collaborators **carry out** [bare infinitive] tasks collaboratively.

2   DHD **lets** users **program** [bare infinitive] a wide array of action groups that can launch at a specific time or in response to specified variables and sequences.

3   If the most of the children of a node are near-full, then even just one more emptying into all them **makes** all of them **overflow** [bare infinitive], which can result in cascading reorganisations affecting most of the Buffer Tree.

2 Verb + agent object + to infinitive

allow, assist, authorize, cause, compel, convince, drive, empower, enable, encourage, forbid, force, get, help, incite, induce, influence, inspire, lead, limit, motivate, move, permit, persuade, prompt, provoke, push, require, spur, stimulate, urge

1   Active contour models **allow** us **to establish** [to infinitive] these kinds of general conditions and identify image structures that best satisfy them.

2   HCI has been shown to improve the performance of Colour2Grey algorithms by **allowing** parameters **to be tuned** [to infinitive in passive voice] to a specific model.

3   Frequent incorrect prefetches may **cause** the performance of systems that apply prefetching **to drop** [to infinitive] below those that apply demand fetching.

4   A parameter-free algorithm would **limit** our ability **to impose** [to infinitive] our views on the problem and would let the data better speak for itself.

5   However, beyond a simple binary classification, content clarity does not **permit** the system **to predict** the average precision of any set of queries.

6   However, the permuterm-based approach 2 does not **permit** question mark operators **to be used** [to infinitive-passive] in combination with the asterisk operator.

3 Verb + agent object + from + verb + ing

block, constrain, deter, discourage, dissuade, keep, prevent, preclude, prohibit, stop

1 Finally, this constraint does not **prevent** us **from applying** the annotation to more than one digital object.

2 First, randomization prevents adversaries from deducing the value or range of the current local maximum value.

4 Verb + that + agent object + verb

ask, demand, ensure, guarantee, necessitate, request, require

1 Private key encryption **requires tha**t users **distribute** keys secretly.

2 Such an approach **guarantees that** we **deal with** every potentially relevant document.

27 causatives: the passive

When causatives are written in the passive, they use *to be*. The agent object is usually omitted.

1 HCI has been shown to improve the performance of Colour2Grey algorithms by **allowing** parameters **to be tuned** to a specific model.

After a preposition, the auxiliary verb is in the *-ing* form. In the following the preposition is *from*.

2 Finally, this constraint does not **prevent** the annotation **from being applied** to more than one digital object.

28 causatives: unsatisfactory workarounds

Writers who are not familiar with causatives may try to express the idea of indirect causation by applying some unsatisfactory workarounds. One of the most common is to begin a first clause with a prepositional phrase e.g., using *Based on, With, Through, By, As a result of* and to follow that with a second clause that talks about *ability*.

When this workaround is used, it may not be easy to identify the intended semantic relation. In Negative example 1, the authors want to signal means-result but *Based on* could also signal condition-consequence or perhaps some other relation. This workaround also creates a long theme and a trivial rheme. In the following the themes are in bold.

Negative example 1

✗ **Based on the concept of QTR, the integration of discipline and agility** can be more easily started and sustained.

Rewrite 1

1 **QTR** makes it easier to start and sustain the integration of discipline and agility.

Rewrite 1a

2   **QTR** makes it easier for the integration of discipline and agility to be start-
ed and sustained.

The rewrites are improvements because they unambiguously communicate three
important ideas that were not present in the workaround.

1. The causation is *indirect*

2. The value being signalled is BENEFIT (*makes it easier*)

3. The semantic relation is means-result.

The rewrites also demonstrate other options for theme and information order
as each has a compact theme and gives the sentence a different focus i.e., each
sentence ends differently.

   The following negative examples apply the same type of unhelpful worka-
round: a prepositional phrase at the head of an initial clause followed by a main
clause featuring *can be (can* + passive).

Negative example 2

✗   **Through** these interactions, both physical objects and information **can be
processed**.

Rewrite 2

3   These interactions **make it possible to** process both physical objects and
information.

Negative example 3

✗   **Owing to** advances in communications technologies, **we are able to** get
help by posting our requests on the Internet.

Rewrite 3

4   Advances in communications technology now **allow us to** get help by post-
ing our requests on the Internet.

Negative example 4

✗   **By using agents**, complex and repetitive business supply chain processes
can be automated.

Rewrite 4

5   **The use of agents allows the automation of** complex and repetitive busi-
ness supply chain processes.

29 causatives: verbs used 'semi-causatively'

Some verbs that are commonly used in causative patterns, for example, *allow,
require*, and *make,* are also frequently used in the pattern Subject + Verb + direct
Object. That is, rather than being followed by a causative-style agent object,
they are followed by a simple direct object.

1   These semantics **require** a new primitive **[direct object].**

Sometimes the direct object which follows the verb uses the noun form of a verb

and implies an agent object, a pattern that this book refers to as *semi-causative*. In the following example, the direct object which follows *requires* is *a careful assessment.*

Example 1

2   The design of a QoS-aware application server **requires _a careful assessment of_** the correct amount of...

Presumably, this process of *assessment* requires some agent, so we could easily rewrite the sentence with *require* as a causative verb.

Example 1a: causative

3   The design of a QoS-aware application server **requires _us/them/someone to carefully assess_**... .

Similarly, the following causative (the agent object is *mobile nodes)* could easily be turned into a semi-causative by first omitting the agent object and then changing the infinitive *to cache* into the noun *caching.*

Example 2: causative

4   Traditional schemes **allow mobile nodes to cache** both the results of recent queries and the data forwarded through them to other nodes.

Example 2a: semi-causative

5   Traditional schemes **allow caching of** both of the results of recent queries and of the data forwarded to other nodes.

30 causatives: some semi-causatives cannot be used causatively

Some semi-causative verbs never appear in a causative pattern, i.e., they are never followed by an agent object. Examples include *facilitate, hamper, hinder, limit, obviate*, and *support*. Compare the uses of *facilitate* (followed by a noun) and *help* (followed by agent object) in the following example. *facilitate* never takes an agent object.

1   RSQL **facilitates [semi-causative] the development of** visual interfaces and administration consoles that provide source owners with a unified view of the services they export on top of their data sources and **helps them reduce [causative]** the cost of maintaining them.

31 cause-effect and reason-result: types of relations

This book refers to five *cause-effect relations: reason-result, means-purpose, means-result, grounds-conclusion,* and *condition-consequence.* Each of these is discussed under *semantic relations: cause-effect.*

32 cause-effect and reason-result: abstract verbs

Research writing makes use of a large selection of cause-effect/reason-result verbs that are abstract. That is, they signal that one thing is causing another to change yet don't specify any particular result or the nature of the change (unlike a cause-effect verb such as *freeze* or *dissolve*.) These abstract verbs are distinguished from each other according to the semantic and grammatical criteria such as

1. Whether the cause-effect relations are direct or indirect,
2. Whether the subject of the verb is the *source* of the change or the *recipient* of the change
3. Whether the verb can be take a direct object (and so can be passivized)
4. Whether the view of the writer is that the change or outcome is to be perceived as positive, negative or no point of view is suggested.

Table 2 lists some common abstract cause-effect verbs. Many of these verbs are considered in detail in Part 2 of these notes, in particular with regard to how writers choose between them as alternatives.

33 cause-effect and reason-result: time-step organisation

The great variety of vocabulary and grammar used to express cause-effect/reason-result (verbs, conjunctions, prepositions, abstract nouns, participle clauses) make it organizationally very flexible in support of time organization, for emphasis (see the next article), and for given-new. For example, it is very easy to reverse relations when using conjunctions in the main clause-subordinate clause pattern.

In the following example, the relation is condition-consequence and the sequence of activities is real-world, i.e., what happens first appears first in the sentence and what happens next appears next. The order is reversed in the subsequent example.

Example 1

1   Each data table has one slot assigned for each expected predictor. *If a predictor is collected during a run* **[condition]**, its value is recorded in the table. **[consequence]**

Alternative: order of condition-consequence reversed

2   Each data table has one slot assigned for each expected predictor. The value of a predictor is recorded in the table **[consequence]** *if it* is collected during a run **[condition]**,

Cause-effect/reason-result is often involved in text-types that rely on time-organisation, specifically recounts, procedures, and explanations. In these cases, writers should be alert for whether they have an appropriate motivation for the order of cause-effect.

Note that when no explicit signalling words are used, readers may assume a sequence of reason-before-result, as in the following example.

Example 1: cause-effect relation not signalled

3   We have selected this scale because people are widely familiar with it. Even users who are not usability experts will find this scale intuitive and easy to use.

Alternative 2 cause-effect relation signalled

4   We have selected this scale because people are widely familiar with it. **As a result**/*So/For this reason/Because of this,* even users who are not usability experts will find this scale intuitive and easy to use.

34 cause-effect and reason-result: supporting comparisons

Cause-effect and reason-result frequently support the parallel organisation of comparison and contrast. The goals of parallelism are, first, to make items of comparison appear as similar as possible so as to highlight contrasts and, second, to arrange that sentences for a desired focus.

The paragraph in Figure 4 provides a feature-rich example of this. It compares two *bidding strategies*. Parallelism (and comparison) is supported by ensuring that the order of reason-result is the same in the two sentences being compared.

But focus is also an important issue in a comparison and reversing the order of reason-result of course will reverse the focus of the comparison. This is seen in the final sentence in Figure 4, which changes from reason-result to result-reason.

A number of language features (both vocabulary and grammar) are exploited to get these information-ordering effects. First there is the use of the present participle *(-ing)* clause *applying an aggressive bidding strategy* to suggest reason/sequence *(see present participles)*

Second, there are verb choices. The verb *results in* cannot be written in the passive. So if we wish to change the order of the comparison, we can change the verb and then control the order through active and passive.

Example 1

1   In contrast, applying a conservative bidding strategy <u>results in</u> **a lower average winning price**.

Alternative 1: alternative order

2   In contrast, **a lower average winning price** <u>is produced by</u> applying a conservative bidding strategy.

Third, this example uses the pattern of main clause + subordinate clause to manage parallelism and focus. The subordinate clause is introduced with *when*—and is easily swapped with the main clause to get a different order.

Figure 4. Reason-Result: for parallelism and focus

Figure 12 shows the effect on the average win price of applying the two bidding strategies and varying the number of agents under the English auction method. We can see that applying an aggressive bidding strategy **[reason]** always **results in** a higher average winning price **[result]**. In contrast, applying a conservative bidding strategy **[reason] results in** a lower average winning price **[result]**. Interestingly, no matter which strategy is used, there is an increase in the average win price **[result] when** we increase the number of agents. **[reason]**

Example 2

3   Interestingly, no matter which strategy is used, **when we increase the number of agents,** there is an increase in the average win price.

Alternative 2: change of focus

4   Interestingly, no matter which strategy is used, there is an increase in the average win price **when we increase the number of agents.**

35 clauses: what is a clause?

English sentences are made up of one or more groups of words called *clauses*. The smallest type of clause contains a subject and a finite verb, i.e., a verb that is marked for time. Longer clauses can also contain three other clause elements: object, complements, and adverbials.

In total, then, a clause can be made up of a Subject, Verb, Object (direct and indirect), Complement, and Adverbial, the so-called SVOCA.

The clauses within a sentence can be of equal logical status, coordinated clauses which are meaningful by themselves and can act as main clauses, or clauses can be of unequal logical status, or subordinate. Subordinate clauses require a relationship with a main clause.

Subordinate clauses include adverb clauses and relative clauses. An adverb clause contains a finite verb and, as the name suggests, acts as a kind of adverb for the main clause. Along with words and phrases such as adverbs and transitions, adverb clauses make up the Adverbial element of a clause (assuming that an entire sentence is regarded as a single clause).

If the adverbial contains a non-finite verbal element (like a present or past participle), it may also be called an adverb phrase. Adverb clauses are often reduced to phrases by omitting words or changing their grammar. A good example of this is participle phrases, which have a number of common functions in research writing, where they signal semantic relations and are involved in theme management and text-organisation,

The two types of subordinate clause are not equally mobile. The adverbials are very mobile in the clause or sentence. They can appear at the beginning, middle or end and are always involved in issues of *structural cohesion* (theme-rheme and given-new).

Relative clauses, however, are strongly connected to the part of the clause

known as the Complement (see the next article) and as a result is not very mobile or not mobile at all. They most typically follow the clause or noun phrase that they describe and thus are little involved in managing structural cohesion.

When we talk about theme and rheme, we may talk about the elements of a clause differently, in terms of *participants*—similar to noun groups—and *processes*—essentially, verb groups. These can be accompanied by *circumstances*, similar to the Adverbial element.

1   Our simulation **[Participant]** involved **[Process]** the construction of four taxonomies **[Participant]** without sampling **[Circumstances]**.

36 clauses: four basic patterns

There are four basic clause patterns.

1 Subject + Verb SV

In this pattern, the verb is referred to as *intransitive:* it has no object and so cannot be written in the passive.

1   Users **[subject]** can. **[verb]**

2 Subject + Verb + direct Object SVO^D

In this pattern, the direct object is directly involved in the action of the verb. The verb is *transitive*: it has an object and so can be written as a passive.

1   We wrote a browser that ran Oak applets (O^D). **[direct object]**

3 Subject + Verb + direct Object + indirect Object SVO^{D}O^I

In this pattern, the verb takes both a direct and an indirect object and is thus known as *ditransitive*. Because it has an object, it can be written as a passive. The indirect object is only indirectly involved in the action of the verb. The direct object is directly involved in the action of the verb. In this example, note that the word *as* is pointing to the indirect object.

1   We refer to this step (O^D) **[direct object]** **as** the early termination criteria (O^I). **[indirect object]**

4 Subject + Verb + Complement SVC

The complement is either identical with or gives more information about the subject. The verb has no object and so cannot be written in the passive.

1   The principles that were developed in the software engineering community **[subject]** were very important **[complement].**

37 **cleft sentences**

Cleft is an old English word meaning "cut in two" (*cleave*). Cleft sentences are sentences that might usually be written as one clause but instead are written as two: main clause and subordinate/relative clause.

Clefts are a strategy for creating emphasis or focus by changing the subject for all or part of a sentence. This makes either the *verb* in the cleft or *everything that follows the cleft* into points of focus.

Subject   Sentence focus

Standard subject
1   It should be noted that **we** constrained the number of applications of trans-formations, **not the types of transformations**.

Subject (underlined)   Verb as focus

Cleft subject
2   It should be noted that <u>what was</u> **constrained** was the number of applica-tions of transformations, not the types of transformations.

The following illustrates this same strategy.

Standard subject + verb
3   **They need** visual analysis systems that automatically present data using the best practices of graphic design.

Alternative with cleft subject
4   **What they need** are visual analysis systems that automatically present data using the best practices of graphic design.

A cleft may also be used to provide a more concise subject.

Long subject
5   <u>A way to reduce the amount of processing time in such circumstances</u> **is needed**.

Cleft
6   **What is needed** is <u>a way to reduce the amount of processing time in such circumstances</u>.

38 **collocation**

Collocation is the way that words typically combine in different typical situations and makes an important contribution to writing that is predictable, cohesive, and coherent.

Collocation occurs between nouns and verbs, nouns and adjectives, adverbs and verbs, and between adverbs and adjectives.

For example, the familiar chunk of words, *much greater (than)*, is a common adverb-adjective collocation. Similarly, *deciding factor* is not uncommon as an adjective + noun combination.

1   Ultimately, efficiency at index time (when correcting) or query time (when encrypting) can be the **deciding factor** in using either approach.

Collocations may on one hand restrict our word choices or on the other may leave us considerable freedom. For example, in a research paper the verb *reap* will collocate only with the noun *benefits*. We would not say ~~reap results~~.

In a similar way, we always say *form an opinion* and, for the same meaning, we would never say ~~make an opinion~~. Yet, we would not normally say *form an assumption* while we would say *make an assumption*. And it is common enough to speak of something being a *safe assumption* that we might say that *safe* and *assumption* collocate too.

2   This **assumption** can be **safely made** wherever dissemination is a result
      of reprogramming.

But collocation is not a prison. While the verb *reap* collocates only with the noun *benefits*, the noun *benefits* collocates with a number of other verbs.

3   These figures clearly show that there are a number of **benefits** to be
      reaped/obtained/derived/had/obtained from recording these link-tracks
      and inserting them alongside the results list.

Similarly, the noun *emphasis* is quite freely used with a selection of verbs, including *put, place*, and *lay* in the pattern lay/*place/put emphasis on.*

4   One approach, boosting, makes use of multiphase techniques that **place**
      special emphasis on accurately classifying rare outcomes.

And with a different meaning, the noun *emphasis* might also be used with the verbs *demonstrate* or *display*. While these choices are not central, they are not unusual either.

39 comparison and contrast

Comparison and contrast involves saying how things are the same and how they are different. These similarities and differences should be easy to find and identify within sentences, between sentences, and across paragraphs.

Effective comparison also requires grouping similar types of information, and the use of *parallelism*, including consistent word use, at all levels of the text. At the sentence level, we use adjectives and adverbs in the standard patterns that English uses in making sentence-level comparisons: equative (*as...as...*), comparative (*-er, more than..., less than...*), and superlative (*-est, most, least*).

Finally, comparison uses suitable adverbs and conjunctions, e.g., *however, unlike, but, although, on the other hand*.

40 comparison: direct and indirect

Comparisons may be *direct* or *indirect*, where a direct comparison identifies the objects of comparison and uses *as* or *than* and an indirect comparison does not. The following comparison is direct; the items being compared are both specified: *discrete bid auctions* and *continuous bid auctions*. The two items being

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Figure 5. Comparison: parallelism and sentence-level comparisons

There are two methods that are commonly used to encode to live video broadcasts, Constant Bit Rate (CBR) encoding and Quality-based Variable Bit Rate (QVBR) encoding. **CBR encoding permits the specification of a desired** average bit rate and an appropriate buffer size. The bit rate will fluctuate throughout the stream but these fluctuations will be limited by the size of the buffer. **QVBR encoding permits the specification of** a desired quality setting (between 0 and 100), During encoding, this bit rate will fluctuate according to the complexity of the stream. **A higher bit rate is suitable for** detailed or high speed content while **a lower bit rate is suitable for** less complex content.

The topic statement (italics) suggests how the paragraph may develop. In this case, it develops by *split progression* This implies the subsequent parallel organisation. At sentence level, it makes comparisons using adjectives and adverbs and standard English comparison forms

---

compared are linked with *than*.

1   When valuation distributions are typical, <u>discrete bid auctions</u> yield less revenue **than** <u>continuous bid auctions</u>.

In contrast, the following comparison is indirect. It does not use *as* or *than* and does not tell us "more important than what" or "cheaper than what".

2   Custom software began to become **more important** in the late 1970s, once American forms discovered that it was **cheaper** to develop software products offshore.

When we make indirect comparisons, we must be confident that the reader can easily infer both sides of the comparison. In this case the comparisons are obviously between "the late 1970s" and "some preceding time" and between "offshore from America" and "onshore in America".

The following example makes both direct and indirect comparisons. In the first sentence, it names the objects of comparison— Bangalore and Mumbai— and uses *than*. In the second sentence, we can infer the objects of comparison from the preceding sentence.

3   <u>Bangalore</u> enjoyed a competitive advantage because rents were <u>lower</u> **than** in <u>Mumbai</u>. However, Bangalore was <u>weaker</u> in the areas of finance and air transport services.

41 comparison: parallelism in a paragraph

The paragraph in Figure 5 compares two video encoding methods. Much of the task of comparison is handled through parallelism, i.e., similar information is placed in similar positions in the sentence and is expressed using similar words and grammar. The pattern of theme development is *split progression*, often used to introduce and compare items. (See *themes: four patterns of theme development*)

At the sentence level and between clauses, comparisons are supported and

detailed using adverbs and antonyms/adjectives such as *less, higher, lower* as well as suitable conjunctions, e.g. *while*.

42 comparison: parallelism: synonyms and antonyms

Readability and effective comparisons depend on the use of expected word pairs—synonyms 同義字 and antonyms 反義字, e.g., *higher/lower*—and parallel grammatical constructions.

For example, if we read the word *fast* in a comparison, we expect the matching term *slow* or something just as familiar. This is not just because they are familiar antonyms but also because they are the same word-class, that is, they are both adjectives. Thus they are *grammatically* parallel.

1   One was **fast** and the other was **slow**.

✗   One was **fast** but the other **had a low speed**.

2   There is a clear knee in the AQ curves and we can see that as the number of surrogates **increased**, the improvement in performance **decreased**.

✗   There is a clear knee in the AQ curves and we can see that as the number of surrogates **increased**, the improvement in performance **diminished**.

Related: trends: verbs for talking about change and trends

43 comparison: ordering information for impact

When making comparisons we need to consider what to place first in the sentence and what to place later. The best result usually comes from putting details—often the relevant point of difference—in focus at the end of the sentence.

In the following, the first and the second clauses are written in the same order. The result is that the comparison is parallel and details are in focus at the end of each clause.

1   Typical path conditions **contain at most a few hundred conjunctions and disjunctions** but the non-decomposable Drive 5 **contains a few thousand**.

Related: graphics: a table supporting claims: placing data for impact

44 comparison: within a clause: equative, comparative, superlative

The basic comparative forms discussed here are important not only because they are the primary and clearest way to make comparisons in English but because control of these forms also gives writers control over the given-new and theme-rheme to get information-ordering and cohesive results which cannot be achieved using the usual workarounds (in particular *compare*-phrases).

The basic feature of these comparative forms—equatives, comparatives, or

Table 4. Adjectives: equative, comparative, and superlative forms

	Equative	Comparative	Superlative
fast	as fast (as)	faster (than)	fastest
easy	as happy (as)	easier (than)	easiest
robust	as robust (as)	more robust (than)	(the) most robust

Table 5. Adjectives: irregular forms

	Equative	Comparative	Superlative
good	as good (as)	better (than)	the best
bad	as bad (as)	worse (than)	the worst
little (quantity)	as little (as)	less (than)	the least
few (number)	as few (as)	fewer (than)	the fewest
many (countable)	as many (as)	more (than)	the most
much (uncountable)	as much (as)	more (than)	the most

superlatives—is that they can require either a change of the word form or the use of certain qualifying words (Table 4 and Table 5). In the following example, the adjective *easy* is modified as the comparative form *easier* and the adverb *quickly* is qualified to become *more quickly*.

1   The use of the CDS makes routing **easier** and enables it to adapt **more quickly** to changes in network topologies.

The adjectives and adverbs in the equative column in Table 5 do not change their form. However, the comparative and superlative forms do; adjectives of one syllable add *-er* and *-est: fast–faster–fastest*

2   The primary advantages of an elastic and cohesive algorithm are first that it can handle spatial variations and second that it is **faster than** naive methods.

Adjectives that end in *-y* take the comparative ending *-ier* and *-iest: easy– easier– easiest*

3   While their mechanism and ours might be regarded as interchangeable, we believe that ours is **easier** to implement in real-world online auctions.

Other adjectives of two syllables or more do not use the *-er* or *-est*. They use *less, more, the least, the most: robust–more robust (than)–the most robust*

4   The proposed regional statistical module provides **more robust** object tracking information **than** the traditional gradient module.

45 comparison: irregular forms

Some of the most commonly-used adjectives have irregular comparative and superlative forms (Table 5).

46 comparison: the compare-phrase problem

The *compare*-phrase problem involves using phrases such as *compared to/with*, *comparing, when compared with, when comparing,* and the phrase *in comparison to* to take the place of many different comparison-and-contrast-related words and phrases, both when the comparison is being made within the clause and when it is being made across clauses and sentences.

47 comparison: compare-phrases: problems within the sentence

Within sentences, problems arise when *compare*-phrases are freely used in place of adjectives, adverbs, equatives, comparatives and superlatives, *more...than, less...than, better, worse, worst, -er, -est, as...as...*etc. The resulting sentences can often be interpreted with a number of different meanings. Consider the following typical misuse.

Negative example 1

✗ **Compared to PAQ and VF, the savings of AM** is mainly I/O time.

Readers might ask, "what exactly is being compared here?" There are three possible interpretations. Each means something different.

Rewrite 1a

1   AM saves **more** in I/O time **than** either PAQ or VF.

Rewrite 1b

2   **More** of the savings of AM are **in** I/O time **than in** either PAQ or VF.

Rewrite 1c

3   The savings of AM are mainly in I/O time **but** in both PAQ and VF there are savings in other areas.

This effect of these ambiguities on readability can range from slight to serious. The following example is certainly faulty, but how faulty?

Negative example 2

✗ Since a geometric mean method can emphasize small terms **compared with** the arithmetic mean method, the geometric mean criterion can be applied in automatic weighting as a way to reduce the impact of class merging.

What is the actual claim here? Does the *arithmetic mean method* <u>not</u> emphasize small terms <u>at all</u>? Or just not as well as the *geometric*? It is not possible to say. And what of the following example?

Negative example 3

✗ From Q 4 we can see that a useful subordinating set query can be expressed in a simple way, **when compared with Q2**.

Here are a couple of rewrites guessing at what this example could mean.

Rewrite 3a

4   As we can see, Q4 expresses a useful subordinating set query **more simply than** Q2.

Rewrite 3b

5   As we can see, Q 4, which uses a subordinating set query, **is expressed more simply than** the query in Q2.

Each of these rewrites is a legitimate guess yet each means something different. In the first, Q4 is doing the action yet in the second, among other issues, the action is being done to Q4. This ia a problem, as clearly it is not possible for both of these interpretations to be accurate.

Often, *compare*-phrase problems make sentences much more complicated than they need to be.

Negative example 4

✗   For example, in SL the main goal is to minimize the overall misclassification error so **the utility of the minority class instances [28] is less significant when compared to** the majority class instances.

Rewrite 4

6   For example, in SL the main goal is to minimize the overall misclassification error. As a result, minority class instances [28] **are less useful than** the majority class instances.

Many common errors with *compare*-phrases are not too hard to interpret.

Negative example 5

✗   Fig.10 shows the simulation results for map postprocessing. Obviously, the processed map **has higher accuracy compared with** the unprocessed map.

Rewrite 5

7   Fig.10 shows the simulation results for map postprocessing. Obviously, the processed map **is more accurate than** the unprocessed map.

Negative example 6

✗   Theta-illumination **has the advantage of lower cost compared with** laser scanning methods.

Rewrite 6

8   Theta-illumination **is cheaper than**/*less costly than/less expensive than* laser scanning.

Often we find *compare*-phrases being used to replace the word *of*.

Negative example 7

✗   While automated methods could not uncover every problem in the specifications, they did uncover most at a fraction of the cost ~~compared to~~ **of** manual detection.

This last example in particular may be a fairly harmless error or may be just

casual usage. The following kind of thing is common in everyday English.

9   Take-out is convenient **compared with** cooking at home.

In research writing, however, such casual phrasings may become involved with other negative habits, in particular the unmotivated fronting of *compare*-phrases.

Negative example 8
×   **Compared with traditional auctions**, online auctions are convenient.

Such fronted *compare*-phrases should be written as standard comparisons.

Rewrite 8a
10   Online auctions **are more convenient than** traditional auctions.

Rewrite 8b
11   Online auctions **are convenient but** traditional auctions **are not.**

Writers from some language backgrounds may feel the need to use *compare*-phrases in order to start sentences the way they want. But in fact *compare*-phrases are not flexible. At sentence level, getting the themes we want involves using standard comparison forms.

Negative example 9
×   **Compared with other IR models, VSM** can <u>more readily</u> handle natural language queries.

Rewrite 9a
12   **VSM** can handle natural language queries <u>more readily than</u> other IR models.

Rewrite 9b
13   **Other IR models** cannot handle natural language queries <u>as readily as</u> **VSM**.

Negative examples 10
×   **DIBFA has a shorter runtime and a higher classification accuracy when comparing with other benchmark algorithms.**
×   **When comparing with other benchmark algorithms, DIBFA** has a shorter runtime and a higher classification accuracy.

Rewrite 10
14   **DIBFA** has a shorter runtime and is <u>more accurate than</u> other benchmark algorithms.

48 comparison: compare-phrases: poor signalling within and between clauses

compare-phrases are also misused in place of adverbs and conjunctions that signal semantic relations between clauses, such as *although, but, in contrast, in fact, on the contrary, nevertheless, unlike, whereas, while,* and *yet.* The following examples give some idea of the nature of this problem.

Negative example 1

✗ **Compared to the domain knowledge approach, the syntagmatic approach has very low recall** but has a significant increase in accuracy.

Rewrite 1a

1 **Although** the syntagmatic approach has a much **lower recall than** the domain knowledge approach, it does significantly improve accuracy.

Rewrite 1b

2 The syntagmatic approach has a much **lower recall than** the domain knowledge approach **but** it does significantly improve accuracy.

Negative example 2

✗ **Compared with** local nonlinear dimensionality reduction techniques, which preserve the local geometry [4], [7], [9], Exomap seeks to preserve the global scale of the data.

Rewrite 2a

3 **While** local nonlinear dimensionality reduction techniques preserve the local geometry [4], [7], [9], Exomap seeks to preserve the global scale of the data.

Rewrite 2b

4 Local nonlinear dimensionality reduction techniques preserve the local geometry [4], [7], [9]. **In contrast**, Exomap seeks to preserve the global scale of the data.

Negative example 3

✗ **Compared to feature level and matching score level fusion,** decision level fusion does not allow thorough exploitation of data related to multiple traits.

Rewrite 3a

5 **Unlike** feature level and matching score level fusion, decision level fusion does not allow thorough exploitation of data related to multiple traits.

49 comparison: compare-phrases: problems across sentences

Effective theme management is a hallmark of good research writing. Among other things, good theme management includes placing given and new effectively and using well-chosen sentence adverbs and connectives.

The theme choices in the next example are well-motivated. The paragraph is making comparisons and supports this with parallelism and by the effective use and placement of the connective, *In contrast.*

1   In an environment of scarce resources, content adaptation can be used to maintain a connection that otherwise would be interrupted. **In contrast**, when resources are more freely available, it can be used to improve quality by dynamically allocating network resources between applications.

Theme management can be impaired by the overuse of *compare*-phrases at sentence-initial, as they can crowd out connectives and interfere with the placement of given information. Often the result of a *compare*-phrase at sentence-initial is a long, unmotivated theme. In the following example, a *compare*-phrase occupies the position that would be better occupied by the second use of the noun phrase *VSM*.

Negative example 1

✗   **The vector space model (VSM)** is one of the most popular and widely used information retrieval (IR) models, providing a reliable way to measure and visualize the similarity between a query and a document. **Compared with other IR models, VSM** can more readily handle natural language queries.

Rewrite 1

2   **The vector space model (VSM)** is one of the most popular and widely used information retrieval (IR) models, providing a reliable way to measure and visualize the similarity between a query and a document. **VSM** can handle natural language queries more readily than other IR models.

50 comparison: compare-phrases: changing topic, putting information in focus

Typically, English uses the *compare*-phrases not to *make* a comparison but for broader text-signalling and organizing tasks, in particular to signal a change of topic and/or to push information into focus later in the sentence.

The paragraph in Figure 6 is a typical experimental results paragraph (it uses the familiar *Description > Observation > Explanation/significance* pattern).

In this case it begins by telling us what the researchers did. At this stage, as readers, we may or may not expect this paragraph to develop into a comparison. The next stage of the paragraph introduces the contents of two tables. With this, we certainly expect a comparison and indeed then the paragraph does move into the comparison stage. This change of topic is signalled with *Comparing the method*s in theme position.

Figure 6. The impact of a *compare*-phrase on topic and focus

We applied XSA and the spectral method to the library dataset and generated 2, 4, 8,..., 1,024 clusters. Tables 5 and 6 show the normalized cut and ratio association values alongside the computation times. Some cells in the tables are empty, indicating cases where, due to memory issues, the spectral method could not be run. **Comparing the methods for the values when the spectral method could be run, [observation]** we see that in most cases XSA produced better objective function values: five out of six for ratio association, five out of six for normalized cut when running XSA on the boundary points, and six out of six for both objectives when running on all the points. Interestingly, the use of all points in XSA produced much better ratio association values than the use of boundary points alone.

Background, data collection, introduces figures, and special considerations

"Comparing" introduces change of focus and "observation"

Explains the significance of the observation

In the following example, the *compare*-phrase is also acceptable. It is not functioning to make a comparison. Rather, it is performing dual tasks, introducing some background relevant to the comparison that follows and pushing a good result (for the authors) into focus. As this example is from a Conclusion, the relevant *other methods* can be assumed to have been described earlier.

1   We have proposed a SEON network for color image segmentation. **Compared with other methods in the literature, SEON** provides an efficient parallel segmentation method which produces more reliable and faster segmentation results at a faster segmentation speed.

51 complementation

Complementation is the use of a word or group of words to provide more information about or to "complete" the meaning of an adjective, noun, or verb. Good dictionaries usually highlight the most frequent or important complementation patterns for a word.

1 Adjective complementation

In this example, more information is added to the adjective *dependent*. The complement is introduced with *on*.

Without a complement
1   In most cases, the best relative pivot values were **dependent**.**[adjective]**

With a complement
2   In most cases, the best relative pivot values were **dependent [adjective] on** the query size.

2 Noun complementation

In this example, more information is added to the noun *reasons*. The complement is introduced with *for*.

1   The respondents provided a number of reasons **[noun] for disliking the test procedure. [complement]**

3 Verb complementation

In this example, more information is added to the verbs use. The complement is introduced with *to (to adjust...)*

1   The cut merging process is then **used [verb] to adjust their node resolutions for consistency**.[complement]

And here the complement of the verb *comment* is introduced with *on*.

2   At the end of the survey, participants were able to add comments **[verb] on the usefulness of the explanations**. **[complement]**

52 complementation: for and to: introducing purposes

In computing research writing, *to* + verb, *for* + verb + *ing* (or *for* + noun phrase) very commonly feature in patterns of complementation where they introduce what a tool or method is *for*, i.e., its use, function, or purpose. In this role they may complement adjectives, nouns, or verbs.

1   This framework provides semantics essential **[adjective] for correctly propagating/for the propagation of** updates.

Or both patterns may complement a noun to talk about the purpose or use of something.

2   A requirements engineer can regard this kind of goal flow diagram as a template **[noun] for understanding** stakeholder goals.

3   The index was originally proposed in [6] as a way **[noun] to speed up** the generation of structural joins.

Similarly, both patterns may complement a verb to talk about the purpose of a verb/activity.

4   The Lyapunov Exponent was first calculated **[verb] to determine** the range of parameters in which an LCG could be chaotic.

5   BVT traversal is **[verb] for collecting** PITPs.

53 complementation: for and to: introducing purposes: choosing between them

As both *to* + verb and *for* +verb + *ing* can be used to talk about the purpose or use of something, how do we know which to use? For adjectives and verbs, the best suggestion is to consult a dictionary.

For nouns, too, it is helpful to consult a good dictionary but these patterns following nouns can also be seen as types of relative clauses, and this makes it possible to suggest some guidelines to choosing between them. For these, readers are referred to the articles including and following *relative clauses: purposes of tools and methods* .

54 complementation: a common problem with 'to'

The *to* + infinitive complementation pattern is not mobile and cannot normally be separated from the verb and placed at the front of a sentence.

> Negative example 1
>
> ✗ **To simulate** the central mechanism of the deadlock, **we do not intend**.

> Rewrite 1
>
> 1 **We do not intend to simulate** the central mechanism of the deadlock.

This kind of mistaken fronting of complements is commonly found with the *use* verbs *use; adopt, employ; exploit, utilize,* etc.

> Negative example 2
>
> ✗ **To arrange** the nodes within an adjacency matrix, many different algorithms **can be used**.

> Rewrite 2
>
> 2 Many different algorithms can be used **to arrange** the nodes within an adjacency matrix.

This error may be due to confusion over the difference between the complement *to* + verb meaning "what they are for", which <u>cannot</u> be fronted, and the subordinating conjunction, which <u>can</u> be fronted, (*in order) to* + verb ("why we did it"). Alternatively, writers may be fronting these complements so as to get better themes. But again, we cannot usually front these complements.

55 complementation: an easy fix for wrongly fronted complements

To fix the problem of wrongly fronted complements, there is little need to consider grammatical issues. We can simply focus on the poor theme-rheme balance that a wrong fronting invariably produces. In the following example, the theme is long and the rheme is trivial, offering nothing new or important. So we know something is wrong with this sentence.

> Negative example 3
>
> ✗ **To arrange** the nodes within an adjacency matrix, many different algorithms **can be used**.

The primary way to fix an imbalanced sentence is simply to rewrite it subject + verb. This will usually produce a shorter theme and a longer rheme.

Table 6. Main stages and features of the Conclusion

1. What this work is about, i.e., the problem and solution

2. How the proposed solution works

3. How it is an improvement or important or novel. This claim should match Stage 3 of the Introduction.

4. How it was tested or evaluated and the results

5. Mention limitations of the solution, or of the setup, or testing

6. Possible directions for future work

Rewrite 3a
1   **Many different algorithms** can be used to arrange the nodes within an adjacency matrix.

This approach is very flexible because any noun phrase in the sentence is a candidate subject.

Rewrite 3b
2   **The nodes within an adjacency matrix** can be arranged (by) using many different algorithms.

Alternatively, if the main clause ends with a *can be* phrasing, we can rewrite it with *it is possible*.

Rewrite 3c
3   **It is possible** to arrange the nodes within an adjacency matrix with many different algorithms.

Rewrite 3d
4   **It is possible** to use many different algorithms to arrange the nodes within an adjacency matrix.

56 The Conclusion: purpose, main stages, features

A Conclusion (*Conclusion and Future Work*, *Concluding Remarks*, *Summary*) summarizes the research, largely focusing on contributions but may also mention limitations or implications of the work and some directions for future work. The Conclusion should refer to the same research goals and criteria as in the abstract and Introduction. A Conclusion can be one or more paragraphs. Occasionally the Conclusion and Future Work are presented under separate headings.

Table 6 summarizes the main stages and features of the Conclusion. Readers may notice how similar this is to Stage 3 of the Introduction. In fact, one way to write the Conclusion is to copy and modify Stage 3 (or vice versa). Fig-

Figure 7. The Conclusion: a framework

8. Conclusion

XYZ is widely used to verify and validate_____by testing both_____and_____. Although it does not allow for the same degree of confidence as proofs,_____ can increase our confidence in_____when_____.

Reiteration of the problem area. Importance.

In this article we have presented a framework for ___XYZ. This framework uses_____to analyse_____as well as_____, to help us verify and validate the_____. The basic assumption of the framework is that_____ and the_____being tested is modeled using_____. We provide tool support to help users_____as well as tools to generate_____and the_____ used for checking_____. The framework was applied to_____using a small, self-developed_____database. We also discussed its application to a_____.

The response to the problem. How it was evaluated? Note the use of the present perfect "have presented" for "past activities that are presently relevant"

Our experience with the framework shows that it can be effective for_____, largely because the assumption of_____provides a significant advantage in terms of_____, although this assumption does exclude the use of the framework in applications where_____. Further, the requirement for_____is currently a drawback but these tasks are certainly amenable to automation. The database that we developed was useful for_____, however it was not equally useful in all cases. In particular, we found that it was not possible to_____when_____ and in such environments an approach such as_____ may be more appropriate or, depending on user preferences, this function may be omitted. Finally, while the framework and tool support were developed for_____ they can just as easily be applied to other_____such as QS, EVEN, and ADM. Our plans for future work include t continue investigating the relationship between_____ and_____ and too develop suitable means to_____ which will help developers_____.

Discussion of results.
• Special considerations
• Are the results unexpected?
• Why did we get those results?
• Drawbacks
• Limitations
• Other areas of application
• Possible directions for future work.

ure 7 provides a framework for a relatively long, detailed, and complete Conclusion. Many Conclusions are not as long as this.

Finally, writers should note that in the Conclusion we

1. Do not introduce new information, literature, or research

2. Do not use graphics

3. Use *we* and the past tense when recounting what we did

Related: introductions: what are limitations?

57 The Conclusion: tense: the present perfect

Conclusions very commonly begin or introduce the proposed work as in the following example (and see paragraph 2 of Figure 7) with the present perfect, here, *has presented*. This tense present events as being complete (or past) but as still relevant in the current context.

> *1* 7 Conclusion
> **This paper has presented** two programs for automatically classifying program execution data in accordance with program-specific outcomes.

58 connotation 含蓄; 言外之意

When we say a word has a particular *connotation*, we mean that the word itself, even with little context, is associated with certain feelings and attitudes and even with certain domains of human activity. These associations make different words and phrasings more suitable in some situations and less suitable in others. In general, we can broadly classify these feelings as positive, negative, or neutral.

1 Connotation: *show, reveal, expose, indicate,* and *suggest*

To illustrate what is meant by connotation and how some understanding of the idea is relevant to research writers, let's take the common phrase *Fig. 1 shows….*

Now we should imagine the situation were we are writing a paper and have already used the word *show* a number of times in this way, to introduce a figure. A writer who is concerned with 'elegant variation' will at this point strive to avoid writing *Fig X shows* yet again. And so the writer might find a list of synonyms for *show*, and thereafter first write *Fig. 2 reveals…* and next *Fig. 3 exposes…* and then *Fig. 4 demonstrates…* and so on through the list, trying to avoid repeating any of these words.

The flaw in this approach is that even when words are broadly synonymous, they are rarely simply interchangeable. The words *show, reveal* and *expose* for example do have some overlap of meaning but they definitely do not mean "the same thing", and some of the difference in their meanings is in their connotations.

While the connotation of *show* is neutral, the word *reveal* may carry a connotation of mystery. It may suggest that something (perhaps something problematic) was previously hidden, concealed, or secret but now will be, perhaps dramatically, unveiled.

This connotation does not preclude the use of *reveal* in computing writing (and in fact, at 130/*mill* it is very frequent!) but it is not a simple synonym for *show*. The following use of *reveal* effectively exploits its connotation that something was hidden and is now revealed.

> *1* The improved test suites **revealed/disclosed** an above-average number of problems in the specifications that we tested.

It is the same with *expose*, which is associated with a variety of domains and

human activities and is found in phrases such as *expose to danger/daylight/infection*, *expose a scandal/corruption* or, with reference to anatomy, *expose underlying tissue/organs.*

A similar problem arises when writers essentially at random replace *Figure 2 shows...* with *Figure 2 indicates..., Figure 2 suggests/illustrates/reports,...* and so on. This is a problem because *show, indicate,* and *suggest*—and indeed all of the verbs we use in research writing to talk about figures—are key vocabulary in hedging, that is in signalling our degree of commitment to or belief in the truth or validity of a statement.

Thus, if we say *Figure 2 shows…*, we are saying that what is in *Figure 2* is an observation that we are sure is true, i.e., that the figure (or observation) <u>does indeed</u> show such-and-such. *(See Results-discussion: As Fig 2 shows...etc)* In contrast, *indicate* and *suggest* imply uncertainty or reservations about a claim. The writer is signalling that the claim is based only on an inference.

Claim: certain knowledge

2   These experiments **show that/prove that** query partitioning does improve the tuning speed but has no effect on access speed.

Claim: uncertain knowledge

3   These experiments **indicate that/suggest that** query partitioning does improve the tuning speed but has no effect on access speed.

59 discourse relations

The term *discourse relations* refers to non-linguistic (cognitive) relations that are perceived to exist between two *discourse elements,* stretches of text that are identified as having different discourse roles or communicative purposes. Such relations may participate in larger patterns of two or more relations known as *discourse frames* or *macro-patternss.* Common discourse frames in writing for science and technology include *generalization > exemplification, preview > detail, topic > restriction > illustration,* and *(situation) > problem > response/solution > (evaluation).*

Discourse relations should not be confused with *semantic relations.* First, semantic relations are inherently binary. That is, we cannot identify a *reason* unless we can also identify a matching *result.* Discourse relations, however, are unitary. While *problem-solution* is a very common relation, it is nonetheless possible to identify a stretch of text as *problem* without the requirement of identifying a matching *solution.*

Second, while we can ultimately identify only a limited number of logical or semantic relations, there are as many potential discourse elements as there are purposes for communicating (e.g. greeting, warning, evasion, insult, apology). An example of this is the way that in these notes we can characterize a results-discussion paragraph as having three discourse elements: Description, Observation, and Explanation. These are just useful labels, not linguistic features.

The ability to identify/signal discourse elements and relations is an important part of being an effective disciplinary reader/writer. Even in an area such as computing research writing, where the purposes for writing are relatively few and well known, it is often the case that it is unclear what it is that writers are trying to say or what particular point they are trying to make. As a first step towards clarity in this area, writers minimally need to be adequate users of abstract signalling nouns.

60 elegant variation

Readers depend on consistent word use in order to identify and relate concepts across sentences, paragraphs, and pages.

Of course, sometimes we vary our word use so as to avoid conflicts of meaning or other misunderstandings. In the following example, we avoid the use of *charge* twice in the same sentence as in each case it has a different meaning i.e., 將充電 *charge (a battery)* and 負責 *in charge of.*

1   The solar panel and battery are connected to the AP through a *charge* controller, which is ~~in charge of~~ **responsible for** tasks such as battery over/undercharge protection.

This is an example of well-motivated variation. It is quite different from what is sometimes called *elegant variation*, where writers arbitrarily vary their words supposedly to make their writing more interesting. However, elegant variation does not make our writing more interesting at all. It just makes it puzzling and difficult. In reality, good writers take care to avoid unmotivated variation.

Of course, some variation is normal. The term *computational complexity* is often used interchangeably with the term *time complexity*. And it may be that an *assembly line* is the same as a *production line*. But one should take care with such casual variation. Is a *system* the same as a *model* or a *framework*? Why swap between *system design* and *system architecture?* Are they really the same?

By the same token, we should not in one place say *classify*, in another say *categorize*, and in a third place say *group*. Similarly, the word *measurement* is definitely not the same as *assessment*. The words *separate, extract, classify, identify, subtract, erase, remove, omit, delete,* and *cut* cannot all be freely interchanged. In short, we should allow our words to change with our meanings rather than permit our meanings to change with our words.

61 ellipsis 省略; 省略部分

We sometimes omit words or phrases from a sentence when the meaning of the sentence is clear without them. This is called *ellipsis* and is common as follows.

1 Omitting a repeated noun phrase

The following omits the second use of *message*.

1   Queue management involves sorting data messages appropriately so as to determine which **message** to send when one sensor meets another and which **[ellipsis]** to drop when the queue is full.

2 Omitting a repeated verb (followed by an object, complement, or adverbial)

The following omits the second use of *to decide*.

1   The user is then in a better position to decide whether the current page is relevant and **[ellipsis]** where to go next.

The following omits the entire verb + object.

2   Although Rao et al included a normalization step, we did not **[ellipsis]**.

3 Omitting the main verb after an auxiliary

The following omits the second use of *permit delegation* after the auxiliary verb *does not*.

1   While our earlier work **did permit delegation**, our current approach **does not**. **[ellipsis]**

4 Omitting first mention rather than second

A word or phrase is usually omitted the second time it is used but sometimes it is omitted the first time. The following omits the first mention of *these properties are enforced*.

1   Section 2.2 explains **why [ellipsis]** and how **these properties are enforced**.

62 Experiments and results

The experiments, results and discussion sections describe and discuss experiments, tests, simulations, implementations and other evaluative activities, which in the following articles are all referred to simply as 'experiments'.

The keys to a readable experiments section are 1) effective paragraphing, 2) the ability to make standard English-style sentence-level comparisons, and 3) good habits for talking about figures, tables, graphics, and data.

63 Experiments and results: content & organisation

The *Experiments and Results* or *Experimental Results* can be organized either as three separate sections—Experiments, Results, Discussion—or all three sections can be combined. Sometimes it is organized as a series of paragraph with each paragraph describing a single experiment and offering the relevant results and discussion.

The Experiments and Results usually begins with a setup paragraph that acts as an overview and provides relevant background to the experiments. The main organisational concern is to maximize parallelism. The content must be aligned with the overview of the section. The paragraphs that correspond to the

overview should in turn have clear and predictive topic statements. In many cases, this means the paragraph or relevant subsection begins with a statement that identifies 1) the relevant experiment; 2) the relevant criterion; and/or 3) the figure presenting the data e.g., *Fig. 2 shows...* As usual, use the same words for criteria, requirements, and constraints that were used in the Introduction and throughout the paper.

64 Experiments and results: subheadings

If necessary, use subheadings to distinguish between experiments, datasets, or criteria, or between experiments and results. Subheadings should be informative and descriptive. For example, a subheading might name the relevant criterion or database. If there are multiple experiments or the experiments have multiple parameters or settings, there can be a subheading for each (see Figure 9).

As always, terms in subheadings should both match the terms used in the overview or setup—take care that synonyms really do have the same meaning—and should appear in the same order. These terms should appear again in the topic statement. Where subsections or paragraphs are similar and may be compared, the paragraphs must be parallel: that is, again, similar contents must be presented in the same order.

65 Experiments and results: setup & overview

The setup appears at the beginning of the experiments. It should let the reader know that this is in fact the experimental section, the number of experiments (or simulations, case studies, etc.) and their purpose e.g., to compare, criteria, and materials and settings, platforms, databases, data collection or processing, parameters, assumptions, methods (see Figure 8).

The setup states the purpose of the experiments in terms that satisfy the requirements or operate acceptably within the constraints described in the Introduction. It uses the same words as are used in the Abstract, Introduction, and Conclusion and refers to the technical problem and criteria in the first couple of lines of the setup, right under the section heading.

The setup justifies and explains the experiments in terms of their purposes and validity and introduces the essential tools, methods, and databases. The setup can be very specific and detailed and can include anything that the authors believes can justify or explain their setup, including special conditions or circumstances.

The description of the setup may end with a brief overview of any subsections. It does not describe or summarize or comment on the results. That is the task of the Results and Discussion. Table 7 provides a checklist of items to consider when writing the setup. The following negative example illustrates how *not* to introduce the experiments.

Figure 8. A brief experimental setup

We tested the CGA algorithm on an MBX860 evaluation board with a PowerPC (MPC860) processor, and 4MB of DRAM. **The reason why** we **chose** the MBX860 board in particular **was that we wanted to** evaluate the CGA algorithm on a real memory-restricted platform (*i.e.* an "embedded" platform). **This notwithstanding, our methodology is certainly also applicable to other platforms such as general-purpose PCs**

A setup introduces the purpose of the experiments. It introduces and explicitly names all the tools and methods (including databases) used in the experiments. It may explain and justify them as a way to establish the validity of the experiments. It may explain special circumstances.

Negative example 1
✗　5. Experimental results
Several experiments on a number of large document data sets have been conducted to demonstrate the advantages of AFAC. This section provides the results and some further discussion.

The general weakness of this example is that it fails to provide readers with anything that would allow them to judge the value or validity of the setup, much less repeat the experiments.

More specifically this description of the setup lacks detail. How many experiments? How many *data sets?* Which ones? Why them? Further discussion about what? What would be the nature of the discussion? And it cannot be the purpose of an experiment to 'demonstrate advantages'.

66　Experiments and results: setup: specific advice

1　Report the setup as a recount, using *we, our,* and the simple past tense

In general, the activities of the setup are our own real activities (not generalizations or abstract procedures), so we use personal pronouns, *we, our*, etc., and the simple past tense. That is to say, much of a setup is usually written as a recount (Figure 9)—it relates what happened or "what we or someone else (or something) did in some time frame".

Of course, if parts of the setup describe activities as typical or ideal, they are described as procedures, i.e., in the present tense and without personal pronouns.

Whether describing as a recount or as a procedure, activities should be described in their ideal sequence.

2　State criteria explicitly

Are we *investigating the performance* of an algorithm? What kind of *investigation*? What kind of *performance*? Relevant criteria should be easy to identify in the Abstract and Introduction.

Figure 9. The experimental setup: separate experiments under separate subheadings

7.2 Denoising

We compared the denoising results of our proposed method with those of three other algorithms: bilateral filtering (BF) [10], median filtering (MF) [12]; fuzzy vector median filtering (FVMF) [14]. The algorithms were implemented in VC++. net on a PC with a 3.2-GHz Intel Xeon CPU and 2.0 Gbyes of RAM. *Our experiments used both synthetic and measured models. We first made a visual comparison of the results and then compared them in more detail using two numerical measures*. The following discusses only the best results obtained for each method after fine tuning the parameters. All of the models were rendered using flat shading.

A recount retells what some agent did. It may use personal pronouns and often uses the past tense

Activities are in "real-world" sequence

No mention of results. A setup does not provide a summary.

3 Prefer verbs that refer to specific research activities

Certain verbs, such as *investigate, study, research, examine, or consider, are* statives and as such describe unobservable mental activities. The setup, however, is essentially about observable, measurable activities, so where appropriate, we describe experimental activities using verbs for activities that have products that are observable and measurable e.g., *compare, determine, identify.*

4 Avoid saying the experiments are designed to "demonstrate" or "illustrate" something

Experiments, implementations, and *simulations* are activities where, at least for the purposes of presentation, we do not know the results or outcomes in advance. In contrast, a *demonstration* shows something where the outcome is already known.

So we should avoid saying that we designed our experiments *in order to* i.e., *with the intention of demonstrating/illustrating/proving* something. If this were true, it would in fact be an admission of bias!

1   We designed three experiments to ~~demonstrate/illustrate/prove~~ **test** the robustness of NTS and the effectiveness of the proposed ARS algorithm on real applications, using case data and comparing the performance of NTS with that of ACDA, C4.5, BPN, and…

Related: in order to: means-purpose: intentions

5 Check that the setup matches the Abstract, Introduction, and Conclusion

6 Use names and numbers

We should be specific in the setup. Instead of saying *several* or *some* or *a set of* or *a number of*, we should say precisely how many experiments are to be described. If the experiments either use or are compared with other popular methods or databases, we should name the methods or databases. We should not just say *a variety of databases*. The following two negative examples fail to name things specifically.

Table 7. Experiments and results: the setup: a checklist

1. What was the purpose for testing the scheme/approach?
  - What knowledge was being sought?

2. How many tests were carried out?

3. What kinds of specific scientific activities did these experiments involve?
  - Comparing? Identifying? Measuring?
  - State this using verbs that refer to observable activities

4. What were the criteria for performance?

5. If something was selected as a parameter, how was it selected? Empirically? Experimentally? At random? By intuition?

6. What was the scheme or approach tested on? e.g. a database

7. How was this test carried out? How was the testbed set up or how were the data found, collected, or processed?

8. What was the proposed work compared with?

9. Do any of the choices in the setup require justification or explanation?
  - For example, was the setup chosen because it is standard or perhaps similar to some other setup? Why these databases?
  - Are there any other noteworthy features of the setup or of the conduct of the experiments?
  - Were any particular assumptions made?
  - Are all the results reported or just a selection?

Negative example 1
✗ To assess the impact of the strategy described in Section V,...

Negative example 2
✗ In the experiments, appropriate threshold parameters are chosen for several algorithms according to the experimental data.

Both examples raise more questions than they answer. What *strategy* in Section V? What is it called? What kind of *impact*? How is it measured? What *experiments*? Where are they described? How many are there? What are *appropriate parameters*? Who chose them? By what method? How many *algorithms*? Which ones? Where can this data be seen? And so on. In short, these setups should be more specific.

7 Justify the choice of method of comparison or database

A justification of the choice of method or database, etc., can be quite simple. For example, we might just say they are *standard, typical, well-known, accessible, similar to those used on previous experiments of this kind,...* The following example

provides a very explicit justification: the test being used is *well-known*, matches the type of data under consideration (*binary*) and is therefore *suitable*.

1   The binomial signed test is **a well-known statistical hypothesis testing method** that is applied when the observed data are binary. As our observed data are either "Na is better than Nb " or "Nb is better than Na,", the binomial signed test is certainly suitable.

Note also that the authors do not assume that the reader will see the significance of the facts they mention and therefore tell them explicitly that the *test is certainly suitable*. Research writing can be dense and readers may read too quickly so it is common for writers to do this, ending a paragraph by explicitly pointing out to the reader the significance of what they have just said.

67 fronting: marked and unmarked themes

fronting refers to the practice of placing an item at the start of sentence which would not in English 'normally' appear there. Such items are referred to as *marked* while in their 'normal' position items are *unmarked*.

The classic assumption about the English clause is that it begins subject + verb. The following example begins subject + verb and is thus "normal" or *unmarked*.

1   **A user [subject]** selects **[verb]** a loan class (*e.g.* personal or small business) from the index.

Of course, it is very easy to point out English sentences and clauses that do not begin subject + verb and it is common for sentences to begin with items other than subjects.

In the corpus for this book, the phrase *for example* is very common—853/ *mill.*—and a massive number of those occurrences are at sentence initial, indeed, twice as many as we find later in the sentence. So we can't very strictly say that *For example* is not in its "normal" position at sentence initial or is being "fronted". We can just observe that some phrases and constructions are frequent at sentence initial, others not so frequent, and still others are heavily dispreferred in that position.

And we should bear in mind that ultimately, the purpose of fronting is to achieve an optimal theme. Thus it always takes into account issues of cohesion, theme-rheme, and given-new.

68 fronting: prepositional phrases

A prepositional phrase is made up of a preposition (*at, for, in, of, to, under, with,* etc.) followed by a noun phrase. Prepositional phrases typically occur later in the clause/sentence where they provide context for some part of the sentence. However, they are also fronted, placed at the beginning of a sentence where they act like a sentence adverb. Often they talk about time or place.

Table 8. Motivations for fronting prepositional phrases

1. To highlight a new topic (emphasis)

2. To signal a change of topic

3. To maintain or emphasize topics in parallel

Example 1: time

1 Several attempts were made <u>in the late seventies and early eighties</u> to design database machines that could handle specialized database operations [3].

Alternative order 1

2 <u>In the late seventies and early eighties</u>, several attempts were made to design database machines that could handle specialized database operations [3].

Example 2: place

3 There are two buffers <u>at the sending and receiving node</u>, the CO buffer and the CL buffer.

Alternative order 2

4 <u>At the sending and receiving node</u>, there are two buffers, the CO buffer and the CL buffer.

69 fronting: prepositional phrases: motivations

The basic motivation for fronting prepositional phrases is emphasis, but more specifically also to signal a change of topic or to maintain topics in parallel for purposes of comparison or listing (Table 8). In the following example, two sentences begin with prepositional phrases. This is justified in terms of all three of these issues.

1 Although **MS-based storage differs in many ways from disk storage**, it is possible to apply some existing index structures to MS with only slight changes to the index nodes. **On disk devices**, the location of a record is indicated by an index node with reference to an attribute key value and the physical address. **In MS storage**, the location of a record is indicated with reference to the coordinates of the tip sectors.

70 fronting: prepositional phrases: in

Prepositional phrases that begin with *in* may signal time or place, or perhaps a domain, setting, or activity.

1   <u>In this experiment</u> we vary the prefetch threshold of each algorithm.

2   <u>In a recent presentation at the first Annual Conference on Secure Data Storage Systems Research (SDSSR'08)</u>, Chan Chun Lee 12] observed that...

     Example

3   <u>In partial derivative approaches</u>, a trained network is used to find the partial derivative of output with respect to inputs and/or weights.

If there is no good reason for the fronting and all it does is lengthen the theme, it is often better just to write the sentence subject + verb.

     Alternative wording

4   <u>Partial derivative approaches</u> **[subject] use [verb]** a trained network to find the partial derivative of output OF/FOR inputs and/or weights.

71 fronting: prepositional phrases: for

In the following example. the *for*-phrase is fronted both to contrast topics in parallel and to achieve a desired information focus.

     Example

1   However, it is not possible to lower FAR and FRR simultaneously so a trade-off is made. **For high security systems**, we reduce FAR. **For low security systems,** we reduce FRR.

Rewritten as subject + verb, the comparison would still be parallel but the focus and emphasis would be different.

     Alternative order

2   However, it is not possible to lower FAR and FRR simultaneously so a trade-off is made. We reduce FAR **for high security systems** and reduce FRR **for low security systems.**

The following fronts a *for*-phrase to signal a change of topic. This creates a strong contrast and signals a "surprising" change of direction.

3   Keyword-based search in centralized information systems has been well studied over a number of years now. **For emerging applications like peer-to-peer (P2P) resource sharing,** however, a considerable amount of work remains to be done. In particular, the area of wildcard search in structured P2P networks is open to....

Table 9. Using *by*: three simple rules of thumb

1. Do not use *by* at the beginning of a sentence, except in set phrases such as *by definition*

2. Do not use *by* as a substitute for the words *if, when,* or *because*

3. Do not use *by* at the beginning of a sentence to introduce agents, tools, steps, or methods

72 fronting: subordinate clauses

Subordinate (adverb) clauses, which also provide background to the main clause, can quite freely appear after or before the main clause.

Example

1 There appears to be a slight improvement in convergence **whether transactions are initially sorted or unsorted.**

Alternative order

2 **Whether transactions are initially sorted or unsorted**, there appears to be a slight improvement in convergence.

73 fronting: false starts

What this book calls a "false start" is a fronting that can't be justified and may make reading difficult. A false start typically starts wtih a prepositional phrase, commonly using *as*, *based on, by, for, in,* and *with* but also *comparing, concerning, regarding,* etc. This aspect of the usage of some of these words is discussed in detail under relevant entries but the following articles introduce aspects of the basic problem of false starts using the examples of *by*, *in,* and *with*.

74 fronting: false starts: 'by'

A good rule of thumb for using phrases beginning with *by* is that they should not appear at the beginning of a sentence except in set phrases, e.g., *By definition,....*

In other uses, fronted *by* may indicate various problems. The most common are a lack of causatives and a failure to *use*-family verbs or phrasings such as *The use of*. This error is commonly found with misuses of *with*, as in the following typical example.

Negative example 1

✗ **By the mechanism**, a locally coupled network of n Peskin oscillators can synchronize in one cycle **with** sufficiently large signal strength.

Compare the original with the following rewrite. It appears that the author of the original lacked causatives—in this case *permit*—and is not able to clearly signal means-result and condition-consequence.

Rewrite 1

1   **This mechanism [means] permits** a locally coupled network of n Peskin
    oscillators to synchronize in one cycle **[result]} [consequence] if the signal
    is strong enough [condition]**.

Table 9 lays out three simple rules of thumb for avoiding the most common
problems with *by*.

75 fronting: false starts: 'in'

The following is typical of a false start using *in*.

Negative example 1

✗   **In the platform for the smart agents, it** is implemented on two types of
    site in a single company environment, namely a user site and a service
    site.

Readers faced with this sentence must ask themselves a number of questions.
What is the subject of the verb *implemented?* What does *it* refer to? Why does
the sentence begin with a prepositional phrase? What is the relationship of this
phrase to the main clause? This is too many questions. We repair this sentence
by rewriting it subject + verb.

Rewrite 1a

1   **The smart agent platform** is implemented on two types of site in a single
    company environment, namely a user site and a service site.

Looking at this rewrite, we can see that it does not in fact contain the preposi-
tional phrases that front the original. However, it does contain a prepositional
phrase that could be easily fronted and that would—as frontings should—es-
tablish a context or boundaries for the actions or events of the following clause.

Rewrite 1b

2   **In a single company environment, the smart agent platform** is imple-
    mented on two types of site, a user site and a service site.

The resulting sentence is highly acceptable:

1. The action of the main clause (*implementation*) takes place on the stage
   established by the prepositional phrase.
2. The sentence is organized background > detail.

But whether this sentence *should* begin with this *in*-phrase is a decision to be
made in context, considering theme and given-new.

76 **fronting: false starts: 'with'**

There are a number of circumstances in which we can begin a sentence with *with*. For example, it can be used to state some accompanying circumstance, especially to introduce either a new topic or change of topic, as follows.

Example

1   **With all of these elements defined,** we can now proceed to define the model.

This can be paraphrased as follows.

Alternative wording

2   **Now that we have defined all of these elements,** we can proceed to define the model.

These issues are discussed in more detail under the various entries for *with* in Part 2. As far as false starts are concerned, however, the too-frequent use of *with* at sentence initial is a problem for a number of reasons. One problem is that it limits our theme choices and our control of given-new. It is also sometimes a sign that writers are not competent with

1. Causatives and semi-causative patterns
2. The *use*-family verbs (See Part 2: *use*)
3. Cause-effect relations, in particular reason-result, condition-consequence, and the use of the conjunctions *because, so, if, once,* and *when*.

The following negative examples and rewrites illustrate these issues.

Negative example 1

✗   XML documents are made up of tagged elements which describe the semantics of the data. **With this feature, it is easier** to parse documents for a machine and for a human.

Rewrite 1

3   XML documents are made up of tagged elements which describe the semantics of the data. **Tagged elements make it easier** for both machines and humans to parse documents.

Negative example 2

✗   **With these four features**, the modeling of aeronautical software systems **becomes** more complex than general business software modeling.

Rewrite 2

4   **These four features make** the modeling of aeronautical software systems more complex than general business software modeling.

Negative example 3

✗ **With** <u>a fixed sampling frequency</u>, a profile **can be** captured and described as a series of points...

Rewrite 3

5 **The use of/using** <u>a fixed sampling frequency</u> **allows** a profile to be captured and described as a series of points...

Rewrite 3a

6 **The use of/using** <u>a fixed sampling frequency</u> **makes it possible to** capture a profile to be captured and described as a series of points...

Rewrite 3b

7 **Using** <u>a fixed sampling frequency</u>**, it is possible to** capture and describe a signature...

Rewrite 3c

8 **When/If we use** <u>a fixed sampling frequency</u>**, [condition] it is possible** to capture and describe a signature...**[consequence]**

Rewrite 3d

9 <u>A fixed sampling frequency</u> **allows** a profile to be captured and described as a series of points...

Negative example 4

✗ **With** <u>the inherent distributed and parallel properties</u>, <u>neural networks</u> can be an efficient method for parallel image segmentation.

Rewrite 4

10 **Because** <u>they are distributed and parallel</u> **[reason]**, <u>neural networks</u> can be an efficient method for parallel image segmentation **[result]**.

Rewrite 4a

11 <u>Neural networks are distributed and parallel</u> **[reason] and so** are an efficient parallel image segmentation method **[result]**.

Negative example 5

✗ **With** <u>better positioning support</u>, an intruder can reduce the size of the one-hop circle.

Rewrite 5

12 <u>Better positioning support</u> **allows/would allow/will allow/makes it possible for** an intruder to reduce the size of the one-hop circle.

Rewrite 5a

13 **If an intruder has** <u>better positioning support</u>, it can reduce the size of the one-hop circle.

Rewrite 5b

14 On**ce an intruder has** <u>better positioning support</u>, it can reduce the size of the one-hop circle.

Rewrite 5c

15 **An intruder who has/had** <u>better positioning support</u> can reduce the size of the one-hop circle.

Figure 10. Graphics: clearly introduced

Table I lists the URIC topics that were used and the average length of the queries in each topic set produced by the two different query types. On average, the two query types produce queries of very different lengths and long queries have many more non-stopwords than the short queries....

Description
Observation
Discussion

---

77 given and new

given and *new* are concerned with the information status and placement of information in a clause. (See *information order)* Given information is something readers are assumed to know. New information is something that readers are not assumed to know, whether because it has not been previously mentioned, or it cannot be easily be understood from the context. Typically, a clause or sentence begins with given information and ends with new information.

78 graphics

Tables and graphs are presented but are not well integrated into the text. The conclusions that the authors draw from the tables or graphs often do not in fact follow from the data.—Reviewer

Graphics, i.e., figures, tables, graphs, flowcharts, screenshots, images, are common in the Methods and are frequent in the Experiments-Results-Discussion. They are rare in Introductions, only occasional in Related Work, and are never found in a Conclusion. Graphics are always linked to and discussed in the text. Otherwise they are placed in an Appendix.

Graphics have two different purposes: they provide selected data or observations that the readers can evaluate or they provide a selection of data for reference e.g., like a lookup table. Readers must be able to conveniently consult the graphic and text together—reading the text, referring to the graphic, and returning to the relevant place in the text. They must know what graphic is being talked about, what feature or data they are supposed to be focusing on, and why that feature or data is of interest.

79 graphics: placing graphics

Authors may have no choice about where graphics are placed but when they do, they should try to keep the text and graphic close together, preferably introducing and explaining the graphic above, not following, the graphic. We avoid placing graphics directly under headings or subheadings—all graphics should be introduced—and we do not break a paragraph with a graphic.

When discussing a single graphic, we should try to keep all of the discussion in a single paragraph unless a change of focus requires a new one. If there are many diagrams but little say about each, we may end up with a series of

Figure 11. Captions: refer to every axis and every label
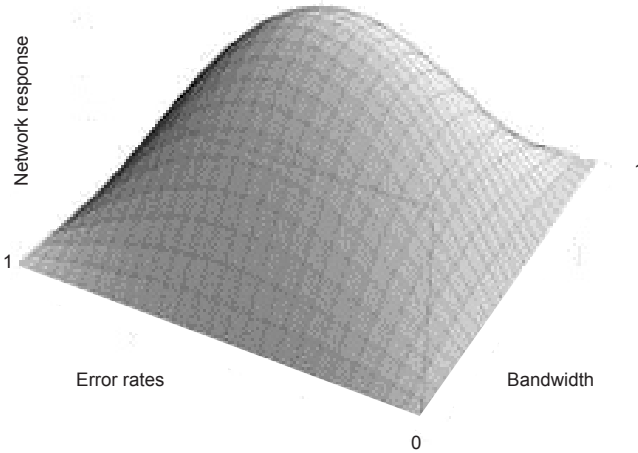
Figure 6. Network Response Function from Bandwidth and Error Rates

short paragraphs separated by each graphic. We should try to combine these into one single, longer paragraph preceding all of the graphics. This can remove a lot of unnecessary repetition and may help identify a common theme for discussing all the graphics.

80 graphics: relating the graphic to the text

A graphic must be clearly introduced and thereafter should be explicitly referred to by its name e.g., *Fig. 1, Table IV*.

1   Figs 2a and 2b show...

The important thing is that when we introduce or refer to a graphic, it should be easy for the reader to identify which figure we are referring to. The following kinds of phrases should thus be used sparingly (節儉地; 愛惜地)).

The table above...,   The following graph...

The abovementioned figure...   As can be seen in the above table,..

It is usually best to name the graphic, e.g., *Fig 2 illustrates...* Referring to graphics by name can help avoid confusing statements like the following.

Negative example 5
✗   The following judgments can be made based on the result above:

Consider, in contrast, how specifically the graphic is introduced in Figure 10 (page 79), creating a neat separation of the introduction of the figure and the discussion of it.

Table 10. Graphics: label graphics for ease of use

1. A table must have both a heading (above it) and a caption (usually below). Other graphics must have both the name e.g., *Fig 1* and caption below

2. All features must be clearly named and labelled e.g., axes, trendlines, columns, segments, criteria, metrics, numbers, nature of scatter items

3. Words for names, labels, features, and data in the graphic must match the words used in the caption and in the text

4. All graphics must have an adequate caption. The caption should use the same words as used in the contents and labelling of the graphic

5. Distinguish or highlight features and data that support the main purpose or point of the graphic, particularly in detailed tables.

6. All figures should be expressed to the same number of decimal places and all decimal points should align.

Graphics. We should make it easy for readers to match the text and graphics.

The initial description of the graphic should closely match its caption. Consider, the function surface plot in Figure 11. Correctly, the caption refers to each axis of the graphic.

2   Fig 5 shows the network response function from bandwidth and error rates.

There are many advantages to this approach to introducing graphics. First, it clearly identifies the topic and details of the discussion and introduces the basic vocabulary. Referring to figures by name and number, e.g., *Fig. 8 shows....* also helps us find the specific figures on the page, especially when there is more than one figure.

Finally, where a graphic is made up of rows of images, we describe the images in the order that the reader should examine them, e.g., top to bottom or left to right, and direct the readers attention to features they should notice.

81 graphics: name the graphic at top-left

If the topic of a paragraph is a graphic, that is, if the chief purpose of the paragraph is to discuss the contents or features of a graphic, then we usually name it at the top-left corner of the paragraph.

1   **Fig. 3 shows** a 240,000-frame video trajectory partition with a trace space dimension of d=2. The height of the kd-tree is L=10 and there are 2048 leaf node level MBBs, each containing around 96 frames.

This way of beginning the paragraph makes it easy to see what the paragraph is

about and supports a general-to-specific paragraph organisation. The following kind of organisation, from detail to background, as follows, would have to be justified in some way.

2   A 240,000-frame video trajectory partition **is shown in Fig. 3**.

82 graphics: clear and adequate captions

It is very easy to write a good caption. First, use words from within the figure and from any legends. Refer to all of the axes, criteria, and settings.

1   Speed of the KEA algorithm with and without blending

2   Decision scores derived using the inference operator.

There is usually no need to use the words *example of, comparison of, illustration of, graph of, diagram of,* etc. And there are no limits on the length of a caption. We can use as many words as we need.

83 graphics: a table supporting claims: placing data for impact

Often a paragraph discussing a graphic is dedicated to establishing just one central claim. A good example of this can be found in the table of data and explanatory paragraph for Figure 12. It makes one broad, central claim:

1   Overall, the performance of Atlas is impressive.

Based on the data in the table, this statement is true. Yet the same data also shows that there are many positives in the performances of the other methods. So the authors of this paragraph face a familiar research writing challenge in establishing their own claims over those of other performances.

An important part of making such a persuasive claim is to place information so that our positives are in focus and our negatives are out of focus, essentially by being placed or concealed earlier in the sentence.

In this example, four comparisons are made in four sentences. Each ends with something positive about the performance of Atlas. This has been achieved in a number of ways. For example, the words *although* and *yet* have been used to de-emphasize the positives of the competing algorithms. In fact, even though Atlas is reported as performing in some respects *worse* than either Blind 1 or Blind 4, the use of *although* and *yet* nonetheless allows the sentences, in particular the final sentence of the paragraph, to end with positive statements about Atlas.

The phrase *compared with* has also been used well at sentence-initial. Often this phrase is poorly used but here it used well, to push the good result of Atlas—of course supported by good numbers—into focus position at the end of the sentence.

Figure 12. Graphics: placing data for impact

Table 6. Classification performance using the VT database

Classification methods	Average recognition rate (%)	Average training time (sec)	Average testing time (sec)	Average number of features	Average computing time (sec)
Atlas	**83.90**	6.54	34.03	132.78	**20.29**
Blind 1 [6]	78.62	167.34	34.36	**118.00**	100.85
Blind 2 [12]	76.25	**0.43**	120.05	3600.00	60.24
Blind 3 [21]	79.24	0.44	123.59	3600.00	62.02
Blind 4 [13]	82.15	365.89	**33.69**	**118.00**	199.97

Table 2 compares the classification performance of all five methods on the VT database. The figures for the average recognition rate, training time, testing time and number of features are the mean values recorded in, respectively, Figures 5, 6, 7 and 8. **Overall, the performance of Atlas is impressive**. It has a better average recognition rate than Blind 1, Blind 2, Blind 3 and Blind 4 by 5.28%, 5.55%, 4.66%, and 1.75%, respectively. And **although** Blind 2 and Blind 4 have the shortest average training and testing times, 2D Fisherface has the shortest average computing time (the mean of the training and testing times). In fact, **compared with** these other two methods, Atlas reduces the computing time by more than 66%. Blind 1 and Blind 4 use the fewest discriminative features **yet** Atlas is also economical, using just 12.5%) more features than either of these methods.

Description

Central claim or observation

Support for the claim

Careful control of emphasis in a comparison. The items *although, compared with,* and *yet* function in this example to background and foreground information.

84 graphics: describing architectures and flowcharts

Graphics such as architectures and work flows that diagram systems must be described with care because readers look at them closely and they provide a reference point for everything else in a paper. Readers may follow this type of diagram as they read, matching the text and the diagram.

Crucially, the diagram must match the text. All parts of the diagram should be labelled and all labels should be mentioned in the text, using the same words. If parts of the description or diagram are missing or are labelled differently, readers will not know whether they should trust the picture or the text.

The description of an architecture in Figure 13 follows the diagram closely. It begins by stating (or implying) the goal or purpose of the process. All steps are written in the present tense. The description is time-organized; what happens first appears before what happens next. Topics usually progress linearly, with the topic in one theme often deriving from the rheme of the preceding sentence. All of the vocabulary from the diagram is used in the description. The words are the same. They appear in the same order as in the diagram. (Top to bottom and left to right.)

85 graphics: architectures and flowcharts: general

1 Label all symbols

2 Use symbols consistently and meaningfully
Different types of symbols should represent different types of activities.

3 Make it clear where inputs and outputs enter and leave the system

4 Begin with an overview
Name the system and tell us what it is for. Name its parts. Broadly describe their functions, features, and operation (usually in that order). If necessary, we can then proceed to a more detailed description

5 Apply the principles of time-step description
Begin by indicating the goal or purpose of the process; write in strict chronological order; start at the start and move step-by-step to the end; mention every unit or module in the graphic. Don't leave anything out.

6 Explain what arrows mean
We should say what is flowing through arrows and in what direction. Why are arrows double-headed? Is data being exchanged or transformed? In what way?

Figure 13. Architectures and flowcharts
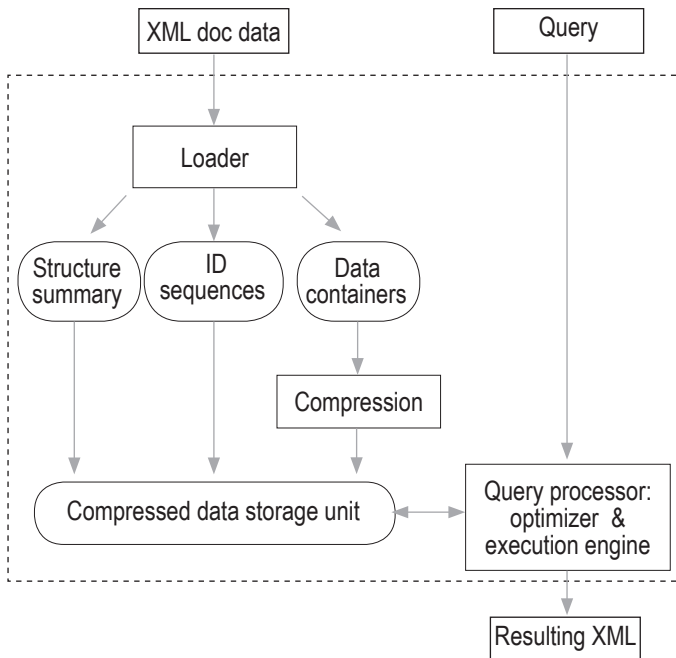
Figure 2. Architecture of the document compressor/querier

Fig. 2 shows the architecture of our document compression and querying prototype. *The compression process **begins with XML document data entering the loader**. This data is decomposed into three forms: structure summaries, ID sequences, and data containers. **While** structure summaries and ID sequences pass immediately to the compressed data storage unit, the data containers **first** pass to the compressor, which partitions the data containers, decides which algorithm to apply (see Section 3), **and then** compresses the containers. **Finally**, these also pass to the compressed data storage unit where data can be exchanged with the query processor.* The storage unit not only stores the products of the previous two layers, it provides data access methods and a set of compression functions that operate at runtime on any constant values in the query. The query processor includes a query optimizer and an execution engine that provides the physical data access operators.

<div style="float:right">

Introduction; purpose, goal

Time-organized description

Evaluation. Significance of the preceding information.

</div>

7 Describe in a systematic order

Adopt a systematic approach to the description, whether it is top-down, bottom-up, left to right, or from inside main elements to outside peripheral elements. A consistent approach will be easy to read and helps us to avoid omitting or overlooking 看漏 anything that should be included.

86 headings: avoid single-word or single-term headings

Single-word or single-term subheadings should be avoided except at the lowest level of a deep hierarchy of headings (that is, where they are just simple list items). Single-term headings are undesirable because they fail to adequately announce following content. For example, a heading such as *Attributed graphs* is too general because it does not tell us what it is about these *attributed graphs* that will be discussed? *Applications*? *Definitions*?

Subheadings should contain a noun and a verb, or the noun-form of a verb. Thus, rather than saying *Attributed graphs,* we should say something like *Defining attributed graphs* or *Applications of attributed graphs.*

87 headings: try not to stack headings

Avoid stacked headings. That is, we should not place a superordinate heading, e.g., *Section 2,* immediately over a subordinate subheading, e.g., *Section 2.1,* with no text between the headings.

88 headings: familiar vs author-invented

Headings in research papers are either the common or typical headings that one sees in papers all the time, e.g., *Architecture; Implementation; Configuration*–or they are headings that have been invented by the authors for use in their specific paper. In either case, readers use them to predict and interpret the order and content of what follows.

89 headings: invented by authors

Headings invented by authors can be found at any level of a paper. They should be accurate and informative as readers rely on them to predict the content, purpose and organisation of following material.

Headings should use words that actually appear in the following content, usually the most frequent content words. A heading like Global picture is too vague unless the topic is indeed "global pictures", for example, from a satellite. Single-word headings like Model are also not specific. . A heading like The FD-FCA Model is much better.

1   **3. ~~Model~~ The FD-FCA Model**
       The FD-FCA model has been widely used in..

90 headings: familiar headings

Many of the headings that we see in a journal article will be quite familiar, e.g., *Definitions, System Architecture, Model, Proposed Techniques, Implementation, Overview and Design, System Testing, Approach, Performance Evaluation, Experimental Results,* and so on.

Readers may have seen these headings many times before and so have high

expectations of their purpose, content, and organisation. This means that the content and organisation that follows these headings should in fact be typical. When such headings are followed by lengthy content, we should use overviews and subheadings to signpost its content and focus.

91 headings: Terminology and Definitions and notations

Material related to terminologies and definitions can be placed in its own section preceding either the Related Work or methods. It does not matter if this section is short but it should have a title that clearly says what kind of material it contains.

92 headings: Background and Motivation, Preliminaries, Overview, etc

Some headings, e.g., *Background*, *Motivation, Preliminaries*, and *Overview*, are rather vague. What, after all, is "background?" Background to what? How is it typically organized?

In fact, there is no typical content or organisation for this heading. Indeed, one often finds writers using these headings when they actually mean something like *Notations, Definitions*, or *Related Work*.

If in doubt as to whether a heading is clear enough, we can follow it with an overview of the purpose and organisation of the section.

93 headings: match the immediately following text

The words that appear in an (invented) heading or subheading should also appear in the following text, usually in the first couple of following lines.

1 **6.4. Threshold selection**
    We used the experimental data to **select** suitable **thresholds** for the parameters of each of the algorithms.

It is not good practice to merely use *this* to refer back to the heading unless the heading is an item in a list.

Negative example
✗   **5.1 Identifying required information**
    There are a number of approaches to **this**.

It is much better to use the actual words from the heading.

2 **5.1 Identifying required information**
    There are a number of ways to **identify required information**. The most common approach is to...

94 headings: subheadings: noun compounds vs noun phrases

Consider the three subheadings below. The first is a *noun compound* and the second and third are *noun phrases*.

In a subheading, we should reserve the noun compound form for terminologies, i.e., the names of recognised concepts in the field or for the names of complex concepts which have been previously introduced and explained.

If the subheading is simply referring to some generic research activity, we should use the style of one of the latter two noun phrases forms (identifying activities), which typically use combinations of *of, ion* and *ing*.

1   6.3 Navigation Path Page Relevance Evaluation **[Theory or concept]**

2   6.3 Evaluation of the Relevance of Navigation Path Pages **[Generic research activity]**

3   6.3 Evaluating the Relevance of Navigation Path Pages **[Generic research activity]**

95 headings: matching subheadings and content– a tricky case

It is usually a simple matter to use words from a heading in the first line of the immediately following text. An exception to this is where we first want to give reasons or background related to the topic of the section.

The writing difficulty created by reasons or background at the start of a section or paragraph is that they can push the topic words further down in the paragraph where 1) they becomes less visible 2) writers lose sight of their topic.

If this happens to a topic, where reasons why, reasons for, purposes, or goals push it out of topic position, instead of starting the paragraph with *because* or *since* or *as*, or *although*, we start with *There are* or *The* or *An* and an abstract noun such as *reason, goal, purpose,* or *difficulty, advantage,* etc.

1   There are a number of reasons why...

2   The goals of this work are threefold.

3   The main purpose of the application is to...

96   hedging: variety of language

Hedging refers to the way we indicate our commitment to the truth, reliability, certainty, or probability of what we are saying. All kinds of language is involved in hedging so the number of language items that it might use is very large. The following categorization is intended only to give some idea of the variety of forms that hedging commonly takes.

1 Modal auxiliary verbs

can, could, may, might, should, would

1   Finally, we **might** have to consider additional temporary structures *that are not part of either the initial or final configuration*.

2 Modal lexical verbs

appear, argue, assume, believe, estimate, feel, indicate, propose, seem, speculate, suggest, tend, think

1   Although theoretically this procedure **would seem** to introduce a lot of redundancy, our experiments have shown that this is not in fact the case.

2   The raters place a tick against techniques that they **feel** meet the criteria and a cross against those that they feel do not.

3 Viewpoint verbs

consider (as), deem (as), see as, regard as, think of as, view as.

1   These distributed software components **are/can be regarded as/ seen as/ viewed as** first-class objects that can be reused and combined to implement business processes.

4 Probability adjectives

perhaps, possible, probable, likely, unlikely

1   It is **unlikely** that any currently available segmentation method would able to separate these foreground and background objects.

5 Nouns

assumption, claim, possibility, opinion, suggestion, view

1   The estimation process must also accommodate the **possibility** that there is no relationship between the intensities of many of the pixels in the two images.

6 Adverbs

apparently, clearly, maybe, obviously, perhaps, possibly, practically, presumably, probably, virtually

1   **Perhaps** the most challenging issue in software engineering is the management of the evolution of software systems.

Verbs can also be adverbial, e.g., *tends to + support, can be regarded as + supporting*

7 Approximators of degree, quantity, frequency, and time

about, a lot of, approximately, at the moment, commonly, currently, essentially, generally, in general, mainly, mostly, occasionally, often, roughly, strongly, somewhat, somehow, specifically, typically, usually

1   Fig. 8 plots the average overlap over time. The sample frames **roughly** correspond to peaks in the plot.

8 Introductory phrases

as can be seen, to our knowledge, it is our view that, according to this view, given that

1   **In our view,** this type of cross validation biases positively toward the within-company data.

2   **To our knowledge,** there are only two approaches that do support these migration tasks.

9 Compound hedges

Hedges can be chained together.

seems reasonable, looks probable, it may suggest that, it seems likely that, it would indicate that, this probably indicates, it seems reasonable to assume that, it would seem somewhat unlikely that, it may appear to be a somewhat speculative assumption but,…

1   **It seems likely that** under similar initial conditions some non-linear maps will evolve to exhibit similar dynamics.

97   imperative mood 極重要的說法

Instructions or requests may be expressed using the imperative form of the verb (bold underlined).

1   **Combine** the remaining test grains into a single pool and from this pool randomly **select** groups of test cases of size n until none remain.

2   **Note** that the time dimension in these figures is represented along the horizontal axis.

98   information order: four principles

There are four principles which describe the order in which information is typically presented in English sentences (Table 11). These principles reflect the idea that any communication is made up of a balance of old or given information—information that was previously introduced or that is already understood in the context—and new information—information that was not previously introduced or is not assumed to be known by the reader. These four principles exhibit a lot of overlap so fortunately satisfying any one of them often results in satisfying them all.

Table 11. Four information order principles

1. Given information before new information

2. Background before detail

3. Less emphasis before more emphasis

4. Short before long

99 information order 1) given before new

The principle of 'given before new' says that what appears at the beginning of a sentence has probably been mentioned earlier in the text or should be familiar to readers as background knowledge.

Placing given information first in a clause or sentence helps readers because it creates a context or background for understanding new information as it is introduced.

In the following example, the highlighted noun phrase is clearly something that has been discussed at some point earlier in the paper. At a minimum the word *neither* tells us that.

1   **Neither algorithm** uses LP, and this provides huge improvements in both the exponential and superlinear polynomial runtimes.

Consider the example in Figure 14 on page 93. The noun phrases in bold represent some of the given information in the paragraph. There is some variety in the forms of the noun phrases. There is a multi-word noun phrase—*A content distribution network (CDNs)*; an adjective—*its;* a pronoun—*this*, which refers to the proposition in the second half of the preceding sentence; an abbreviation—*CDNs*; and another pronoun—*they*. With each noun phrase, the given information tends to be more compressed until ultimately it becomes, as we have seen, just a pronoun but it is always clear what each of these shorter forms refers to.

Putting given information at the start of a sentence in this way supports the basic assumptions upon which *lexical cohesion* is based. The repetitions, references, and substitutions, (and in other examples, omissions/ellipsis) that we see in Figure 14, all contribute to lexical cohesion but this can only operate smoothly inside the regular and highly expected architecture provided by structural cohesion (theme-rheme and given-new).

A feature of one pattern of given-new is that what is new in one sentence may appear in given position in the very next sentence. This pattern, known as linear progression. (See *four patterns of thematic development—linear, constant, hypertheme, split)* is present in Figure 14, where clients is in 'new' or focus position at its first appearance yet in the immediately following sentence it is in given position. Thus, what is new in one sentence is old in the very next.

100 **information order 2) background before detail**

Background-before-detail involves the assumption that what appears at the start of the sentence is background or a setting+ for what follows.

1 **In our testing model, the parameters of the game world** are the number of decorators, floors, rooms, and sledgehammers, the thickness of walls, and the time required to finish the game .

101 **information order 3) less emphasis before more emphasis**

Less-emphasis-before-more-emphasis involves the assumption that what appears at the end of a sentence may be its main point, or what writers want readers to particularly notice.

Example 1

1 Although managing a multi-site team in adjacent time zones <u>can be easier than managing a global team</u>, **it greatly restricts service hours.**

The following alternative uses the same information but has a different focus and emphasis

Alternative 1

2 Although managing a multi-site team in adjacent time zones <u>greatly restricts service hours</u>, **it can be easier than managing a global team.**

102 **information order 4) short before long**

Short-before-long is a general requirement that longer or more complex things be placed last in a clause or sentence, like the long noun phrase in the following example.

1 QoS factors are <u>the fuzzy variables that directly or recursively fuzzify user-oriented QoS parameters</u>.

Figure 14. Information order: referring to given information

A content distribution network (CDN) [topic/given] is a network optimized to deliver content such as static Web pages, streaming media, or real-time video or audio. **Its [given]** purpose is to provide users with fast and easy access to current content [24]. **This [given]** is achieved by pushing hosted content from the origin server(s) to distant surrogates located near to *clients* **[new]**. Whenever **a client [given]** issues a request, one of the surrogates is assigned to deliver the requested content to the client on behalf of the origin server(s). **CDNs [given]** are of benefit to both content and service providers because **they [given]** reduce server workload, alleviate network congestion, and speed up the delivery of content.

Given before new: The **bold** print—*A content distribution network > Its > This > client > CDNs >they*—shows where some given information (in this case, information and ideas from earlier in the discusssion) is picked up and carried forward in later sentence themes. The arrow indicates one case where what is "new" in one sentence *(clients)* is picked up in the theme of the following sentence (a pattern of theme development known as *linear progression*.)

103 information order: variation in applying short-before-long

We can ignore the short-before-long principle if we wish to achieve a particular emphasis or focus. Consider the second sentence of the following example. It starts with a long list of features but the end of the sentence, to the right of the verb group, we find something short, low-level features.

This arrangement of the sentence conflicts with the principle of short-before-long but has been done for emphasis, because the author wishes to emphasize not the features themselves but the fact that they are low-level features.

1   Low-level features are extracted either automatically or semi-automatically at the signal processing level. Features such as color content, point, texture and transform coefficients, or even text information extracted from images [46] can all be considered **low-level features**.

We find a similar flexibility in the following example. The main claim of the paragraph is that the prediction of windshear remains *inaccurate.* Thus, the authors purposely violate the principle of short-before-long in order to place just one word, *inaccurate,* in focus at the end of the sentence. The reasons for the inaccuracy of current approaches are kept in the background.

2   However, even after decades of research, because of the instability of weather phenomena and complex terrain around airports, current approaches to the prediction of windshear remain **inaccurate** [21].

Finally, sentences that are balanced on either side of the verb group can be arranged to satisfy the other three principles. The sentence in the following example satisfies both the given-new and background-detail principles.

3   One special instance of this problem **[general]** is **a tree topology with a single server at the root. [specific]**

104 information order: misuse of the passive

Writers are sometimes given the advice that science is written in the passive. However, while the passive certainly is important and common in science writing, it must be used in a motivated way.

The following sentence is hard to read because the use of the passive has produced a sentence that is long and detailed at the start in comparison with its end (or focus), which is briefer and more general. The sentence seems to have been written back-to-front and its emphasis may be hard to justify.

> Negative example 1
> ✗ **A three-chip CCD camera with 8-bit resolution for each channel and 1024* 768 spatial resolutions** was used as <u>the imaging device in this study</u>.

The sentence is easier to read when written background-before-detail.

> Rewrite 1
> 1 **The imaging device used in this study** was <u>a three-chip CCD camera</u> with <u>8-bit resolution for each channel and 1024*768 spatial resolutions.</u>

105 instructions

See: text types: instructions

106 Introduction

The Introduction is a paper's problem statement and introduces and defines all of the basic terminology used in the paper. It also establishes the background, motivation, scope, importance, novelty, and contribution of the paper and may even state findings and limitations. If the paper is a *proposal* (for example, a research proposal) it will consider objectives and outcomes.

An Introduction can be of any length and is written in one continuous section, usually without subheadings. In particular, it should not contain vague or uninformative headings or subheadings such as *inspiration, challenges, motivation, highlights, key ideas,* or *overview.*

107 Introduction: what is background?

Background includes anything that helps the reader to understand the nature of the technical problem. This may include a summary of a current social situation or the current state of knowledge or practice in a field of study. The background helps the reader understand the area and scope of the work, the problems it is addressing and why they are important.

Novice writers of research typically have two problems with background: providing too much and not providing enough. The best solution for both of these problems is to have a good title and start the paper by using the most general or largest concept from the paper's title. We should define or explain this concept and/or provide concrete examples. The result will be a paper that has begun where it should.

Table 12. Three types of motivation in the Introduction

1. Motivation for the work: Socially useful? Useful to the field?

2. Motivation for the response: Why try to solve the problem this way? What subproblems are motivating the choice of approach?

3. Motivation for the design: requirements and constraints

108 Introduction: what is motivation?

Motivation is a slippery term both because it can mean a range of different things and because it is never found neatly in just one place, but rather is found throughout an Introduction and with a variety of emphases. Specifically, the term motivation is commonly applied to three different concepts:

1. Motivation for the work e.g., How it is socially useful or how it is useful in the field

2. Motivation for the response, which can mean either why we are trying to solve the problem in a particular way or what sub-problems are motivating the choice of approach.

3. Motivation for the design: Requirements and constraints

With all of these potential interpretations available, it would be very difficult to write something useful under a single heading *Motivation*. It is much easier, and more reliable, to simply follow the four-stage model. The following article sketches out the idea of *motivation* as found in Stages 1, 2, and 3 of the Introduction.

Related: introductions: overview of the four stages

109 Introduction: motivation in the four-stage model

In Stage 1 of the four-stage Introduction model, motivation may refer to some social or field-specific problem—that is, a problem that is either of social value or of disciplinary interest. At this stage motivation thus typically addresses the problem of importance, of why the reader should care. Ths stage makes it clear *why the work is of value, to whom, and to what activity*.

In Stage 2, as we critique previous or related work, motivation considers other related problems that are also motivating *the work and the choice of approaches or solutions*.

In Stage 3, as we link elements of our solution to the specific problems and sub-problems outlined in the earlier stages, motivation continues to reflect the motivations for our *methods*.

110 Introduction: what are novelty, importance, and originality?

Novelty and *importance* are the basis of a contribution. Specifically, a contribution must be novel in that it has not been proposed before and must be important by being non-trivial in its problem, method, or outcome/result. Importance and novelty are weighed together in assessing the quality of the contribution. Originality differs from novelty. Originality is the requirement that the work be one's own.

There are two ways to demonstrate that a problem area is non-trivial. One is to refer to some important social use, although that is not enough by itself. The other way is to refer to and appropriately discuss previous published work in the area. The logic of this is twofold.

1. If other researchers have been published in this area, we can say that the problem area is important

2. The critique of previous work will demonstrate the importance and novelty of the proposed work when it describes how previous work failed to solve the problem.

If there is no previous work on the problem, Stage 2 of the Introduction may still describe some *similar* kind of problem in some other area and then apply its tools, perhaps modified in some way, to the present problem area.

Finally, note that novelty by itself is not a contribution. It is simply a requirement for a contribution.

111 Introduction: what are contributions?

The principal contribution of any research paper is that it solves the technical problem identified in Stage 1 of the Introduction and responds to any sub-problems identified in Stage 2. If we have contributed, we have created knowledge or capabilities that did not previously exist.

To determine if something is a contribution we can ask "Do we now know something of interest to the field that we did not know before? Can we now do something that we could not do before? Can we now do something better than we could before?"

The idea of a contribution may include a contribution to society (or industry or whatever) but this is very much secondary. The primary contribution is a contribution to the field.

A contribution will be in one of more of three areas: *problem, method, results.* Very often there is a contribution in all three but one of them is usually the central contribution e.g., improving the method has improved the results. This central contribution is the element that is featured in the title of the paper.

Table 13. Is it a contribution?

1. Do we now know something of interest to the field that *we did not know before?*

2. Can we now do something that *we could not do before?*

3. Can we now do something <u>*better*</u> *than we could before?*

112 Introduction: where should we describe our contributions?

Formal claims of contributions are made in three places: the Abstract, the Introduction, and the Conclusion. In the Introduction, this happens in Stage 3. This makes sense, because it means we are claiming our contributions only after establishing the technical problem and its sub-problems.

The description or discussion of contributions typically appear in Stage 3 either as a part of the discussion, or perhaps (rarely) under a separate heading or perhaps introduced with some form of words such as *This article presents three major contributions:*

113 Introduction: can we state contributions before describing the problem?

Occasionally we see papers that begin with a general claim of contribution. i.e., the paper begins with something like *In this paper....* This is acceptable if the readers can be assumed to already know the basics of the problem. However, as mentioned in the discussion of abstracts, less experienced writers who use this pattern sometimes omit any discussion of the problem at all.

So if we start the paper by talking about our contribution, we should check that we have actually discussed the problem and have done so using specific criteria and problem-related words.

Related: introductions: overview of the four stages: introduction Stage 1: the problem

114 Introduction: what is scope?

Scope refers to the boundaries of a report—what the authors did and did not deal with and what they will and will not write about. There is no need to state the scope under a separate heading, e.g., *Scope*, because in fact scope is implied throughout the Introduction. That is to say, the Introduction automatically sets the boundaries of the research, in naming the problem area; by the hierarchical arrangement of information, e.g., placing physically or abstractly larger concepts before smaller ones; and by the way terms are defined, as defining one aspect of something automatically exclude a focus on other aspects.

Similarly, once we have stated the technical problem in Stage 1, we can in Stage 2 further define the scope of the problem simply by critiquing previous approaches to it.

115 Introduction: stating scope explicitly

Occasionally it may be necessary to make an explicit statement of the scope of a work, telling the reader that we are limiting our discussion to some particular topic or aspect or that we are not addressing something that readers might otherwise expect us to address. Phrasings such as the following are then usual.

1   We limit our discussion to...

2   For these reasons, we will restrict our attention to...

3   We will concentrate on a class of models that ...

More fully, we first introduce the limitations of the coverage, and then describe the actual coverage.

4   **[limitations of coverage]** *Space does not permit a comprehensive description of the drawbacks of the all of these approaches.***[actual coverage]** Instead, we mention them in the discussion section wherever they have had a significant effect on the applications.

5   *As an exhaustive description of the features of the AutoVis framework is beyond the scope of this paper,* we focus here only on the design of selected transitions, specifically, those listed in Figures 1-4.

6   In this article, *we do not discuss the design of our text-referencing indexing system in detail (we refer the reader to Schelling et al. [2001]*) but merely highlight the key features and provide selected result to illustrate its performance.

7   *Due to lack of space, we cannot present our detailed image segmentation results* and instead provide an example to demonstrate that Imula can be used in this domain.

116 Introduction: what are objectives and outcomes?

Objectives and outcomes are not major concepts in research *reports* but are important in research *proposals*. The difference between objectives and outcomes is that objectives precede and motivate the research activities that produce outcomes. That is, we set objectives, then undertake research activities to achieve them, and these activities produce outcomes. Outcomes are things that are useful to the field—e.g., a novel database, algorithms, devices, knowledge—or perhaps to society.

117 Introduction: what are findings?

Findings consist of results, conclusions, recommendations, and implications for further work. In original research, the findings usually focus on the results, which are invariably stated quantitatively. However, it is also possible that a technical project will focus on new or unusual methods for achieving results that have already been obtained in some other way.

118 Introduction: what are limitations?

Limitations are seldom mentioned in an Introduction. They may be mentioned in Stage 3 but most commonly they are a topic for a Discussion section or Conclusion. Nonetheless, for convenience we will briefly consider this here along with the other important concepts of a research paper.

Limitations are the criticisms that the authors themselves make of their own work. They may refer to limitations on the quality or scope of the work, limitations in resources, on the generalizability of the findings or applications or performance, on the validity of the assumptions or conclusions, or on anything else.

1 The main threats to the validity of our technique are that <u>we studied only a single system, tested for only two possible outcomes, used only a few sets of test cases, and considered only versions with rates of failure higher than 6 percent</u>.

We draw attention to the limitations of our own work in order to deal with the potential objections of reviewers. In this way we show that we are aware of the limitations and it gives us the opportunity to argue that our work nonetheless makes a contribution.

Thus it is not a negative to describe the limitations of our own work. Reviewers know that limitations are just part of doing practical work and part of a context or a certain stage of work. Limitations are also good pointers to future work.

119 Introduction: what is definition?

Stage 1 often begins by describing a field of activity or defining a key term from the paper, a term which is probably also the largest concept in the title of the paper. Thereafter the Introduction is full of definition, as are the Related Work and Methods.

While definition is obviously a basic feature of research writing, sometimes, in the belief that "the reader knows what that term means" or "my readers already know that", writers may fail to define things they should.

But definition is not just a matter of providing "information". Aside from the fact that people may not agree on a definition, it is also true that even in a settled field of study any particular concept can be defined from a variety of viewpoints, in terms of its parts, features, functions, operation, purpose, and so on. It is thus up to writers to decide what aspect of a concept will be emphasized in a definition and this is not something that readers can possibly 'already know'.

120 Introduction: definition describes scope and focus

One purpose of definition is to focus the reader's attention on particular aspects of a topic of discussion while putting aside other aspects. In other words, definition establishes both the scope of the research and the direction of the future discussion–that is, how the paper will develop.

For this reason, even informed readers often require quite basic definitions, not merely to tell them what something is, but to signal the direction (limits and scope) of the discussion. This is a matter of readability being predictability.

The following example is thus typical of what we can find in research papers. It defines the term *trie* even though any reader in the field would certainly already know what a *trie* is.

1   The partitioned context model (PCM) approach uses ***a trie*** (a tree-based data structure) to efficiently store sequences of events.

121 Introduction: definition: hierarchy: theme progression

Definitions should be provided in a hierarchy, with new concepts being introduced against a background of already-discussed concepts. Exploiting the principles of given-new in this way will produce typical patterns of theme development where the source of an idea and its relationships to other ideas are easy to identify.

Figure 15 shows the opening paragraph of an Introduction. The first concept—*segmentation*—becomes a building block for later concepts. The subsequent discussion is easy to understand because it is arranged hierarchically, background first. Thus the larger concept *segmentation* precedes *image segmentation*, which precedes the two sub-types of image segmentation, *supervised* and *unsupervised*. This is a familiar pattern of development known as linear progression. (See *theme: four patterns of thematic development*)

122 Introductions: common problems in definition

The following definition-related problems are commonly seen in pre-publication research writing.

1 Problem: insufficient definition

Novice research writers may assume that there is no need to define something because "everyone knows this". But this misunderstands the function of definition. (See *Introduction: definition describes scope and focus*)

2 Problem: defining too late

Writers may repeatedly use a term and only subsequently define it. This is confusing. Terms must be defined at their *first* appearance.

3 Problem: a term appears just once

Sometimes a term appears in a paper just once and is not defined. This is almost certainly a mistake. Maybe it is something left from an earlier draft of the paper. Or maybe it is a synonym. In any case, a single, undefined term is hard to place as part of any network of ideas so no term should appear in a paper just once. A possible exception might be a term for some concrete entity when used in an

Figure 15. Introduction: a hierarchy of definitions

Introduction
(1) **Segmentation** is a preliminary step applied before image analysis where the goal is to segment (or partition) images into regions that show similar characteristics. (2) **Segmentation of images** is common in practical applications such as ultrasound and magnetic resonance (MR) imaging where it is used to distinguish between, for example, soft tissue and tumors. (3) **Image segmentation** can be supervised or unsupervised. (4) **Supervised segmentation** requires prior knowledge of the group labels of the training data while **the latter** does not.

Readers have high expectations of how a text will develop. It is a primary task of writers to produce readable texts by satisfying these expectations. This series of definitions develops in a predictable hierarchical pattern of larger concept before smaller, derivative, or sub-concept. Structurally, the pattern of theme development is *linear*— elements (underlined) of a rheme appear as elements (bold) of the theme of the following sentence or clause. Note that the clauses in sentence (4) develop from sentence (3) by *split* progression (in parallel).

example. Other instances of single terms should be removed or corrected.

123 Introduction: overview of the four stages

An Introduction describes the research problem and introduces basic concepts. It critiques previous responses to the problem and outlines a proposed response, including implementation, testing, and evaluation. In other words, the Introduction is a Problem Statement, in which we describe Background, Motivation, Scope, and Contribution.

This could be quite a complex task except that we can greatly simplify it by treating an Introduction as an arrangement of four stages in which each stage has one specific purpose expressed in one or more paragraphs:

1 Stage 1: the problem: measurable and observable criteria

Stage 1 states the problem being addressed in the paper. It may begin with background or definitions, a statement of the current situation in a field, or a description of some general-level or social problem. This material introduces the technical problem, which is the real focus of the paper.

This technical problem is often expressed as an inadequacy in the current domain knowledge or methods and is stated using explicit, measurable, or observable criteria, as Figure 17.

Related: introduction Stage 1: what is a computer engineering problem?

2 Stage 2: the "1st Related Work"

Stage 2 critiques—says what is good or bad about—previous or current work relevant to the technical problem or to design requirements and constraints. This stage establishes the motivation, scope and focus of the research as well as the basis for any claim of contribution. It also introduces, defines, and provides

Title, Abstract, Introduction

Title
Should express at least two of *1. Problem* 2 *Response* 3. *Outcomes*

Abstract
All terms and criteria used in the Abstract should match those used in the Title, Introduction, and Conclusion

Introduction: Stage 1: the problem
Begins with the largest concept from the title. Introduces the technical problem, *i.e.,* some inadequacy in current domain practice or knowledge.

1. Background, definitions, current situation, current practice in the field, general problem area, etc.
2. The technical problem (TP) where currently the field
   - can't do
   - can't do well enough
   - doesn't know
3. States criteria explicitly

Introduction: Stage 2: previous responses to the TP
The main task of Stage 2 is to critique (say what is good or bad about) previous responses to the technical problem or to describe current design requirements and constraints. This often involves characterizing, classifying, or describing an approach or a set of approaches.

This stage establishes the motivation, scope, and focus of the research as well as the basis for any claim of contribution. It also introduces and defines key terms and concepts.

The critique pattern
The critique pattern has four basic stages, often organized as follows:

1. Authors(Reference)/name or classification of approach
   - Operation, functions or features of approach to solving the technical problem
2. Describe the extent of the value of the approach/method i.e., where it worked or was applied or what it achieved
3. Problem signal e.g., *however*
4. Drawback of this using this way of operating or this function or feature, e.g. lacks something, can't do something.

Introduction: Stage 3: the response

The response to the Technical Problem, taking into account all of the issues raised in Stages 1 and 2.

1. Features, functions, operation (implying contribution) of your approach
2. Method of testing, evaluation, or implementation, etc.
3. Results – mention criteria

Introduction: Stage 4: the outline

1. Refers to all of the major subheadings of the remainder of the paper, in the same order, using the same words.
2. Uses active voice as first choice and uses verbs that describe replicable scientific activities, e.g., *measure, define*

The body of the paper

Related work

1. If related work is negligible, this section may be incorporated into the material and methods
2. Explains, discusses, and justifies materials and methods.

Materials and Methods

Point of reference: Stage 3 (Our response)

Experiments; Results; Discussion

Terms and criteria match Abstract and Introduction

Conclusion

1. Terms and criteria match Abstract and Introduction
2. Claims of contribution match those made in Stage 3

Figure 16. The structure of a research paper in computing

Figure 17. The Introduction: measurable and observable criteria

There has been a good deal of research on indoor positioning systems yet the accuracy and robustness of these systems are still unsatisfactory. There are five major associated problems: *(1) computational-intensive and inaccurate positioning algorithms, (2) unstable wireless signal transmission, (3) interference caused by unstructured WLAN infrastructure, (4) lack of models for visualizing the signal distribution used to deploy WLAN infrastructure, and (5) a failure to provide location-aware information appropriate to user preferences.*

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a context for key terms as they are introduced. This stage may require just one long paragraph or multiple paragraphs.

3 Stage 3: the proposed response

Stage 3 is the stage that typically begins with the words *In this paper.....* It describes the proposed response to the technical problem, taking into account all of the issues raised in Stages 1 and 2. It describes the features, operation and contribution of the proposed response, the method of testing, evaluation, or implementation, etc, and the results, usually in terms of explicit criteria.

4 Stage 4: the outline

The outline tells the reader what will be found in the rest of the paper. It refers to all of the paper's major subheadings in order and using the same words. It uses the active voice as first choice and uses verbs that describe specific, scientific activities.

124 Introduction: Stage 1: introducing the problem

The main purpose of Stage 1 is to introduce a technical problem or task that will be the focus of the research and that is of interest to a specialist reader. This will often be defined as a subset of some other more general-level field problem or social problem. These general-level problems are described so as to provide context, background or motivation.

The technical problem must be described clearly, using specific, measurable, observable criteria e.g., *computationally expensive, slow, inaccurate, not robust* (Figure 17). These criteria should be referred to explicitly and repeatedly in the paper without variation—in the methods, in the experiments, in the results, and in the Conclusion. Once the technical problem is described using measurable criteria, Stage 1 is finished.

1   Most previous research in the area of compiler-directed SPM has overlooked the inherent limitations of off-chip memory access redundancy and inefficient data transfer, which in embedded systems can cause **higher energy consumption and slower performance**.

Some technical problems, procedures, and design issues are well known. In these

Table 14. Stage 1: what is a computer engineering problem?
1. We can't do some specific thing,
2. We can't do it well enough, or
3. We lack knowledge

cases, a paper may not provide any background at all but instead might start with the technical problem, simply naming the technical area and an associated concept. Specialists readers may be presumed to know the relevant technical issues and problems. However, it is not in fact so common that simply naming a topic can take the place of describing the context and nature of a problem and giving concrete examples. (See also, *Abstracts: beginning with background: 'social' and 'technical' problems.*)

125 Introduction: Stage 1: what is a computer engineering problem?

Essentially, It can help us to state the problem clearly if we think of an engineering problem as a situation where the following apply:

1. We *can't do some specific thing*
2. We *can't do it well enough*, or
3. We *lack knowledge*

1 We can't do some specific thing

Statements about *abilities* and *functions* are common at Stage 1 and ideally are linked with explicit *criteria*. Beware of vague or subjective 主觀的 statements and terms such as *does not perform well*, *effective*, or *successful*. After all, what does "effective" means Simpler, faster, or more accurate? Converges to a solution quickly? The reader may not know. It must be clearly stated.

Broad statements about, for example 'improved performance' should be used only later in a paper, once readers are aware of the criteria for good performance, success, efficiency, effectiveness and so on.

2 We can't do it well enough

Something does not operate as well as we would like, does not satisfy some requirement or meet some standard, or lacks certain desirable features or functions. This would include cases where we are proposing another improved way to do something or are extending previous work.

3 We don't know something or don't have required information

Something is unknown because it has not previously been successfully studied. This is sometimes referred to as a "gap in the research".

Note, however, that the mere fact that something has not previously been studied does not by itself mean it is a good topic for research. After all, it may not have been previously studied simply because it is not a good topic! If we wish to justify it as an object of research, we must still provide good motivations for the research.

126 Introduction: Stage 1: begin with words from the title

Students struggling to start a paper often begin with excessively general statements such as the following.

✗   Nowadays, people need to process a large amount of information and tasks everyday.–

As a rule of thumb, the best way to begin a paper is with words from your title, (assuming the title is good). Indeed, ideally, all of the words from the title should appear in Stage 1. If they do not, either the opening words are off-topic or the title may need to be reconsidered.

127 Introduction: Stage 1: start with the biggest and most "real-world" concept

Start Stage 1 with the term from the title that represents the largest concept, either physically or conceptually. Starting with the biggest concept allows readers to enter the explanation at the most general level of knowledge and helps establish a hierarchy of ideas so that every subsequent idea is a subset idea. It places background before detail so that readers have the knowledge they will need to understand what follows and so that new knowledge is immediately relevant.

If we have a choice between big concepts e.g., The Earth vs The Internet, we might start with the one that is most real-world (The Earth). In the following example the big concepts are satellites and the internet. The authors chose to begin with satellites.

1   **Multiple-Access Burst Targeted Demand Assignment for Satellite-based Internet Service Delivery**

I. Introduction
Satellite systems will have a central role as an access technology in the integrated networks of the future. In particular, given that they are an inherently broadcast technology [1] and can provide almost universal coverage, satellite systems will certainly be heavily involved in the delivery of global **Internet** protocol (IP)-based services.

128 Introduction: Stage 1: some words from the title don't appear until Stage 3

Very often, everything from the title appears (or should appear) in Stage 1. The exception to is when a title names its solution, in particular when the solution

is a new model, scheme, framework, or algorithm. Such "solutions" may not appear in the paper until Stage 3, the "proposed solutions" stage that usually begins *In this paper…*

129 Introduction: Stage 1: use problem vocabulary to signal and describe problems

It is not always obvious what a "problem'" is in a technical field so readers are often looking for words to help them see where a problem has been introduced. Thus, in the first paragraph of a paper, writers should use suitable problem words to signal first, that a problem is being discussed, and second, what type of problem it is.

Of course, this allows a very large vocabulary, but the following selection should indicate what is meant by 'problem vocabulary'.

- **abstract nouns:** *problem, difficulty, disadvantage, drawback, trade-off*

- **non-specific adjectives**: *unsatisfactory, inadequate, insufficient*

- **verbs referring to ability and inability:** *can, cannot, unable to, may not, allow, constrain, permit, prevent*

- **abstract cause-effect verbs with neutral-negative prosodies:** *cause, lead to*

- **abstract cause-effect verbs with negative connotations:** *deteriorate, aggravate*

- **conjunctions and transitions that expression concession/contra-expectation:** *however, yet, but, despite, although, nonetheless*

- **prepositional phrase:** *due to* (see the discussion of *due to* for assigning blame in Part 2)

130 Introduction: Stage 2: the first of the related works

While a paper will commonly have only one section with the title *Related Work, Literature Review,* or *Previous Work*, many research papers in reality have two and on rare occasions even three literature reviews, each with a different purpose. The first related work in a research paper is in fact usually Stage 2 of the Introduction. It describes the technical problem and identifies sub-problems in the light of current work.

The second related work, found between the Introduction and the Methods, explains and justifies the researcher's methods. When there is a third related work, it is found just before the Conclusion and often also takes the place of the Discussion. It evaluates the work being reported in the paper against other similar work, invariably trying to argue for its own novelty, importance, or specific contributions.

Table 15. Stage 2: three important questions

1. How has previous research succeeded with regard to the technical problem?

2. How has previous research failed with regard to the technical problem?

3. What have been the weaknesses of previous research?

131 Introduction: Stage 2: answers three important questions

Stage 2 of the Introduction is what this book also refers to as the *first related work*. It has four main purposes as laid out in Table 16. More specifically, Stage 2 (or "the first related work") classifies and critiques previous work relevant to the technical problem introduced in Stage One. It answers one or more of the following three questions:

1. How has previous research succeeded with regard to the technical problem?

2. How has previous research failed with regard to the technical problem?

3. What have been the weaknesses of previous research?

Stage 2 is where we create the foundation for our claim that the proposed work is justified and the contribution is novel. It shows that there are gaps or flaws in current knowledge or that there are opportunities in areas that other researchers have also suggested could be productive of knowledge.

132 Introduction: Stage 2: organisation

The central organizing feature of the literature review is the relevance of previous work to the technical problem, so the discussion tends to begin with broader general theories or approaches to the problem, only then discussing more narrowly relevant theories. This may involve critiquing classes of approaches, individual approaches, or a combination of the two.

While discussions of previous work may appear to be time-organized, this simply reflects the fact that older work is often less relevant or more foundational than recent work. It is not the purpose of Stage 2 to provide an historical survey of a field.

133 Introduction: Stage 2: attitude towards previous work

Stage 2 usually emphasizes the flaws of previous work more strongly than the successes. If it does make positive comments on previous work, stating benefits, advantages, successes, etc., it usually means that the authors intend to adopt or adapt something from that previous work, a feature, method, metric, etc. Alternatively, they may be justifying their own research practices by, for example, adopting an assumption that was accepted in similar previous work.

Table 16. Stage 2: what is Stage 2 for?

Stage 2 of the Introduction is what this book also refers to as the "first related work". It has four main purposes.

1. To break the technical problem into smaller sub-problems

2. To define new terms and concepts

3. To establish the scope of the work

4. To establish the basis for a claim of contribution to the field

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134 Introduction: Stage 2: other purposes

Stage 2 also serves a number of other overlapping purposes. It defines the scope of the work. This is largely the automatic result of classifying and defining work relevant to the technical problem. It defines terms and concepts for further use in the paper.

Finally, Stage 2 also explains a problem area more thoroughly by analysing the technical problem into smaller sub-problems. Stage 2 is thus a powerful tool for defining the problem area and justifying claims of contribution.

135 Introduction: Stage 2: does not always identify problems

Sometimes we can describe most of the research problem in Stage 1, for example, when the problem is well known and the novelty or contribution is perhaps simply in extending some previous method. In such a case, Stage 2 will just explain or describe the relevant aspect of the method. Such a first related work will be short.

136 Introduction: Stage 2: no previous work to critique?

Obviously, we cannot critique previous work if none exists. However, we can use Stage 2 to describe or outline the basic difficulties, challenges, or issues in the work. This is especially common in design-oriented papers where Stage 2 can be used as an initial description of requirements and constraints and to show the thinking on a problem. Stage 3 then describes the response to these requirements and constraints.

137 Introduction: Stage 2: length of paragraphs

Stage 2 is often just one long paragraph and may be much longer than any paragraph one would normally find in the Methods or Results. This is because Stage 2 paragraphs are organized according to "previous work" rather than some other kind of logic.

Figure 18. Stage 2: Mention the technical problem and criteria

There are four common problems associated with the way we typically document changes to API components and to instructions for adapting existing application code (as in, for example, the Eclipse "What is New" [19] and Visual C++ "Migrating from Previous Versions" documents [17]. **First**, it requires a considerable effort from component developers to *first* produce and *then* consistently maintain such documentation. **Second**, even with these efforts, the documentation is often still not complete and may discuss only some subset of the changes that the component developers regard as important [12]. **Third**, the documentation does not always accurately reflect the actual code. **Finally**, documentation is sometimes written in very compact, cryptic jargon that even application developers can find hard to understand.

Repeats key words from the technical problem, including criteria

Lists sub-problems

However, long paragraphs may be broken up for clarity, according to topic, making sure that the topic-related words appear early in the topic statement if possible, towards the left close to the left of the first lines of the paragraph, where readers can see them and relate them to earlier topics. Subheadings are not normally used. (Subheadings are, however, fairly common in the second Literature Review.)

138 Introduction: Stage 2: announce it

The beginning of Stage 2 (Figure 19 and Figure 18) is commonly signalled using phrases such as *Previous work in the area of XYZ has chiefly…; Common approaches to the...;* and words and phrases like *research, previous responses, the literature, work,* and hedges such as *commonly, tradtional, typically, often.*

Note that this opening statement should suggest the relevance of the following material to the problem outlined in the preceding paragraph. This should be done by re-using key words from the technical problem, including the criteria. This will help us keep on-topic, remind readers of the topic, and keep the technical problem in focus.

139 Introduction: Stage 2: the critique: function

To critique previous work is to consider its positives and negatives relative to the technical problem. We can critique classes of approaches, individual approaches, or classes of approaches exemplified with suitably representative examples.

A primary function of Stage 2 is to define previous work negatively, as inadequate, so we typically say that there are particular (specific) drawbacks, disadvantages, or limitations on the value of the features, functions, or operation of an approach, or we may criticize its assumptions, testing, implementation, conclusions, etc.

Figure 19. An Introduction: Stages 1 & 2

1 INTRODUCTION

Wireless sensor networks usually consist of thousands of resource-limited sensor nodes deployed across an area without any fixed infrastructure [1-3]. In unattended environments, in areas from battlefield surveillance to civilian communications [4]-[10] such networks are targets for malicious attacks. The secure operation of such networks depend on security measures that utilize encryption and authentication protocols based on keys. Key management is thus a critical security protocol issue. In particular, there is the problem of setting up keys so as to protect connections between sensor nodes.

Background

General problem

Field response

Technical problem clearly signalled:
There is the problem of...

Networks are typically formed with either **one-hop connections** between pairs of neighboring nodes or connections between two nodes over a **multihop path**. **One-hop connections** are managed by the link layer protocol, with the link layer connection being secured with Link Layer Key (LLK) shared between between the neighboring nodes. As **multihop connections** are in different neighborhoods, they are managed by the transport layer protocol Transport Layer Key (TLK) which faces the difficult task of providing end-to-end security.

Current responses

The organisation of the paragraph is parallel/split progression (arrowed).

Introduction of a subproblem: problem language

The central problem of establishing the TLK is that although each node in a network of N nodes can theoretically be preloaded with N keys uniquely shared with other nodes, given the memory constraints of sensor nodes in large scale of sensor networks, this is very difficult to achieve. Most recent solutions [10-24] take the approach of relaxing the security requirement and focus on establishing the Link Layer Keys (LLK) between any pair of neighboring nodes. The advantage of this is that in a large scale sensor network, the number of neighbors of a node is usually a small constant so an LLK infrastructure is an effective way to save memory resources. At the same time, such an LLK infrastructure allows two end nodes to communicate securely over a multihop path using intermediate nodes and a TLK on demand negotiated, if needed, through the secure handshake. The drawback of this approach is that while it can prevent external attackers from accessing the network, it cannot counter internal attacks and security breaches, such as from compromised nodes, which become more likely as the number of hops along a multilink path increase. Moreover, previously proposed LLK schemes have been burdened with large memory requirements to maintain acceptable levels of security or connectivity.

Paragraph begins with vocabulary from the end of the previous paragraph (TLK).

More specifics on the subproblem

Current response > critique

A series of problem-response/solution relations organized with suitable vocabulary

Abstract nouns stage the discussion: *problem, solution, approach, way, drawback*

Connectives: *although, given, while*

Problem/success language: *difficult, achieve, allow, prevent, can, cannot, burden*

Table 17. Stages in the critique pattern
1. Describe or name the type of approach to the problem and/or reference the researchers and method
2. Describe the operation, functions, or features of approach or method
3. Describe the extent of the value of the approach/method i.e., where it worked or was applied or what it achieved
4. State the drawback using "problem language" (or state the benefit or advantage of the approach will be adopted)

140 Introduction: Stage 2: the critique: be specific

We should make our critiques specific and state criteria as observable and measurable e.g., *causes delays.* Used alone, phrases such as *does not handle* or *does not deal with* are quite general and might not make clear what kind of specific activity *handling* or *dealing with* refers to.

For example, if we say a system *cannot handle/deal with large volumes of data* does that mean it, e.g., cannot *store* large volumes of data, or cannot *translate* large volumes of data, or cannot *transfer* large volumes of data? Or does it mean something else? At first mention of the problem, this must be specified.

141 Introduction: Stage 2: the pattern of a critique

Critiquing an approach or method typically involves—combined in various ways—all or most of the stages laid out in Table 17. Stages may be combined, especially 1 and 2, or put in a different order, especially 2 and 3. The following example lacks Stage 3 (unless we accept that it is covered by the word *efficient*).

1   Xiong et al. [29] **[authors]** proposed an efficient kernel Fisher discriminant **[name or class of approach]** that uses QR decomposition, **[operation, functions, features]** but this algorithm suffers from **[state drawback]** the same problem as the method in [24]. Keerthi et al [29] proposed a fast primal algorithm that greedily selected a subset of the training basis functions to approximate the SVM solution, however....

The reader must be informed if a related approach has a problem—it lacks something or cannot do something—or if it perhaps offers some advantage.

142 introduction: Stage 2: the critique and "problem language"

This was mentioned with regard to Stage 1 but is also an issue in Stage 2; we should use appropriate vocabulary for signalling problems and benefits In the example in the preceding article, the words *but, suffer from,* and *problem* all make it clear that a problem is being discussed.

Figure 20. Elements of a literature review critique

1

Name of Authors/Reference AND/OR Approach/Reference

2

Operation Functions, Features

3

Value, benefits

4

Drawback
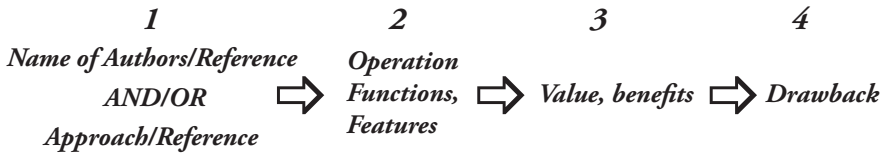
Similarly, if there are positives, these should also be clearly signalled, e.g., *Further, it offers the advantages of...* Appropriate language would include verbs *(handle, cope with, deal with, benefit, offer, provide)* and adverbs *(additionally, however)* but also the abstract nouns, e.g., *problem, solution, benefit, drawback, dilemma.*

One reason that this is necessary is that while something may be a technical problem in one context, in a different context it be merely a neutral fact or even an advantage. For example, whether *sensitivity to light* is a *problem* or a *benefit* would depend on the context.

143 Introduction: Stage 2: recounts and procedures: time-organisation

Descriptions, even brief ones, of how something was done (a recount) or how something is usually done (a procedure) should be written in a "real-world" sequence. That is, what happens first should appear first in the sentence or clause and what happens next should appear next and so on.

If needed, suitable supporting adverbs and conjunctions should be used e.g., *first, then, next, until, finally, after, before.*

1   Propagation based approaches [10][11] estimate the position of a device by **first** applying an algorithm to calculate the received signal strength RSS of local access points and **then** applying a triangulation algorithms.

144 Introduction: Stage 2: parallel sentences

Stage 2 should be written with careful attention to parallelism as this will, first, allow quick and easy comparisons of the various approaches that are discussed and, second, make it easier to follow as the discussion moves from one topic to another or from one author to another. Minimally, this means that if one sentence starts with either Name of Authors/Reference or Approach/Reference then all of the sentences should start that way.

1   *Xiong et al. [29]* proposed an efficient kernel Fisher discriminant that uses QR decomposition, but this algorithm suffers from the same problem as the method in [24]. *Keerthi et al [31]* proposed a fast primal algorithm that greedily selected a subset of the training basis functions to approximate the SVM solution, however....

145 Introduction: Stage 2: referring to authors

Computing research is very flexible in how it refers to authors, their work, and their views, and there is great variety across fields.

In particular there are many ways of making authors or their work into the subject of a sentence. Often, this simply means treating authors and their work as identical. Some of the ways of referencing—especially those that do not mention author names—are not acceptable in all fields.

1   *Literature [24]* employs leave-one-out cross-validation (LOCV) to improve the learning efficiency.

2   *[24]* employed leave-one-out cross-validation (LOCV) to improve the learning efficiency.

3   *In Ref. [4], the authors* showed/*Ref [4]* showed that leave-one-out cross-validation (LOCV) can be used to improve the learning efficiency.

4   *Zheng et al. [25]* grouped the training samples to enhance the computational efficiency.

146 Introduction: Stage 2: do not mention the proposed work

Stage 2 discusses previous work. Therefore it should not mention our proposed work. i.e., the work to be discussed in the paper in hand. Of course, if the authors of the paper have done relevant previous work, they may mention that. But the current proposed work is not previous work so should not be discussed in Stage 2.

147 Introduction: Stage 3: function

From one point of view, Stage 3 is the contribution paragraph. Very often it is just one paragraph but it may also be made up of a series of paragraphs.

As summarized in Table 18, and illustrated in Figure 21, Stage 3 outlines the response (solutions) to the problems described in Stage 1 and the sub-problems outlined in Stage 2. The match between these problems and sub-problems and the proposed solutions and methods should be perfect. One way to ensure this is to check that the Stage 2 problems and the Stage 3 problems are discussed in the same order and using the same words.

148 Introduction: Stage 3 in four phases

Whether Stage 3 can is usually just one paragraph but can be multiple paragraphs. It is commonly has four phases (Table 18). Depending on the focus of the work, or how standard or non-standard the experimental process is, some of these elements are blended or omitted. At the same time, problem and solution may imply each other, as may testing and results. Having said that, specifics are always appreciated and may in fact help to highlight contributions that otherwise might be overlooked.

Table 18. Stage 3 in four phases
1. State problem and propose solution
2. Operation/Features/Functions of the solution
3. Testing /Evaluation
4. Results/Discussion

1 Refer to or restate the technical problem

Restate or refer to the technical problem. Usually this means a statement like this:

> In this paper we propose + **[name or classify it it]** + a novel rule-based classifier that...+ **[solves the technical problem: a brief restatement or summary of the problems or a summary of the purposes/goals/ functions of the solution]**

2 Describe operation of the proposed solution

We might describe any of the relevant parts, components, steps, stages, operation, features, functions, methods, techniques, or mechanisms of the proposed approach.

We should give reasons for the choice of method or briefly describe the design of the model with particular focus on those elements which contribute to solving the problem.

We should tell the reader—or make it easy for the reader to infer—how this solves the problem identified at Stage 1 and is a feasible solution to or improvement on other current methods as outlined in Stage 2.

If necessary, we should signpost contributions with suitable nouns like *advantage* or *benefit* or talk about abilities, capabilities, or capacities with causative verbs such as *allows, permits, enable, prevents,* or use phrases such as *makes it possible/easier to* or *avoids the problem of...*

3 Describe how the theory, framework, model, design was tested, implemented, simulated, etc.

If comparisons are made, mention the bases for the comparisons. For example, say why the proposed work is being compared with a particular set of data. This may only require a few words of justification such as saying these databases are, for example, *typical* or *standard* or *widely used*.

1   We conducted experiments on very high dimensionality datasets (up to 200 dimensions) and on datasets with....and the results show that the proposed method is scalable in both size and dimensionality and is able to adaptively respond to....

Figure 21. Stage 3 in four phases

In this paper we propose **[solution]** a novel technique for generating halo effects using GPU-based volume rendering. Our approach **[operation]** classifies, generates, and maps volumetric halos so as to allow flexible control of their appearance. The proposed method requires no advance computation while all parameters can be modified interactively. **[results/discussion]** We demonstrate that this technique is effective in improving depth perception in volumetric data sets and does so without obscuring features.

Problem/Solution

Operation, features, functions

Testing
Results
Discussion

Four stages of Stage 3. The order of these stages is not very flexible but stages may be compressed, blended, or extended. The main goal is to highlight contributions. In this example, notice that most of the discussion is on method and results. No doubt these are the areas of contribution (rather than, say, the novelty of the problem or the nature of the testing).

4 Briefly state the principal results

Stage 3 may mention the principal results. This statement should be in terms of observable and measurable criteria. Specific numbers are always acceptable. Authors might also offer a few words as to the implications of the work or findings.

149 Introduction: Stage 3: if this work (or parts of it) has appeared elsewhere

1   A preliminary version of our adaptive propagation algorithm appeared in [17].

2   A preliminary version of this paper appeared in the Proceedings of the IEEE...

150 Introduction: Stage 3: should we list the contributions separately?

In most cases, there is no reason to list Contributions separately. This is because Stage 3 will normally automatically describe the contributions, which, after all, are essentially the solutions to the problems discussed in Stages 1 and 2.

However, writers sometimes do list contributions at the end of Stage 3. They might introduce them with a statement such as *Our contributions are as follows…* or under a separate heading Contributions and list the contributions, perhaps as bullet points. These points should not repeat what was said in the preceding paragraph.

151 Introduction: Stage 3: what isn't a contribution?

Basic research activities should not be claimed as contributions. For example, researchers may have developed a novel database for their research but this may or may not be a contribution to the field. The determining factor is whether

Table 19. Stage 3: introducing it	

In this paper we propose/describe...	The present work extends the use of the previous model by...
This study reports on the results obtained....	We now report the interaction between...
This study was designed to evaluate...	The primary focus of this report is on...
This paper reports on a novel approach to...	In this work, we develop and investigate a formalism for processing...
In this paper we give preliminary results for...	This paper proposes a new approach for...
The aim of this report is to give..	In this article we analyze and evaluate strategies for...

the database is also available and useful to other researchers. If not, it is just a research activity and research activities are not, in themselves, contributions.

Results are not by themselves contributions. The actual contribution is either the new knowledge inferred from the results or it is the achievement of improvements in efficiency, speed, accuracy, robustness, etc. Often, these have already been claimed.

Finally, it is not a contribution that "no one has previously addressed this problem or done it this way". Novelty is not by itself a contribution.

152 Introduction: Stage 3: general advice

1 Begin with "This paper"

Stage 3 should begin with words that identify it as Stage 3. Suitable phrases are similar to *In this paper, we describe (*e.g., *how)…* or *This paper reports on a novel approach to…*

Alternatively, we start Stage 3 with a brief recap of the problem and follow that with a clear signal of the proposed response with, again, words like *In this paper….* (See Table 19) We then typically

1. Mention the problem area
2. Specify the technical problem
3. Name or briefly describe the approach.

Following this, we would explain how or why the proposed approach is different from or improves upon the approaches critiqued in Stage 2. This discussion of the Stage 2 problems should be parallel with the actual order of the discussion in Stage 2.

Table 20. Stage 3: how not to introduce it

To tackle the above problems,	In order to investigate these problems,
As a solution to this problem, we propose...	Based on the above observations, we propose in this article..
In this paper, in order to solve the two problems listed before, we propose...	In this article, we introduce a novel approach that overcomes these problems.
Aiming to solve these two problems, in this paper,.....will be proposed.	To circumvent the three difficulties outlined above,...

2 Avoid beginning with "in order to"

We should usually avoid beginning Stage 3 with *In order to*. There are a number of reasons for this. First organisationally, this phrase fails to signal to the reader that Stage 3 has begun. That is, any paragraph might begin *In order to*. Only Stage 3 should begin with *In this paper we propose*.

Second, an *In order to* clause (means-purpose, or *why we did it*) states a purpose or intention. Achieving that purpose/intention will require real-world action. If writers follow an *in order to* clause with a clause using a relational verb such as *propose, examine, consider, focus on*, the result is a statement that cannot be true, as such mental and verbal activities cannot in fact bring about the goal declared in the first clause. In short, if we wish to say *In order to* in the first clause, the second clause must use a verb denoting an action that could conceivably contribute to achieving the proposed goal.

The root of this problem is that writers may be unclear as to the different ways that means-purpose *(why we did it)* and means-result *(how we did it)* are signalled in English. But in any case, this issue is easily avoided simply by starting Stage 3 with *This paper...* or *In this paper...*

3 Avoid empty introductory phrases

The top-left corner of a paragraph is an important point for skimming and scanning and is a strategic point for organizing predictable paragraphs. The beginning of Stage 3 should thus not be occupied by phrases that contribute little and fail to refer to the problem being addressed, as in Table 20, where none of the examples offers anything concrete and the start of the paragraph is wasted.

4 Explain specifically in what way work has been "inspired by" or "motivated"

We sometimes say that something *motivated* or *inspired* our work

1   Our work is mainly **inspired/motivated** by the idea of...

But it is not always obvious what authors mean by *inspire* and *motivate*. When our work is "motivated" does it mean that it *modifies, extends, adapts, adopts,*

Table 21. The Introduction: Stage 3: common problems

All of the following individual problems are common in Stage 3.

1. **Double-counting contributions**
   - Avoid this with consistent word use and parallelism with Stage 2.

2. **Inconsistent criteria**
   - If the criteria in Stage 1 are "fast" and "precise", in Stage 3 the criteria cannot be "efficient" and "robust".

3. **Solutions without problems**
   - We cannot claim a contribution in Stage 3 unless there is a corresponding problem in Stage 2. Again, Stage 2 and Stage 3 should be written in the same order and with the same words so that they are easy to cross-check and match.

4. **Problems without solutions**
   - Stage 3 must offer a response for every issue raised in Stage 2 unless something is explicitly excluded from the scope of the work.
   - Again this problem most often arises when Stages `2 and 3 are not matched in order and wording.

5. **Re-opening the discussion of scope, focus, and motivation**
   - Issues of scope, focus, and motivation are explicitly covered in Stages 1 and 2. They should not be re-opened in Stage 3.
   - A sign of this error is the appearance of references e.g. [2]. Such material belongs either in Stage 2 or the Related Work.

6. **Long explanations of the choice of approach or tools**
   - A brief mention of why certain tools or methods were chosen is usual. Longer justifications of tools and approaches belong in either the Related Work or the Methods. Again, the use of references e.g. [2] may signal a misplaced discussion.

7. **Discussions of future work**
   - These belong in the Conclusion.

8. **Introduction of novel or irrelevant material**
   - We may find we have extra thoughts at the end of the Introduction but if they cannot be fit into the four-stage framework, perhaps they belong in some other part of the paper. But they can't be added to Stage 3 as an afterthought.
   - Is something mentioned here and nowhere else in the paper? Delete it.

exploits, makes use of or *is based on* or *influenced by* some earlier work?

Alternatively, if by *motivated* we mean that the proposed work is in some way *similar to* previous work, then we need to say how it is similar and how it is different.

5 Bbe specific about the results and experiments

Stage 3 usually mentions testing and results. Writers should provide at least

some basic details, and should mention specific, observable, measurable criteria. Use numbers if they are relevant. Mention databases. Justify their use. For example, say they are 'typical' or 'comparable'. Any statements made here must be a perfect match for the Abstract, Experiments, and Results. The following kind of statement is not informative and should be avoided.

Negative example

× Experimental results validate the effectiveness of the proposed approach.

6 Before submission, check Stage 3 against the Conclusion and Abstract

The Conclusion of a draft paper, composed after much thought, often contains a clearer description of problems and methods than the Introduction at the same stage. For this reason, it is always worth checking everything in the paper against the Conclusion.

153 Introduction: Stage 4: the outline

Stage 4 of the Introduction, the outline (Figure 22), has two purposes. The first is to tell readers what is in the paper and where to find it. The second is to act as a framework for the writer and as a checklist to be referred to before submitting the paper.

We should sketch the outline early and revise it as we write. It can then serve as a concise reference for the relevance of the organisation and content of a paper. We strictly match the terms in the outline with those in subsequent section headings and describe them in the same order. For example, if the words *Case study* appear in the heading for Section 4, they should also appear in the Outline.

We begin the outline with a suitable phrase.

1   The remainder of this paper is organized as follows./The organisation of this paper is as follows./The rest of this article is organized as follows./This paper is organized as follows.

As the outline is a list of items, not a list of events or a description of *how*, we do not need the words *first, then, next, after*, and *finally*. Sentences should start with section names as subjects, e.g. *Section 2 describes...*

Negative example

× The test environment used in the experiments is described in Section 3.

Rewrite

2   Section 3 describes the test environment used in the experiments.

We should not use only general verbs like *consider, study, investigate* and even *discuss* and *introduce*. We should also use (or prefer) verbs that denote more specific research activities, e.g., *analyse, classify, compare, define, describe, explain, identify, justify, formulate, measure, test…*

The final section of the paper is typically a Conclusion, not Conclusions. We

---

Figure 22. Stage 4: the outline

The remainder of this paper is organized as follows. Section 2 reviews related work in _____. Section 3 describes _____. Section 4 defines _____, outlines its characteristics, analyses its feasibility for use in _____ and discusses _____. Section 5 introduces an _____ algorithm and analyses its effectiveness in _____. Section 6 experimentally tests _____. Section 7 offers our Conclusion and outlines future work. In the Appendix we provide a formal proof which shows that _____.

Begin each sentence with a section name

Use verbs for reporting-specific and observable research activities: _describe, analyze, compare,_ etc.

The final section of a report is usually a _Conclusion_

---

capitalize Conclusion because it is the name of the section.

1   Section 5 offers our Conclusion.

The final section does not usually _draw conclusions_ or _offer conclusions._ To _draw conclusions_ is to come to/report a view after reflecting on/reporting evidence. This is more typical of the Results-Discussion. (For an example of the typical staging of a Conclusion, readers are referred to Figure 7.)

Finally. there should be an exact match between the terms in the Outline and in the remainder of the paper. So, if the outline says _Section 3 describes the system architecture"_, the heading for Section 3 will be _3. System Architecture,_ not, for example, _3. Main features._

154 Introduction: Stage 4: the outline: common problems: negative examples

The following negative example has three basic problems: first, it offers very little information; second, there appears to be no logic to its organisation; third, there are some common errors of usage.

Negative example
✘   In Section 2, we introduce the KES algorithm. Our improved algorithm is discussed in Section 3. In Section 4, the experimental results are given to illustrate the efficiency of the new algorithm. Finally, we make a conclusion in Section 5.

Because this negative example is quite information-poor, the following rewrite is still only just adequate. The way for writers to get more relevant content into an outline is to use all of the words from corresponding section headings. If we need more detail, we look to the section _sub_headings.

Rewrite
1   The remainder of this paper is organized as follows. In Section 2 we describe the KES algorithm, and Section 3 introduces the improved algorithm based on KES. Section 4 provides experimental results illustrating the efficiency of our proposed new algorithm. Section 5 offers our Conclusion.

Following are the main problems of these negative examples.

1. The outline is not introduced. It should begin with something like *The remainder of this paper is organized as follows.*

2. Section names should begin the sentence and sentences should be arranged given-new to remove the unmotivated passive, *are given*.

⬩ We should be told something about the experiments, e.g. number, purpose, criteria, materials and methods.

3. Vocabulary and usage

⬩ In a research paper, authors *introduce* only their own work. The work of someone else is usually *described*.

⬩ The algorithm will be *discussed*, but in what respect? Here, we need verbs that specify observable research-related activities like *analyse, classify, compare, describe*

⬩ *are given to illustrate* : The use of *(in order) to illustrate* suggests that we have arranged the results in advance. This is because the phrase *in order to* (means-purpose) implies "intention". Rather, if we are confident of our claim, we should say that

2　The experimental results demonstrate/illustrate/show/prove the efficiency of the new algorithm.

⬩ The phrasing *we make a conclusion* should be *Section 5 offers our Conclusion* (capitalized). This is a matter of *collocation*.

155 Introduction: Stage 4: what follows the outline?

The outline is the last element of the Introduction. Nothing should follow it, except the heading for Section 2. Brief discussions of terminologies or notations are best placed under their own heading at the beginning of the Methods or, if they will be used in the Related Work, in its overview.

156 introductory it

See Part 2: it: preparatory subject; it: preparatory object; because: it is because vs It is because;

157 Methods: the materials and methods section

The Methods section or the Materials and Methods is essentially the middle of a research paper. It begins after the Introduction or the Related Work and extends as far as experiments/testing. The methods section provides a detailed, step-by-step description of what was used and how it was used.

The methods section is often the longest part of a paper and there can be

Table 22. The overview of the Methods Section
1. Matches both Stage 3 of the Introduction and the Outline of the paper;
2. Tells readers what the methods section in general will be about and what will be covered in the following sections;
3. Describes each following section in order;
4. Uses all of the words from all following subheadings.

great variety in its content. This makes it most important that readers be able to easily understand how the paper is organized and what can be found where. Readers must be able to find information quickly and understand the purpose of each section and subsection. It must be clear how any particular section or discussion relates to

1. The technical problem
2. Preceding and following sections and subsections
3. Figures, tables, and graphics

The main organizing elements are *overviews* at various levels, *headings, parallelism,* and *paragraphin*g. The primary writing skills are the ability to discuss graphics clearly and make clear comparisons and also writers should be familiar with the basics of writing the text-types (see *text-types*) that are most common in science writing, in particular *recounts, procedures, instructions*, and *explanations*.

158 the methods section overview: match headings and subheadings

A report must have an architecture of headings that is hierarchical and logical, clearly linking the research approach and the problem across different levels. To build such an architecture, we begin the methods section with an overview that satisfies the four criteria in Table 22. The checklist in Table 23 can also be followed to create a clear hierarchy and a parallel structure.

159 Methods: the "problem definition"

The Methods sometimes begins with a section called a *problem definition*. This should not be confused with a *problem statement*. The term problem statement in a research a paper is just a way of referring to the Introduction, which of course describes the main elements of the problem. *Problem statement* is not used as a heading in any part of a research paper.

However, the term *problem definition* is sometimes used as a heading. A formal *Problem definition* may be found either at the start of the methods section—i.e., it is Section 2 or 2.1—or following the Related Work.

The purpose of the *problem definition* is to provide a clear, complete, mathematical formulation of the problem and the authors' reasoning prior to presenting the detailed methods and solution. As to the level of detail, it may be necessary to explain why the solution is given in a particular form but there is usually no need to elaborate on basic algebra.

160 modal verbs: grammar

The modal verbs are auxiliary verbs. As can be seen from Table 24 they are very common in computing research writing—among the most common language items of all. Their function is to support the meanings of other verbs in the verb group and to express attitudes towards propositions in terms of four notions, *ability, possibility, motivation/impetus,* and *"future" outcomes*, both real and hypothetical. While there are strictly speaking only nine modal verbs, the so-called *pure modals*, it is also common to talk about *semi modals,* and *quasi modals.* Only the pure and semi-modals are important in research writing.

1 Pure modals: grammar

- *can, could* - ability
- *may, might* - possibility
- *must, should* - motivation
- *will, shall, would* - outcomes, instructions

The pure modals always occupy first place in the verb group and do not add *-s* in the third person. They are followed by the bare infinitive. They do not change to show tense, and cannot be modified with other modals.

1   While macro expansion ***may*** <u>introduce</u> redundant code, there are various ways of eliminating redundant statements. For instance, we ***could*** <u>simplify</u> the attribution function

2 Semi-modals: grammar

- *to be able to, has/have to, need to* - motivation

The semi-modals follow pure modals in the verb group and do add *-s* in the third person singular e.g. *need/**s** to.* They are followed by the *to* infinitive. The most important difference from the pure modals is that the semi-modals change to show tense and and can be modified with other modals. In the following, *have to* is modified with the pure modal *would.*

1   Given this data sparseness, automatic classification **would have to** make use of auxiliary sources of information.

Table 23. The Methods Section: a checklist

1. The methods introduces no major new terms
    - All important terms are introduced in the Introduction.

2. Overviews are used after any headings that are followed by multiple subheadings

3. Overviews and headings are parallel
    - They use the same words and appear in the same order

4. Headings and subheading are descriptive and informative

5. There are few or no single-term subheadings
    - Single-word or single-term headings are used only for listed items presented at the lowest level of the hierarchy of a section.

6. Terms used in headings also appear in the immediately following topic statement
    - This gets the paragraph quickly on topic and contributes to good general-to-specific paragraph development.

7. Paragraphs are organized from general to specific

8. All lists and comparisons are parallel

9. All lists are introduced
    - Lists are not placed directly under headings. A list is introduced with a statement telling us what it is a list of.

10. All descriptions of procedures begin with suitable words to indicate the purpose, goal, or outcome

11. Results are not discussed prematurely
    - For example, we do not mention in Section 4.3 results that are not demonstrated until Section 5. Of course, this does not apply to discussing results of experiments to, say, determine the parameters to be used in a method. This is an appropriate discussion in the methods.

12. Reasons are provided for taking various measurements or using certain equations

13. Words in captions match the contents of figures

14. Words in captions, figures, and text all match

15. All equations and figures are numbered

16. At first appearance, all figures, graphics, and equations are referred to by name in the text, e.g., Fig 2 shows... and not with a phrasing such as *The above/below figure shows...*

17. All equations that are set off from the text and that are complete should end with a full stop (period)

Table 24. Modal and semi-modal verbs: frequencies					
can	**could**	**able to**	**have to**	**may**	**might**
4680/mill.	547/mill	500/mill	302/milll	1520/mill	286/mill
must	**need to**	**ought to**	**shall**	**should**	**will**
555/mill	1,492/mill. approx.	60/mill	58/mill	685/mill	1397/mill
would	1748/mill				

For these reasons, the semi-modals *able to* and *have to* are respectively common alternatives to the pure modals *can* and *must*.

1   But even with large increases in the number of correlated clusters, MDM ***could/was able to*** maintain high levels of query precision.

   'have to' as past tense alternative for 'must'

2   Although we were provided with an initial implementation, we nonetheless ***had to*** significantly optimize and extend it.

3 Quasi-modals: grammar

⬧ *had better/had best, ought to, used to,* and *would rather* - various

The quasi-modals have the same grammar as pure modals except that they are two-word forms. In general *ought to* can be replaced with *should*. The meaning of *used to* in this sense is not the same as *use/employ*. Rather, the meaning is closer to *formerly* or *once but no longer* or *previously and habitually*. In this sense *used* is pronounced /ju:st/. The phrasing *would rather* is synonymous with *would prefer to*.

1   Analysts ***would rather****/would prefer to* work on their own tasks than spend time training with graphic design tools.

161 modal verbs: meaning and usage

The pure modal and semi-modal verbs all offer variations on the core ideas of *can, may, must* and *will*.

⬧ *can, able to, could* - ability

⬧ *may, might* - possibility

⬧ *must, have to, need to, should* - motivation

⬧ *will, shall, would* - future outcomes

can and *must* can be used only with present tense meanings. In contrast, the other pure modals *could, may, might, shall, should, will* and *would* can be used with a variety of meanings, present, past, future, timeless, conditional, and hypothetical.

Subject	Modal verb	Auxiliary verbs	Main verb	Complement
This value	*can, could, may, might, must, shall, should, will, would*	have been	selected	very carefully.

Table 25. Modal verbs (pure): first place in the verb group

The pure modal verbs are placed at the beginning of the verb group. They are followed by the bare infinitive form of the verb, e.g., *can select*

162 modal verbs: ability: can and could

can expresses the idea of *ability*, whether it is a physical ability or a social ability (such as to have permission). We can express the past tense of *can* by using *could* or *be able to*. *could* is also used to express hypothetical meanings of *can*.

The chief writing problem associated with *can* is its use in workarounds, in particular as *can* + passive at the end of a main clause. (See *can be + verb at the end of a main clause)*. This usually manifests in poor given-new and theme-rheme organisation and ambiguities in cause-effect relations.

More generally, where this is a habit, writing will not have the abstract, general-to-specific qualities that research writing requires. Generalizations will be clumsy, unclear, and roundabout 繞道的. Writers will not be able to smoothly express logical relations between nominalizations, especially in terms of cause-effect. In conjunction with this, writers will have limited control of sentence themes, topics, emphasis or focus. Cohesion and coherence will be faulty.

One answer to these problems is to have a broader range of language related to *ability*, in particular causative or semi-causative verbs and patterns. The verb *allow* is important as are certain relational verbs e.g., *involve*.

The items in the following list suggest the kind of *ability*-related vocabulary and grammar that research writers need. The items *allow, ability,* and *possible,* (especially used with *preparatory subject it)* are all key. Table 24 provides the frequency information for the modals.

- **modal verbs:** *able to, can, could*

- **causative verbs**: *allow* (761), *enable* (307), *facilitate* (117), *permit* (28), *prevent* (70)

- **abstract nouns:** *ability* (1061), *capability* (139)

- **grammar:** preparatory subject *it* (e.g., *it is possible to/for/that*) and *make it + possible*

163 modal verbs: motivation and impetus: must, have to, need to, should

must, *have to, need to* and *should* all talk about the *source of motivations* and *impetus.*

* *must* and *have to* both express the idea of external motivation.

* *have to i*s used when a change of tense is needed or where other modal verbs might be used.

* We express hypothetical motivation with *should.* It is not possible to identify the source of a hypothetical motivation as being either internal or external.

1   If the display exhibits overplotting, users **should be/ought to be** informed, otherwise they may not realize that some data is out of view.

The semi-modal *need to* is prototypically used to refer to motivations that have an *internal* source, i.e., internal to the agent of the clause. However, in computing research writing the ideas of internal and external motivation are often hard to distinguish or are irrelevant where *need to* is used. See in *Part 2: need to: inanimate entities.*

Apart from modals, a variety of alternative vocabulary and grammar can be used to talk about external motivation, as in the following examples of alternatives to *must*:

Example 1
1   This framework provides the semantics **that must be used when** propagating updates.

Alternative 1
2   This framework provides the semantics **that is essential for** propagating updates.

Alternative 2
3   This framework provides the semantics **that is required when** propagating updates.

Alternative 3
4   The semantics that is provided by this framework are **required when** propagating updates.

The items *require, need* (noun) and *necessary* are key research vocabulary, as is *it is + adj.*

* **modal verbs:** *have to, must, need to, should*

* **causative verbs**: *cause (273), require (1019), make it* + adj.

* **adjectives:** *it is* + adj., *make it* + adj. *(81); critical (110), crucial (31), essential (52), important (489), necessary (243), vital <20*

◆ **adverbs:** *necessarily (92)*

◆ **abstract nouns:** *constraint (547), necessity (rare), need (148), requirement (332)*

◆ **grammar:** preparatory subject *it* (*it is necessary to/for/that*) and *make it + necessary*

164 modal verbs: future and conditional outcomes: will, would, shall

will talks about outcomes in some future-like time frame, whether it is the future seen from the present, past, or even from a conditional viewpoint. In research writing *will* talks about what will happen in the future, about habitual actions and features, and realistic conditional outcomes.

1 will: predicting the future

1   **We will then show** that the proposed principal subspace mapping better supports failure detection than the CCA-based method.

2 will: talking about habitual actions and usual features

This way of using of *will* appears in procedures. It is not necessary and may be replaced with the present tense.

1   Such a user-visible failure **will occur**/*occurs* when a bug in a software component causes items to not be added to a shopping cart.

2   A single user with a typical desktop setup **will use**/*uses* all of the available screen space.

3   Visualization software **will frequently include**/*frequently includes* interactive features to help the user cope with limited display space.

3 will: conditional (non-hypothetical) outcomes

Both *will* and *would* can be used to talk about outcomes arising from certain conditions. If the conditions are realistic—as they often are in procedures—then they are expressed using a simple present tense, and the future outcome is also regarded as realistic and is expressed using *will*.

1   If a JavaServer Page (JSP) file is lost **[condition]**, the client **will** receive some type of wrong information, for example, the date of a Web page will be incorrect.**non-hypothetical outcome]**.

2   This zoom factor must then be distributed over both axes in such a way **[condition]** that the new node **will have** an appropriate aspect ratio that fills the entire window **[non-hypothetical outcome]**.

4 would: hypothetical outcomes

If the conditions are unrealistic or hypothetical, they are expressed using a past tense form and the future outcome is also regarded as unrealistic and can be expressed using *would*.

1　On the other hand, **if we had used** handles instead of digital objects, [**unreal condition**] **we would have had to** map each handle back to its digital object. [**unreal, hypothetical outcome**]

2　**If** all of the details of the client access patterns **were** available [**hypothetical condition**], **it would be possible** to identify the organisation with the optimal access latency. [[**hypothetical outcome**]

Although the past tense and hypothetical forms of *will* are often expressed with *would*, conditional outcomes can also be indicated with *will* itself.

5 shall: talking about the future; stating requirements

shall is sometime used as a variant of *will* for talking about the future.

1　We **shall**/*will* assume that the active domain of...

shall is also used to specify requirements, to indicate that a particular requirement is not optional.

2　Roles, responsibilities, and authorities **shall** be defined, documented, and communicated.

165　modal verbs: possibility: may and might

Both *may* and *might* are used to talk about the present and the future and both can used to talk about permission and possibility. *may* chiefly signals *permission* (although it is seldom needed in research writing) and, more commonly, *hypothetical outcomes* or *typical options*. *might* signals hypothetical outcomes.

1 may: typical optional features and occurrences

may is very commonly used in research writing to say what something *typically has as an option* or what can *typically happen as an option*. The supporting use of *sometimes* in the following example is not essential but does clarify this meaning.

1　However, **it sometimes may be difficult to** select a suitable parameter, especially when dealing with historical data

2 may and might: permission; possibility

In the following example, the meaning of *may* is *permission* i.e., that something is an allowed behaviour. This is clarified by the preceding use of *permissible*.

1　In XML nesting is permissible. For example, a department element **may be nested** under another department element.

But in the following example it is not entirely clear whether *may* signals permission or possibility. The reader must decide in context.

Figure 23. Nominalization: clauses become adjectives and nouns

Every cell in the human body contains a full set of chromosomes and **genes**, yet only very few of these **genes** are **turned on (expressed)** [9] during protein synthesis. These **expressed genes** determine the various properties of different types of cells and of the message RNA (mRNA) that the cell can produce. We can identify **expressed genes** and the context of **gene expression** in different environments by studying the types and amounts of mRNA produced by a cell (5). Using microarray technology, we can now gather large amounts of **gene expression** data from a single experiment. This makes possible many previously infeasible kinds of genetics-related studies. For example, researchers can exploit observed differences in the **gene expression** of normal and cancer tissues and use the context of **gene expression** levels to identify potential triggers for various cancers.
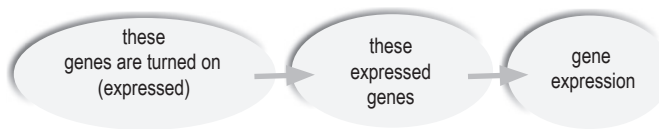
2   The details of how load shedding is carried out are left to the in-operator load shedder, **which may decide to** retain all unexpired tuples.

We can use *could* or *might* to clarify that the meaning is hypothetical.

3   The details of how load shedding is carried out are left to the in-operator load shedder, **which could/might decide to** retain all unexpired tuples.

3 may not, must not, might not

may not can refer to permission and possibility. If there is ambiguity, we can clarify with *must not* (permission) or *might not* (possibility).

1   If the structure is too noisy, then that position **may not/must not/might not exist** in the transformed matrix obtained by the second subroutine, and as a result the underlying network may be too compact to be further subdivided.

166 nominalization: turning a clause into a noun

Nominalization is the process where something that was previously expressed as a clause is expressed as an adjective or noun.

1   **We selected** a template > **the selected** template > *template selection*

Nominalization works by removing elements from the clause such as tense and direction of action i.e., 'who did it to whom and when'. A nominalization is thus a generalized (abstract) expression of the activities and relationships in the original clause.

Once a clause is turned into a noun phrase, it can be conveniently used as a subject or object to satisfy requirements of cohesion, theme selection, and information order. Further, noun phrases can be expanded with adjectives, relative

clauses, and complements.

Consider Figure 23. The verb *expressed* becomes the adjective *expressed*. This then becomes the noun *expression*. The noun *expression* can then be further modified with adjectives and so on (see Table 26. *Noun phrases: building a noun phrase around a head noun)*

Ultimately, *expression* evolves into the term *gene expression* and thereafter, the concept *gene expression* is available to be used as part of other noun phrases and compounds e.g., *gene expression data, gene expression levels, the gene expression levels of normal and cancer tissues,...*

In the following example, *to be described* is nominalized as *the description of*. The resulting noun phrase is then easily placed in the sentence as subject or object. This offers flexibility in sentence organisation.

2   The event modules and role modules allow event-internal attributes and role-internal attributes **to be described**

3   The event modules and role modules allow **the description of** event-internal attributes and role-internal attributes [object]

4   **The description of** event-internal attributes and role-internal attributes **[subject]** is allowed by the event modules and role modules.

167 nominalization: relative clauses (1)

The process of nominalization is also seen when relative clauses become increasingly compacted as nouns. In these cases, the material modifying the relative clause may move from *new* position after the noun to *given* position in front of the noun. The result is a new concept that is perceived as stable (or given) in the discussion.

In the following examples, the past participle *queried* becomes *for querying* (this is for used to talk about the purpose or uses of general-class or abstract things) and then ultimately becomes the present participle adjective *querying*.

Noun phrase containing a relative clause
5   Inefficient querying occurs because the traversing approaches do not provide an index **that can be queried**

Noun phrase with reduced relative clause
6   Inefficient querying occurs because the traversing approaches do not provide an index **for querying**

New (stable) concept: noun phrase with adjective
7   Inefficient querying occurs because the traversing approaches do not provide **a querying** index.

168 nominalization: relative clauses (2): from verb + ing to noun + ion

We can also nominalize a relative clause without it changing position. The the verb changes into the *ing* form (present participle), halfway between a noun and verb (a gerund) and then changes into the *ion* noun form. Consider what happens to the relative pronoun and verb in the following example.

Noun phrase using a relative clause

1 This paper proposes a process **that decomposes and derives** goal flow diagram primitives based on the principle of duality.

Noun phrase using -ing (present) participles

2 This paper proposes a process **for decomposing and deriving** goal flow diagram primitives based on the principle of duality.

Noun phrase using -ion nouns

3 This paper proposes a process **for the decomposition and derivation of** goal flow diagram primitives based on the principle of duality.

169 noun clauses

noun clauses are clauses introduced with *that* or with a question word such as *how, if, when, whether* or *which*. They function as the objects of verbs such as *explain, know,* and *determine*.

1 The granularity of content replication and server capacity constraints **determine whether** the surrogate placement problem should be solved dynamically **[object]**.

Noun clauses can occur as subjects as well as objects.

2 Whether the surrogate placement problem should be solved dynamically **[subject]** is determined by the granularity of content replication and server capacity constraints.

But as noun clauses tend to create, long, non-predictive themes, they are usually avoided as subjects, for example by using 'preparatory subject' *it*.

Example 1

3 That no errors will be overlooked because of this **cannot be guaranteed**.

Alternative 1

4 **It is not possible to guarantee** that no errors will be overlooked because of this.

170 noun compounds vs noun phrases

A noun compound is a noun phrase made up entirely of words that are usually regarded as nouns, e.g., *data warehouse settings*.

Noun compounds are less transparent than noun phrases. That is, it is harder to know what a compound means just by looking at it. Consider for example the noun compound *model construction cost*. How can this be interpreted? Is it *a construction cost that can act as a model for other construction costs?* Or is it *the cost of constructing a model?* We can only know the answer to this in the context of a well-organized discussion.

So noun compounds are not just more compact ways of writing a noun phrases. Rather, they can represent a whole series of ideas which otherwise might have to be expressed in many words, often abstract concepts with a special meaning in a field or in the current discussion. Given this, the reader does not necessarily assume that *indicator of quality* in Example 1 is synonymous with *quality indicator* in Example 2.

Example 1
1 Fault-proneness is an important **indicator of quality** [8], [42].

Example 2
2 Fault-proneness is an important **quality indicator** [8], [42].

171 noun compounds: adjectives in the compound

In all noun compounds, the head noun of the compound is the noun on the right-hand side. In the following example, *data* and *languages* are the head nouns.

1 One limitation of this study is that the metric ***data*** were collected from systems implemented with a single language. Future work will replicate this study using a variety of programming ***languages.***

The head noun is what the compound is talking about. The other nouns (or groups of nouns) to the left describe the head noun. Strictly-speaking, these left-hand nouns and noun groups are in fact adjectives because they tell us what kind of data, *metric data*, and what kinds of languages, *programming languages*.

But as noun compounds grow, it can be difficult to know what part of the compound is modifying what other part. In the following, *software maintainability prediction* is acting as an adjective phrase for *modeling techniques*.

2 Such studies would allow us to further investigate the performance of AVS in **software maintainability prediction**. Another interesting direction for future work would be to attempt to obtain more accurate **prediction models** by combining AVS with other ***software maintainability prediction modeling*** **techniques**.

But readers can only know this from background knowledge or with reference to earlier parts of the paper where these ideas were first introduced and ex-

plained in more concrete terms, i.e., with subjects and verbs, or perhaps with examples. This kind of explanation of terms is among the main functions of the Introduction and Related Work.

172 noun compounds: plurals within the compound

In English, adjectives do not normally take a plural form e.g. not *Two ~~reds~~ houses* but *Two red houses*. So, since the elements to the left of the head noun in a noun compound are, strictly speaking, adjectives, we do not normally write them as plurals even when the "adjective" might normally be a countable noun and may refer to more than one item.

Consider the compound *reference point selection*. As we can see in the following example, more than one reference point is being selected yet the compound in the subheading still reads *point*, not *reference points selection*.

1   3.3 **Reference point selection**
One important issue in our acknowledgement scheme is ***how the reference points*** are selected.

Again, whether this selection process involves selecting just one point or many, the fact remains that in this noun compound *point* is acting as an adjective and English does not (normally) pluralize adjectives. If we do wish to say *points* (plural), our options are to write the subheading as a noun phrase. The noun phrase would use some preposition (often *of* or *for*) with the *-ion* noun or the verbal element would use the *-ing* form[1]: *Selection of reference points* or as *Selecting reference points*.

2   A minimum of 24 GPS satellites in orbit above Earth are tracking GPS signals and at any point on Earth users can receive at least **six satellite signals**/*signals from at least six satellites*.

We do sometimes encounter phrases such as *biometrics research*, but in these cases *biometrics* is not a plural of *a biometric*. Rather, it is simply the name of the field, just as we say *mathematics*.

173 noun phrases: what is a noun phrase?

A noun phrase is a word or group of words that has the potential to act as a subject in a clause. Noun phrases can be made up of just one noun or they can be multi-word groups of different word classes (adjective, noun, etc.). And they can adopt the role of either subjects or objects.

1   Surrogates **[subject]** cache only the most popular content **[object]**.

Noun phrases can be grammatically complex. That is, they can be constructed

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1 In terms of meaning, the practical difference between a noun phrase and a noun compound in science writing is that the noun phrase form typically (as in this example) indicates *a generalized activity* while the noun compound form indicates *an abstract concept* or *construct.*

out of other elements of a clause (see Table 26). In the following example, the noun phrase that is the subject of the clause is constructed by adding a comple-ment, *of this problem,* to the noun *instance.* The object noun phrase is construct-ed by adding a relative clause, *with a single server at the root* to the noun *topology.*

2   One special instance **of this problem** is a tree topology **with a single server at the root.**

It is common for noun phrases to be embedded inside other units of the clause, such as a prepositional phrases. In the following, the noun phrase is *this paper* is embedded in the prepositional phrase *In this paper.*

3   **In this paper**, we address a range of issues related to mobile-agents.

A noun phrase that is made up of entirely of words that are normally regarded as nouns, e.g., *data warehouse settings,* is called a *noun compound..*

4   Finally, commercial DBMS products such as Oracle also apply compression in **data warehouse settings**.

Noun phrases can be participle clauses, i.e., they may begin with a present par-ticiple (in the following, *allocating*).

5   **Allocating weights** provides a straightforward way to distinguish between query topics.

Noun phrases can also be non-finite clauses beginning *to* + verb.

     Example 1
6   **To execute a join in the compressed domain** required a transient decom-pression.

Note that when this kind of *To* noun phrase appears in subject position it can at first look like a subordinate clause, i.e., (*In order) to.....* This is a good reason to avoid them as the subject of a sentence. One way to do this is to signal the noun phrase by using *The.*

     Alternative 1: different wording
7   **The execution of a join in the compressed domain** required a transient decompression.

174 noun phrases: cohesion, repetition, reference, omission

Cohesion requires us to choose effective sentence themes and apply the given-new principles. So it is a basic writing skill to be able to place given information in given position. But it is essential that readers be able either to recognize given information as in fact given—e.g., mentioned earlier—or they must be able to understand how it is related to what was said earlier. In sum, readers need to be able to see how noun phrases refer to each other across the text. To do this, writers should

1. Use words consistently

2. Use acceptable synonyms

3. Be able to effectively use *it, this, these, they, such,* etc., both as pronouns and adjectives

Consider the noun phrase *this relationship* in the following example.

1 The width of an object's surface **corresponds to** the phase information. **This relationship [given]** is a function of the parameters of the imaging system. The following provides a mathematical model for measuring **the relationship** between the width, the phase, and the parameters.

The noun phrase *this relationship* is in given position, so readers know it refers to something in the preceding material

The adjective *this* tells readers where the given information was previously mentioned. In this case, *this* tells them that *relationship* can be identified with the idea of the entire preceding sentence. The word *relationship* is an acceptable synonym for *corresponds to* and also is repeated soon after in the same paragraph. In these ways, structural cohesion (given-new and theme-rheme) and lexical cohesion (repetition, substitution, ellipsis, reference, and conjunction) coordinate to provide a way for readers to easily recognize information as given and understand what it refers to. For an example of ellipsis, see Figure 25.

Table 26. Noun phrases: building a noun phrase around a head noun

A useful reference + for software developers + who want to measure the usability + of their products

Adjective	a useful (reference)
Complement	for software developers
Relative clause	who want to measure the usability
Complement	of their products.

The head noun in this noun phrase is *reference*. It is built up into a long noun phrase by using an adjective (in front), and a relative clause and complements (behind)

175 noun phrases: adding information to nouns

Noun phrases may be long and complex. This complexity is created as we add more information to the head noun of the noun phrase. The head noun of a noun phrase can be modified on the left or on the right.

The following example contains both a subject and an object noun phrase. The head of the subject noun phrase is *list*. It has been modified—i.e., information about the head noun has been added—only on the left, with a series of adjectives, resulting, usability, and metric.

1   The resulting usability metric **list [subject]** provides ***a useful reference*** for software developers who want to measure the usability of their products. **[object]**

The head of the object noun phrase is *reference*. It is modified on both the left and the right. On the left it is modified with the adjective *useful*. On the right, it is modified with more information about the head noun, in the forms of complements and a relative clause.

176 outline: of an introduction

See Introduction Stage 4: the outline

177 overviews: section overviews

Any section or subsection of a paper that has multiple subsections can have an overview that lets the reader know the content of the section, its order of appearance, and its purpose.

Section overviews help readers find information faster and read it more accurately. They also help writers produce material that is relevant, complete, and logically grouped.

Any particular Section overview at the top level (i.e. 2.0, 3.0 and so on) should always refer to corresponding material from Stage 3 of the Introduc-

tion—that is, the paragraph that begins *In this paper*—and should use the same words.

Sections should be parallel with following subsections. So one of the first concerns should be that all the words used in a section overview should match the words in all of its following subheadings.

Thus, if the overview for Section 2 says that Section 2.2 talks about *naïve kernel methods,* then the heading for Section 2.2 cannot be *KCPA and its acceleration.* It must be *Naive kernel methods.* In the following example we see that the use of the word *define* in the overview is matched in the corresponding heading *Definitions.*

1   **3 Implementation of the Evolutionary Bargaining Model**
    In this section we first **define** some basic terms, and then describe in detail the implementation of the bargaining process, the bargaining protocol, and the bargaining strategy.

    3.1 Definitions

178 overviews: contents

An overview is a convenient place to provide background that is common to multiple following sub-sections or to provide a justification of the following material. For example, an overview might tell us in advance why certain methods are the best for solving a particular problem or are most suitable in the proposed design. It might say why the authors deal only with this material and not something else that readers might have expected.

An overview might provide pertinent material such as brief definitions, explanations, limitations, or assumptions that are important but do not warrant their own sub-sections.

Overviews are specific. The following are not effective overviews, largely because they are not specific. Concepts and methods should be named. Items should be enumerated.

✗   In the following, we use the above model to analyse the aforementioned distributions.

✗   In this section, we present how we address the issues listed in the previous section.

179 overviews: the simplest way to write one

The simplest way to write an overview is just to start with something like *In this section we* + verb… e.g., *describe*, and to continue in that way—*In 2.3 we compare*..... Mention every subsection at the next layer of headings, discuss each in order and use the words from the relevant subheadings.

> Figure 24. Paragraphs: topic statement + support

There are two methods that are commonly used to encode to live video broadcasts, Constant Bit Rate (CBR) encoding and Quality-based Variable Bit Rate (QVBR) encoding. **CBR encoding permits the specification of a desired** average bit rate and an appropriate buffer size. The bit rate will fluctuate throughout the stream but these fluctuations will be limited by the size of the buffer. **QVBR encoding permits the specification of** a desired quality setting (between 0 and 100), During encoding, this bit rate will fluctuate according to the complexity of the stream. **A higher bit rate is suitable for** detailed or high speed content while **a lower bit rate is suitable for** less complex content.

Parallelism and consistent word choices: The support is a good match for the topic statement. The themes develop through split progression.

180 overviews: updated with the paper

Overviews should be used from the first draft and updated and developed as we write. Initially, we simply describe what can be found in each of the planned following subsections and then add to and change that as the paper changes. Finally, we check the overview against the final content before submission. The content will be focused and relevant.

181 overview paragraphs: general advice

1 Use the passive voice appropriately

Negative example 1: trivial rheme
✗ **Two mutations of reorganisation, one using the exponential decay function and the other using the naive estimator,** are described in this section.

Rewrite 1
2 ***This section*** describes two simulations of reorganisation, one using the exponential decay function and the other using the naive estimator.

2 Use verbs that refer to observable activities

Rather than simply telling readers that we are going to *address problems* and *consider issues* or even *investigate, study,* or *research*, we should use verbs for specific activities, such as *measure, compare,* or *collect*. In this respect, the following example is too vague. What does it mean to *investigate in a quantitative way*? Is it to *measure*? What kind of observable activity is it to *relate*? Is it to *compare*? And what the *other considerations*?

Negative example
✗ In this section, we investigate the correlation between different spectra in a quantitative way and relate these to other considerations.

Figure 25. Paragraphs: organized with signalling nouns

Goal reaching is a common autonomous robot navigation **task** that involves giving a robot a goal or target. The robot then attempts to achieve the goal or navigate to the target autonomously while avoiding any static or dynamic obstacles in its path. One common **approach** to this **problem** is heuristic goal reaching, which combines planning and tracking [2, 3]. An essential **precondition** for the application of heuristic goal reaching is the possession of adequate prior knowledge of the environment to be traversed. This raises some practical **difficulties**. **One is that** for many advanced and high-value tasks, prior knowledge about an environment is often incomplete, uncertain, imprecise, or simply unobtainable. **Another is that** real-world environments are also often dynamically complex and unpredictable [7]. **And another is that real-world** robot tasks, for example, deep water exploration, are typically real-time and non-repetitive.

The abstract signalling nouns in this example clarify the staging of the discussion. Note how after the first use, the noun *difficulties* is repeated through omission (ellipsis).

182 **paragraphs**

A paragraph is a series of sentences focusing on one topic or, in a series of paragraphs, on one subtopic. Paragraphs are surrounded by white space, which makes the beginning and end of the paragraph more visible and facilitates scanning and identifying the topic of the paragraph and the main point it is making. Writers exploit white space by applying a general-to-specific, topic + support paragraph organisation.

183 **paragraphs: topic statement + support**

One simple and useful way to think of a research writing paragraph is that it is made up of a topic statement + support. The topic statement is usually the one or two sentences that occupy the beginning of the paragraph, where it is clearly visible after the white space. Readers use the topic statement to infer the purpose, content, and organisation of the paragraph.

The key content and organisation words of the paragraph should appear in the topic statement. This makes it easy to scan the paragraph to determine its connection with preceding and following paragraphs, to identify its content, and predict how it might develop.

The topic statement must be supported in the rest of the paragraph. Support might include examples, explanations, reasons, descriptions, proofs, details, arguments, and references. The paragraph may end with an opinion, a list, or examples. The beginning and end of the paragraph may match in the words they use or may match logically.

The topic + support pattern makes it easier for readers to scan for information and improves comprehension because it allows them to process what they read as they read it, matching supporting details against the generalization in the topic statement. It is also faster and easier for writers to use a simple, stand-

Figure 26. Paragraphs: content words

It has been our experience that a proliferation of **pegs** on the flat surface of the platen can confuse users as to where and how they should place their **palms**. We deal with this first by illustrating the platen with a simple outline image of the left/ right hand that serves as a guide but the design also uses only three **pegs** (Fig. 3.2): one large triangular **peg** to separate the **middle** and **ring fingers** and two **pegs** that separate either the **middle** and **index finger** or the **ring** and **little finger**, depending on whether the right or left hand is placed on the platen. Together, these features create a stable **palm**print alignment positioning mechanism with an interface that users find simple and easy to use.

Content words. *peg/platen* and *palm/finger (index, middle, ring, little)* are the content words here because they represent the domain of the discussion, i.e., the objects or activities that the paragraph is about. Cognitively, this is a problem-solution paragraph. Keys words in the topic statement that signal this pattern are *proliferation*, which has a negative connotation, and of course *confusion*. The 'solution' words in the final sentence are obviously *simple* and *easy to use*.

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ard framework and this pattern is easy to check for completeness and coherence. Figure 24 shows a paragraph from a methods section. The topic statement's promise of content and organisation is clearly fulfilled in the supporting content.

184 paragraphs: topic statements: too general

Topic statements are typically generalizations but the generalization should not be so broad that it has no value. All of the following statements are too general to be useful.

- ✘ There are several areas of new research that can provide substantial improvement in several respects.

- ✘ Technology has been playing an indispensable role in the development of humanity for centuries.

- ✘ Nowadays, HCI plays an increasingly important role in many aspects of day to day life.

- ✘ Constructing an ontology is a challenging task that impacts on several issues.

185 paragraphs: topic statements: hedging

As a generalization, a topic statement is often hedged: that is, language is used that signal the writer's degree of commitment to the generalization. Adjectives and adverbs like *current, main, important, serious, typical, common, considerable*, number words like *several* and *a number of,* and modal verbs like *may, might, should* may be used to avoid making too-definite, easily-refuted 駁斥 statements.

1   There are four **main** drawbacks to the way that changes in API components are currently documented.

2   A **common** approach to implementing the adaptation of services at the gateway proxy is to....

Figure 27. Paragraphs: enumeration

The approach in this paper has drawn from **four other areas of research**. **First**, it has taken advantage of the large body of work, spanning more than three decades, on extensible and modular languages as represented today in projects such as ArchJava, AspectJ, and LXWB. **Second**, we have benefited from the many meta and generic modeling environments that have recently emerged and now provide the technical ability to make feasible many of the syntactic capabilities of the proposed XML-based infrastructure. **Third**, there is the basis of previous research in ADL that gave us XML-based ADLs such as ADML and xADL 1.0, two first-generation ADLs which had some limited extensibility. **Finally,** our approach can and should be compared with APUML, nowadays often put forward as an architecture description language.

Enumeration to support organization as a list. The value of this simple technique for signalling cognitive patterning should not be underestimated. Each item in the list is quite dissimilar and difficult to render in parallel. Without enumeration, we would have to scan and re-read this paragraph a number of times before we recognized it as a list.

186 paragraphs: abstract nouns: signalling nouns

Along with other language features, signalling nouns can help us to interpret the broad purpose of a paragraph and follow a discussion more easily. They may appear in a topic statements, where they can characterize the following content and help readers predict how the paragraph may develop.

1   The most effective recent **improvement** in the area of DoS attacks has been...

But they may appear throughout the paragraph as well and have a strong organizing influence. In Figure 25 the topic of the paragraph is clearly "types of *goal reaching* but the words *goal, task, approach,* and *precondition* guide us through the discussion of different types of goal-reaching while the abstract noun *difficulties (one, another, and another)* signal a series of problems that must be faced in the goal reaching *task.*

187 paragraphs: content words

Content words tell us what things or activities the paragraph is 'about'. They may first appear in the first or two of the paragraph, where they are easy for the reader to see. They may then appear throughout the paragraph, like the words *peg* and the words related to hands, *palms, index, middle, ring,* and *little fingers,* in Figure 26

188 paragraphs: enumeration

Enumeration is a basic organisational feature of paragraphing in research writing and involves the use of numbers and number-like words e.g., *first, then, next, until, finally,...first, second, third, last,...one, two, three..., both, several, many, a number of, not only…but also….* Such words function in paragraphs to signal

Figure 28. Paragraphs in series: parents and children: keywords

3.2 Choosing CTU Parameter Values and Interactions and Identifying Conflcts

Failures in the CTUs may be triggered by parameters and their interactions. In this section we carry out three preliminary tasks: first, *we* **choose what parameters** to use for the CTUs; second, *we decide* **how many values to assign** to each parameter; and third, *we identify any potential the* **interactions and conflicts** *between these parameters and values*.

The CTU system parameters (factors) are configuration parameters and user input parameters. **We choose suitable parameters** for each by....

The number of values that can be assigned to any particular parameter is potentially very large. This is first because values for each parameter may be either specific values or combinations of values and...

Different **parameters and values may not interact or may conflict**. For example, the Brower parameter of the NGS cannot take on "Chrome" values when the Access parameter has "ISDL" values. This knowledge is used to decide...

Paragraphs in series. The series begins with a parent paragraph that provides the general topic and mentions all of the subtopics. Each child paragraph then develops one of these subtopics in turn. The pattern relies on parallelism. The subtopics/child paragraphs appear in the same order and using the same or similar words as in the parent paragraph.

---

steps, priority, and items in lists and to help maintain and emphasize parallelism. They are also used in series of connected paragraphs to signal continuing discussion of related parts of a topic.

Enumeration in the topic statement can suggest how the rest of the paragraph will be organized. The paragraph in Figure 27 is essentially just a list but would that be so easy to see without the sentence-initial enumeration? How would we recognize the organisation and purpose of such an information-dense paragraph? Another example which strongly features enumeration can be found at *paragraphs: where to break up a long paragraph*.

189 **paragraphs: series**

While paragraphs in research papers are always single, meaningful units, at the same time they can also have a role in a longer series of paragraphs. In these cases, (Figure 28) we typically find the following.

1. A parent topic is presented in a first paragraph
2. Subsequent child paragraphs each developing a sub-topic
3. In each of the child paragraphs, the sub-topic is named in the first one or two lines.
4. Terminology is consistent across all paragraphs in the series

If a paragraph is functioning in a series, readers may be able to guess this from its topic statement. The topic statement may use enumeration to signal a paragraph's place or role of in the series, e.g., *First, Second, A third reason…,* or some phrasing that indicates a topical or logical link it to the preceding paragraph or to the parent paragraph.

Similarly, a paragraph that begins *Although, In addition, However, Similarly, Another way to…* is obviously building on an earlier idea.

Finally, keywords from the end of one paragraph may appear in the topic statement of the next as illustrated in the following example, showing the end of one paragraph and the beginning of the next.

1   If the sender does not receive the acknowledgement, the device will register that **the transmission has failed**. **[end of paragraph]**

[new paragraph] Upon learning of a **failed transmission**, the sender will repeat the process of transmission until it fails up to a maximum of…

190 paragraphs: where to break a long paragraph

Good places to break a long paragraph include

1. At a point of evaluation – when the author sums up the meaning of the preceding information
2. At a point of enumeration – *A second type of system is…*
3. At a subtopic
4. At a contrast or a change of logical direction: e.g., *although, however, despite*.
5. At a point where an abstract noun could be used to organize the paragraph
6. At the start of an example
7. Following an evaluating statement (Figure 29)

Consider the two paragraphs in Figure 29. They deal with just one topic—*our simulation*—and could have been presented as one long paragraph. However, the information is more readable as two paragraphs. The paragraphs break where the focus changes from *describing the four taxonomies* to *describing how the four nodes were built*.

We could also break the second paragraph at *For the third and final build*. But while this would highlight the most successful of the 'builds', the use of short, attention-grabbing paragraphs is not good research-writing style.

191 paragraphs: repairing incoherent paragraphs

Editors can sometimes fix poorly-organized paragraphs and it may be instructive to consider an algorithm for how this is done.

We begin by assuming that a paragraph does in fact have the potential to be coherent and thus has a topic and an argument. The basic task is to find the key content words, find or devise a topic statement using those words, and then use the remaining material in the paragraph to build reasonable supporting arguments.

What arguments we build will of course depend on our guess as to the purpose-for-writing. Part of guessing this involves identifying where we are in the paper. In other words, we look beyond just the paragraph and try to identify its role in the the context of the entire section or paper.

1 Try to match paragraph to context

1. For example, if the paragraph is in the Introduction, does it seem to belong there, and if so, does it belong in Stage 1, 2, 3, or 4? Is the paragraph in the Experiments? Maybe it is the setup paragraph. Does it discuss Results? Then is it describing and discussing a figure? Is it a comparison? What is being compared?

2. Does the section have a forecast? Try to match the paragraph to the sub-headings.

3. Do the sub-headings match the forecast? Do the words in the sub-headings match the following paragraphs?

4. Make sure the first lines of a paragraph immediately under a heading or subheading uses words from the subheading

5. Is the paragraph part of a series? Then the topic statement may use a text-organizing signal e.g., enumeration or perhaps an abstract noun (like *difficulties* in the phrase *Despite these difficulties...*) or it may repeat key words from the parent paragraph of the series, or if it is extending a topic, it may use content words from the end of the preceding paragraph

2 Find the topic statement

1. Is the paragraph upside-down? This is often the case in the writing of students, who may think as they write but then not re-write what they have thought. So we may find the topic statement at the end of the paragraph instead of the beginning.

2. Is the topic statement somewhere in the middle of the paragraph? Find the most general statement and put it at the start of the paragraph.

3 Devise a new topic statement

Does the paragraph contain no candidate topic statement?

Figure 29. Paragraphs: breaking up a long paragraph

Our simulation involved the construction of **four taxonomies**. **Three of the taxonomies** came from pre-existing NewsNet subtrees, Government, Sports, and Science while **the fourth** was a personal taxonomy made up of nodes of personal interest to one of the ontologists. **The first three taxonomies** contained between 120 and 150 nodes and **the fourth** contained 70, for a total of 450 **nodes**.

Each node was built three times. **For the first build** we used a "basic" query consisting of the title of the topic or a simple alternative. The intent was to produce a quick first "semi-automatic" attempt at describing a node. **For the second build** we used a "supplemented text" query that made use both of additional descriptive terms and of sample terms. The intent here was to simulate a richer text query that could use domain knowledge, as found in commercial rule-based classifiers. **For the third and final build** we used one or more "model" hubs and "best-ranked" authorities. (These and "model" pages are explained in detail in Section 3.2). **This last build**, combining text, samples, and authorities, provides the richest type of description in our simulation.

1. Look for the most common content word(s) in the paragraph. Place it/ them near the top-left corner of the paragraph. Can't find common content words? What about synonyms? No recognizable synonyms or associated words? Then we have reached a dead end. This paragraph may not be repairable.

2. If we find common content words, we may make a generalization about the most common of them.

   • Try using things that are commonly found in topic-statement generalizations such enumeration, abstract nouns, hedges and characterizations such as *common, typical* or *useful.*

   • Perhaps the paragraph is intended to introduce new content. Consider using *there is* or *there are*, or organize the content with an abstract noun or relational verb.

4 Identify the purpose/organisation of the paragraph.

1. Is it primarily a recount, procedure, explanation, list, or comparison? Is it talking about cause-effect, reason-result, the use of tools, or problems and solutions?

2. If the purpose is comparison, make items parallel, state acceptable criteria, use standard English comparison forms e.g., *more than, less than, faster, slower* and arrange comparisons for focus.

3. If the purpose seems to be to discuss causes, effects, reasons or results, use a suitable selection of verbs. Consider the given-new principles. Arrange sentences for focus.

5 Information order and chain of reasoning

Now that we have content and a generalization and a logical grouping, we check for cohesion and a coherent chain of reasoning.

1. Sentence themes will develop in one of four patterns, linear, split, constant, or hypertheme (a paragraph may combine them).

2. Consider the effectiveness of the uses of *it, this, these,* and *such,* both as adjectives and pronouns.

192 parallelism

Parallelism involves presenting information of the same type in the same order and using the same or similar words. Writers use parallelism to organize material and readers use it to predict and infer relations between content.

Parallelism operates at both text and sentence level and requires grammatical parallelism. At text level, it helps to give documents, sections, and paragraphs a predictable, hierarchical, and logically-grouped structure (See Figure 30). At sentence level, it orders, groups, classifies, and refers to the elements within sentences so that we can easily see similarities and differences.

193 parallelism: text level

Text level parallelism makes it easy to compare and contrast across sections or paragraphs. It involves consistency between

1. Overviews/outlines and headings/subheadings,

2. Headings and paragraphs topic statements, and

3. Topic statements and supporting content.

Text-level parallelism requires that content be discussed in the same order in which it is introduced and of course using words and terms consistently.

Consider Figure 30. The topic statement tells us that there are three machines learning paradigms and (immediately) names them. The paragraph then discusses them in the same order. The content of the topic statement and the supporting content are thus parallel.

This pattern is *split progression* and is often used in research papers to introduce a topic and subtopics, for example at the start of Related Work, where its predictable structure tells us what we are going to get and where we can find it.

Again, note that the three machine learning paradigms are all named in the topic statement. This is always done except when the concepts have very long names and it would be tedious (for the reader) if we named them all. In short, the following is wrong because all three paradigms should be named before they are discussed.

Negative example

✗ There are three machine learning paradigms that are currently employed to exploit unlabeled samples. <u>Semisupervised learning</u> [11], [54] methods involve automatic exploitation and...

Figure 30. Parallelism in a paragraph

There are three machine learning paradigms that are currently applied to exploit unlabeled samples: **semisupervised learning, transductive learning,** *and* **active learning. <u>Semisupervised learning</u>** [11], [54] methods involve automatic exploitation and the unlabeled and test examples are usually different. **<u>Transductive learning</u>** [40], [23] also involves automatic exploitation but in this case it assumes that the unlabeled and test examples are identical. **<u>Active learning</u>** [1], [34] is a type of iterative supervised learning that is applied where there is abundant unlabeled data but labeling is expensive. To minimize the number of queries required, the learning algorithm can actively query an oracle for the labels of specific instances

Three topics from the topic statement each in turn become topics later in the paragraph. Parallelism organizes the text at a level above the sentence. The pattern of development is "split progression" (See *theme: split progression*)

194   parallelism: sentence level

The example in Figure 30 also demonstrates sentence-level parallelism. The definitions of each of the three machine learning paradigms are consistent. Each definition makes use of maximally similar words, describes similar qualities or characteristics, and describes them in the same order.

Notice that the authors do not strive for variation in their word use. Three times the authors write *deals with methods that*. This repetition is in fact a positive, as it provides a consistent background against which differences are easier to identify.

Even when there are considerable differences between things, descriptions must be as similar as possible in their order, content, and wording.

Consider the following example. It describes two *signal reception approaches* which in many ways are different. Nonetheless, the order and content of the descriptions are consistent and, as far as possible, so are the word choices.

1   There are two basic signal reception approaches, ***the individual*** and the ***collective***. **In the individual approach**, individual nodes <u>receive complete signals from the base station</u>. **In the collective approach,** a collection of nodes within the signal area <u>receive partial signals from the base station</u> and then pool and reconstitute the original complete signal.

The consistent word choices and use of typical antonyms 反義字 helps readers to see that part of the discussion as a single unit with a single function. Thus, the verb *receive* is used consistently; *complete signals* are mentioned more than once; and *partial (signals)* is an acceptable antonym to *complete (signals)*. Without such consistent word use, it would be hard for readers to see in what ways these two approaches are similar and different.

195 parallelism: grammatically parallel

Parallelism involves describing things in similar ways so that any similarities and differences are easily discerned. This includes describing items in grammatically parallel ways even when the differences between them require different vocabulary. Grammatical parallelism minimally means that listed or compared items are described using the same

- Word class, i.e., nouns, adjectives, verbs, etc.
- Tense
- Voice, i.e., active or passive
- Mood, e.g. as directions (the imperative), statements, or questions

For example, the following lists *two major issues related to VSM*. The two issues are very different, so it is not possible to use exactly the same vocabulary to talk about them. Nonetheless, they are both items in the same list so they must be described in a way that is grammatically parallel.

1   Previous research has investigated two major issues related to VSM: **how** term weights **can be** transformed into a suitable vector space and **how** similarity scores **should be** normalized for different-sized document.

Thus in this example each *issue* is discussed as a noun clause and in each noun clause the verb group uses a modal verb and is in the passive voice—*can be transformed into/should be normalized for.*

In this way, through grammatical parallelism, we can highlight the similarities of otherwise highly dissimilar items.

Related: noun clauses

196 parallelism: fronting prepositional phrases

See fronting: prepositional phrases

197 parallelism: lists: punctuation

A list is a series of two or more similar items, including steps in a procedure or instruction. The similarity of items is emphasized by being written in a grammatically parallel way. Parallelism provides a way to check that each item in the list is in fact similar, and so belongs in the list, yet is also in some way different, so it is not merely repeating another item in different words.

A list may be in-text, that is, contained within a paragraph, or may be written as a vertical list using numbers or bullets. The following in-text list describes three outcomes of merging certain technologies. The three items are grammatically parallel through the infinitives encourage, improve, and make better use of. It is easy to see where each item in the list begins.

In-text list

1   Merging content and wireless communications in a wireless context would encourage access to DLMS, improve cooperation, and make better use of physical and digital resources.

Lists should be introduced. An introductory sentence may or may not be grammatically complete. i.e., make sense by itself. A complete introductory sentence ends with a colon (:) or a full stop/period (.) and the first word of each item in the following list is usually capitalized. There is no need for an items to end with a full stop, semi-colon, or comma—unless the item is a complete sentence, and then a full stop may be used.

Vertical list: introduced with a complete sentence

2   Merging content and wireless communications in a wireless context would offer three advantages:

- It would encourage access to DLMS.
- It would improve cooperation.
- It would make better use of physical and digital resources.

We may also introduce a list with an incomplete sentence. This is a bit more difficult as each item in the list should, first, complete the introductory sentence in a grammatically satisfactory way, and second, all items in the list must still be grammatically parallel. Such lists may be written with a comma or semi-colon (;) at the end of each item. The second-last item in the list ends with and and the final item ends with a full stop/period.

Vertical list 2: introductory sentence runs into the list

3   Merging content and wireless communications in a wireless context would

- encourage access to DLMS,
- improve cooperation, and
- make better use of physical and digital resources.

198 participles: present and past

English grammar refers to "present" and "past" participles. The present participles are the -ing forms of the verb, for example, going, building, arriving. The past participles are the forms used in making the simple past, such as went, built, and arrived.

Despite their names, the participles are less concerned with time or tense than they are with active and passive: the -ing forms typically reflect the active voice and the past participle forms typically reflect the passive voice (See *participles: as adjectives)*.

199 participles: range of functions

Participles are very common and do many different jobs: they can be used in verb groups, as adjectives, adverbs, and nouns. They can also can be used to form participle clauses, where they act like either relative clauses or like adverb (subordinate) clauses. The following examples give some idea of the great frequency and variety of participles (bold).

1   To make Eq. (12) more discriminative, all statistics are **calculated [past participle]** on appropriate image blocks and the **resulting [present participle]** values of R are **averaged [past participle]** over the entire image, **yielding [present participle]** a global score.

2   Figure 5 shows the markings **representing [present participle]** the inference **drawn [past participle]** from the example.

200 participles: in tenses and the passive

To form the simple past tense, we use past participles.

1   Kamvar et al. **proposed [simple past]** an EigenTrust algorithm that...

To form perfect tenses, we combine *have* and past participles.

2   This work **has proposed [present perfect]** an efficient method for identifying...

To form progressive tenses, we combine *be* and present participles.

3   Note that we **are not proposing [present continuous]** here any kind of UML extension. Rather...

To form the passive voice, we combine *be* and a past participle.

4   An improved non space-filling algorithm was **proposed [passive voice, past tense]** by Tan et al.

201 participles: as adjectives: after be, become, seem, appear

Participles can be used as adjectives after verbs such as *be, become, seem,* and *appear.*

1   It **is interesting** that the difference is not statistically significant on the smaller dataset but is on the larger.

2   This problem **is challenging**.

3   This **is not surprising**, since KT is a density-based algorithm and so tends to discover places with a higher density of GPS readings.

202 participles: as adjectives: before and after nouns

Participles can be used as adjectives both before and after nouns.

1   **Several improved K-means algorithms** have been developed in recent years.

2   To make Eq. (12) more discriminative, all statistics are calculated on appropriate image blocks and **the resulting values of R** are averaged over the entire image, yielding a global score.

When used after nouns, participles are like relative clauses.

3   The handles **discussed in Section 3.4** are not only able to uniquely identify...

In general, participle that are used as relative clauses in this way (to identify the noun as "which one") are not used as adjectives in front of a noun. Thus we would not say *the considered work* or *the discussed paper*. On the other hand, we can use them in this way if they are modified with an adverb. So may say *the above mentioned, a well-studied, a well-known, a much-discussed,* etc.

These rules of thumb are not 100% reliable. For example, even though it is not modified with an adverb, we also frequently say *the preceding/following discussion* as in the following.

4   However, the fact after each run KT discards as noise all points that were not added to a cluster leads to **the following situation.**

Finally, sometimes a participle will have different meanings before and after the noun. For example, *involved guidelines*—are not "guidelines that are involved in something". Rather, they are "*guidelines that are complicated*". Similarly, a *considered opinion* is not merely "an opinion that has been considered" but rather is one that one that has been thought through *carefully*.

203 participles: -ing forms as nouns

The *-ing* forms of verbs are commonly used as nouns referring to some type of activity or procedure in general. Such participles may occur as subjects.

1   **Finding** a suitable closed form expression **[subject]** is difficult, but it is possible to compute them numerically for different values of h.

They also commonly occur after prepositions, in the following examples, after *of* and *for*.

2   Manufacturing in these industries relies heavily on specific sequences **of** development, **testing**, and verification.

3   The cue **for identifying** a location is a significant weakening of the GPS signal.

They occur as the complement of a verb.

4   This kind of link generation involves ***creating*** new links adaptively in response to user activities.

204 participles: relative clauses

Participles are very commonly used in reduced relative clauses, both defining and non-defining.

1 Defining relative clauses

1   Figure 5 shows markings **representing**/*that represent* the inference drawn from the example in Fig. 4.

2   Each of the three indexes **evaluated**/*that were evaluated* in these experiments provides a unique measure of fusion performance for all MS bands.

2 Non-defining relative clauses

1   The idea of access rights, private, public, and protected, grew out of data abstraction research, **discussed**/*which is discussed* in the following section.

205 participles: present participle clauses

Present participle clauses—verb + *ing* + noun phrase—are adverb clauses that have no subject, conjunction, or preposition.

1   In the second phase, a cutoff criterion is applied to to the transformed adjacency matrix, **dividing it into two block matrices corresponding to two subgraphs**.

Adverb clauses of this type are common in research writing, in particular in procedures, where they signal that events or actions in the participle clause and the main clause

1. Occur or are carried out simultaneously
2. Occur or are carried out one after the other (in steps)
3. Have a cause-effect relationship

1 Two actions occur or are carried out simultaneously

The actions or events in the participle clause and the main clause may be simultaneous. This usage does not in fact occur in the corpus for this book but the pattern is as follows.

1   **Going** out the door, **[one action] he said** he would never return. **[simultaneous action]**

More commonly, simultaneous actions or events are signalled using words such as *while, at the same time,* and *simultaneously*

2   **Holding down the Alt key while depressing F4** closes the current active window. If there is no active window, this opens the Shut Down dialog box.

2 Two actions with the same subject occur or are carried out one after the other

The relationship between the participle clause and the main clause may be one of chronological sequence.

Example 1
1   **Extracting the watermark information**, **we** scale it down and embed it in the x-coordinate of the original mesh.

Alternative 1a
2   **We first extract** the watermark information **and then** scale it down and embed it in the x-coordinate of the original mesh.

Alternative 1b
3   **After extracting the watermark information**, **we** scale it down and embed it in the x-coordinate of the original mesh.

3 Two actions with the same subject have a cause-effect relationship

The relationship between the participle clause and the main clause may be cause-effect or reason-result. In the following example, the relationship is reason-result.

1 Nonetheless, **believing that the results are of interest to the wider community**, **[reason] we** have made the complete dataset available at htttp:/www.datamate.org **[result]**

206 participles: misrelated

When a sentence begins with a present participle clause (an adverb clause), the participle clause may not have its own subject. It may instead share the subject of the following main clause.

In the following example the adverb clause beginning believing has no subject of its own but we assume that it is we as that is the subject of the following main clause

1 Nonetheless, **believing that the results are of interest to the wider community**, **we [shared subject]** have made the complete dataset available at htttp:/www.datamate.org

In general, it is a mistake—a 'misrelated participle'—if the adverb clause has a different subject from its main clause or if the subject of the main clause is not in initial position.

However, some misrelated participles are in fact quite common and acceptable, specifically, when the adverb clause is

1. A set phrase or well-known pattern of words, or
2. The participle signals a logical condition, e.g., *assuming, given, depending on, provided, supposing,...* or
3. When the following clause begins with preparatory *it*.

In all of the following, the subject of the main clause (underlined) is not the subject of the adverb clause (bold italics) yet all of these sentences are nonetheless acceptable.

2 **Generally speaking,** larger XML documents fragment more slowly.

3 **Comparing the time taken by the two strategies**, Packetization with Reduction is more expensive than Packetization without Reduction.

4 **Bearing in mind the reasons for the previous restrictions**, it is possible to stipulate that...

5 **Taking STRIKER as an example**, setting n to 9 reduces the average tuning time by 10 percent lower for all three indices.

207 participles: concerning, considering and regarding at given position

Adverb clauses such as those beginning *concerning, considering* and *regarding*—and *with reference/regard to*—introduce given information. They should not be used to introduce a new topic. The following example is faulty in two ways. First, the noun compound that makes up the subheading is not really a concept, it is just an activity and is not transparent written this way (see *noun compounds vs noun phrases).* Second, and more to the point here, phrases of the type mentioned above are not used to introduce a fresh topic. Rather, they are used to *re-introduce* something that was introduced earlier, perhaps in an overview

Negative example 1

✗ 3. Formal Specification Derivation
   Regarding the formal specification derivation, the greatest potential for improvement is in the atomicity of the UCE transitions.

Rewrite 1

1 3. Derivation of formal specifications
   The greatest potential for improving the formal derivation of specifications is in the atomicity of the UCE transitions.

208 personal pronouns: I, we, our etc: establishing contributions

Writers are commonly advised to avoid the use of personal pronouns in their reports, in particular *I* or *we.* The rationale is that this will make their writing appear more "objective".

This advice is only half correct. While it is usual to avoid the word *I,* on the other hand it is also true that researchers write research papers in order to establish their contribution to a field, i.e., to say they have done something novel and distinct from what others have done. The contrast between *us* and *them* is thus an important feature of a research paper and requires researchers clearly distinguish between *our work* and *other work.*

Ultimately, to help readers contrast our contributions with the work of others, we must use *we, us, our,* and *ours* and phrases such as *the proposed work,* and *this research* (meaning *"our research").* To signal the work of others we say *they, their, the authors* (meaning, in context, *"other authors").*

If we do not use these kinds of words, readers will regularly wonder, "Is this sentence or paragraph talking about what the authors did or is it what someone else did?" The following recount clearly reports what we did, putting the focus on what in fact happened or was done and on who did it.

Recount

1 **We calculated** the chromatic values by transforming the sRGB color space into the standard CIE color space.

The following rewrites the same sentence as a procedure, saying *how* something

is usually, typically, or ideally done. In a procedure, personal pronouns are usually not needed.

Procedure

2   **The chromatic values are calculated** by transforming the sRGB color space into the standard CIE color space.

Related: text-types: procedures; text-types: recounts

209 personal pronouns: solidarity we

Sometimes *we* is used to refer not just to the authors but also to talk about the authors and the readers together as people having something in common, usually as researchers in a field.

1   While more landmark nodes can tighten the lower and upper bounds, as *we* can see from the discussion in Section 3.3, the number of...

210 personal pronouns: we in the Results

Writers sometimes make great efforts to avoid *we* in some parts of their papers but then overuse it in the Results. The most common overuse involves creating long themes starting *As we can see in Fig. 2,...* when they should begin simply *Fig 2 shows...*

Phrases such as *As can be seen* and *As we can see,* are not just normal ways to introduce a graphic but in fact point to support for a knowledge claim. (See *Results-discussion: As Fig 2 shows...etc.*)

1   The improvement of PKF over CPA becomes more obvious when more features are used **[knowledge claim]**, **as we can see** from the Airplane data set (Fig. 3e). **[evidence in support of claim]**

211 personal pronouns: you and one: everyone and no one in particular

In formal contexts, *one* is used as a non-specific personal pronoun.

1   After partitioning a graph, **one** locates the boundary nodes and computes all shortest paths between every node.

The pronoun *you* can be used in a similar but more familiar way.

2   Hypotheses state, in operational terms, exactly what **you** think will happen in a particular study [90].

212 personal: gender-neutral references: users, people, he/she, s/he

English does not have gender-neutral third-person pronouns that can be applied to human beings but it is now out-of-style in English to use *he* and *him* to speak of people in general. So what strategies do we have for this purpose? There are a few. One is to use a plural form such as *people* or, in context, *viewers, shoppers, experts, commuters, consumers,* etc. Often, users is a good non-specific choice.

1   **Users** can present **their** credentials....

2   Although **a single user** might *unintentionally* send a message to all addresses in **their** address book, such events are rare.

Writers sometimes use *he/she* or s/*he* but these are not easy to to read and should be used sparingly. In the following example, *his/her* is used because it is a direct response is to a single reviewer and so the plural forms *(they, reviewers, etc)* are not appropriate.

3   We thank the reviewer for **his/her** helpful suggestions. The following responds to each of **the reviewer's** comments in turn.

Note however, that the writers avoid *his/her* when they can. In the second sentence, they use *the reviewer* to avoid *him* or *her* and *his/her* as well as to avoid directly addressing the reviewer as *you*.

213 personal pronouns: avoiding I and we

Research papers in computing typically have group authors so the need to use the word *I* does not often arise. On the other hand, dissertations do have single authors. But it is still not normally acceptable to use *I*. One way to get around this problem is to refer to oneself as *"This author..."* but this quickly becomes tiresome. The following describes some other ways to avoid the subject *I*.

1 Avoiding *I*: identify yourself with the work e.g. *This research...*

For example, we can say: *This work, This paper, The present work, The proposed method, Chapter 3, etc,...*

1   **The following section discusses** the results and compares the positioning accuracy under three typical channel allocation schemes.

2   The K-Nearest Neighbor (K-NN) algorithm requires two sets of data. The first set of data is the samples of RSS from N APs in the area, **which this paper refers to as** the sampling vector. Eddie thesis.

3   **This thesis makes** four major contributions.

4   **This section summarizes**.....

Figure 31. Problem-solution vocabulary (1)	

A point-to-point data access approach is well-suited to systems where there is less competition for bandwidth and server resources. **However,** the overall system performance can **deteriorate** quickly with increases in the number of users or the system workload. In these circumstances broadcast [2], [5], [6] **is a more attractive option** as it **permits** simultaneous access by an arbitrary number of mobile clients **yet** does not **cause** interreceiver interference. A further **advantage is that** it **allows** clients to retrieve information from the broadcast channel without revealing their operations and intentions to the server and thus maintains the user's privacy

> Situation
>
> Problem
>
> Response
> (*broadcast*)
>
> Evaluation
> of solution

Problem-solution language comes in a varierty of forms: transitions, conjunctions, verbs, abstract nouns, adjectives: *however, deteriorate, attractive option, permits, yet, cause, advantage, allow*

2 Avoiding *I*: use the passive

1   The preset RSS value **is denoted** m and the interference strength value is denoted n.

3 Avoiding *I*: use abstract (stative) verbs like *allow* and *require*

The words *allow* and *require, involve* and similar abstract (stative) verbs make it easy to relate nominalized clauses. The following example is written purpose clause + main clause, and uses *I*.

    Negative example 1
✗   To determine R, **I first find** the midpoint M of the side BG then draw the line segment from W to M.

We can nominalize each clause (turn the clause into a noun) and relate them with a semi-causative noun, like *require*.

    Rewrite 1
1   Determining R **requires first finding** the midpoint M of the side BG and then drawing the line segment from W to M.

4 Avoiding *I*: use "preparatory subject" *it*

Using preparatory subject *it* involves using phrases like *It is (not) possible; It is (not) necessary; It is difficult to; makes it necessary/possible/hard to...*

    Example 1
1   Perhaps the function is smaller at M, but **I cannot replace** W with M because **I must have** a triangle.

    Alternative without "I"1
2   Perhaps the function is smaller at M, but **it is not possible to replace** W with M because a triangle **is required/it is necessary to have** a triangle.

Figure 32. Problem-solution vocabulary (2)

However, not only is it **impossible** to accurately estimate the time correlations (lags) between the tuples of different streams at application design-time, they also   vary significantly during runtime. Further, lags can also be **caused** by **unpredictable** stream rates that **lead to** processing delay. **A simple fix** such as incorporating a fixed time window in the join predicates **will not solve** the time lag **problem**. And in any case, join windows that can **accommodate** all the variations in time correlations tend to be large and **overload** the system. **The ideal solution would be to** develop a time correlation-aware load shedding framework for n-way windowed stream joins that could **effectively deal with** bursty stream rates.

Problem

Solution

Problem-solution language: *however, impossible, caused, unpredictable, lead to, simple fix, problem, will not solve, accommodate, overload, ideal, solution, effectively, deal with*

5 Avoiding *I*: use *there is/there are*

Negative example 1

✗ In the modified version of the algorithm (Fig. 5) **I have a flag** for each branch. If all the flags are true, the root node is regarded as output.

Rewrite 1

1 In the modified version of the algorithm (Fig. 5) **there is a flag** for each branch. If all the flags are true, the root node is regarded as output.

214 predictable/predictability

See readability is predictability

215 preparatory it

See: it: preparatory subject, it: preparatory object

216 prepositional phrases

See fronting: prepositional phrases; fronting: false starts

217 problems

The most important task that authors face is to establish their proposed contribution. This is done through a clear statement of the nature and scope of the problem they are addressing. This requires an effective Introduction, which is in effect the problem statement of a paper. The discussion of problems in this sense is largely found in the part of this book devoted to the Introduction.

Related: Introduction Stage 1: introducing the problem, Introduction Stage 1: what is a computer engineering problem? Introduction Stage 1: use "problem vocabulary" to signal and describe problems

218 problem (n): "problem" verbs 問題, 疑難問題

Engineering uses many verbs to talk about problems.

> 1 One major **problem** of the matched filter is that it **responds to** non-line edges as well as to lines. It is well known that **this problem also occurs** in other line detectors, *e.g.,* the Gabor filter and the second order derivative of a Gaussian function.

The following roughly categorizes the most common "problem verbs" used in computing.

- **problems exist:** *to be, are (to be) present (adj), exist*
- **problems manifest:** *appear, arise, exhibit, exist, happen, manifest, occur, pose, present* (This does not mean *exist.* It is more like *appear* as we say for example, "*problems present themselves*" or *"problems present in two forms"*), *recur, show up*
- **blame for/source of problems:** *introduce, cause, give rise to, pose*
- **become conscious of problems:** *discover, encounter, expose (are exposed), find, meet, reveal (are revealed* or *reveal themselves), run into, see*
- **take an attitude toward problems**: *address, avoid, circumvent (get around), confront, face, ignore, obviate, tackle, take on*
- **respond to problems:** *accommodate, cope with, deal with, fix, handle, resolve, respond to, solve, work out*
- **problems made or get better:** *alleviate, ameliorate, mitigate,*
- **problems made or get worse:** *add to, aggravate, contribute to, exacerbate*

219 problems: the problem-solution pattern: vocabulary

A pattern that is common at various levels of a paper is *problem-solution* or *situation-problem-response/solution-evaluation*. As shown in Figure 31 and Figure 32, the problem-solution pattern is supported with a great variety of vocabulary (for example, see the listing of verbs in Table 27).

- **adjectives and adverbs:** *impossible, unpredictable, ideal, well-suited, attractive, effectively*
- **connectives:** *however, yet*
- **abstract nouns:** *advantage, fix, option, problem, solution*
- **verbs—** *accommodate, allow, cause, deal with, deteriorate, lead to, overload, permit, solve.*

In this role, the cause-effect verbs are especially cohesive because not only do they signal cause-effect relations such as *reason-result* and signal *problem-solution* but, as a third function, they also verbs also signal how we should evaluate problems and solutions. For example, the connotation of *cope with* is of "only just"

Table 27. Verbs that refer to problems			
accommodate	適應; 相符	give rise to	引起
add to	增加	handle	對待, 處理
address	應付; 滿足	happen	發生
aggravate	加重; 增劇; 使之惡化	ignore	不顧, 不理會; 忽視
alleviate	減輕; 緩和	introduce	引進; 傳入; 採用[
ameliorate	改善; 改良	manifest	表明, 顯示, 表露
appear	出現	meet	對付, 應付;
arise	產生, 出現, 形成	mitigate	使緩和; 減輕
avoid	避免; 避開	obviate	排除, 消除
cause	導致, 使發生, 引起	occur	發生
circumvent/ get around	以智取勝; 規避; 防止...發生	pose	造成, 引起
confront	迎面遇到; 面臨; 遭遇	present/exist	出席的, 在場的
contribute to	促成	present (themselves)	出現; 呈現
cope with	競爭; 對付, 妥善處理	recur	再發生, 復發
deal with	應付; 處理	resolve	解決, 解答; 消除
discover	發現	respond to	對...有反應
encounter	遇到(困難, 危險等)	reveal (themselves)	揭示, 揭露; 暴露; 洩露
exacerbate	使惡化; 使加重	run into	偶遇
exhibit	表示, 顯出	see	看見, 看到
exist	存在	show up	出席; 露面
expose (are exposed)	使暴露於; 使接觸到 揭露, 揭發	solve	解決; 解釋
face	面臨; 勇敢地對付; 正視	tackle	著手對付
find	找到; 尋得; 發現; 碰上	take on	承擔
fix	修理; 校準; 整理;	work out	解決

handling a problem while, say, *deal with* implies that a solution was satisfactory.

Finally, note that while the overall pattern of the paragraph in Figure 32 is problem-solution, there are also smaller pairs of problem-solution and solution-evaluation relations within the paragraph as it criticizes a series of solutions to a problem that, we can assume, was discussed in a preceding paragraph. For example, the sentence beginning *In any case* contains a solution-problem pattern as does the sentence beginning *The ideal solution*.

220 procedure: text-type

See text types: procedures

221 prosody: semantic prosody

Semantic prosody is a phenomenon where a word—often an abstract word that has no real-world referent—has the potential to project a *positive, neutral* or *negative* meaning onto surrounding text.

Very often, such an abstract word will have both a neutral (or no) prosodic potential as well as either a positive or negative prosodic potential. Whether the reader recognizes a positive or negative potential is to some degree a matter of context (e.g., what other words are used) but just as significant are the alternative word choices that are available to the writer at that point in the text.

Thus, for example, if it is available to the writer to use the neutral reason-result terms *as, since, because, the reason for, is derived from,* etc, but the writer instead chooses *due to* or the cause-effect verb *cause,* then readers will assume that the writer rejected the other neutral choices in favour of the terms that carried negative meanings.

Similarly, in another situation a writer might choose neutral *obtain* rather than positive *achieve*. In the end, writers are using the semantic prosodies of words to emphasize that things are to be viewed as problems, solutions, advantages, disadvantages, and so on.

Two clear examples of this in engineering writing are the usually positive prosody of *provide* and the frequently negative prosody of *due to*, considered in the following articles

Related: connotation **Part 2:** due to: reasons, causes, and blame; take place. carry out, conduct, happen, occur

222 prosody: the example of provide

provide is usually associated with good things, as in provide opportunities, provide evidence, or provide what users want. These associations give it the ability to project a positive prosody onto things that otherwise might be seen as, say, inherently neutral.

In the following, it is obvious that *content descriptors* are good because they are described as *useful*, they can be *used*, and they *improve* things.

1   However, most modern enterprises have developed item ontologies that **provide_a useful body of content descriptors** that can be used to improve the quality of recommendations.

Nonetheless, even if we removed the "good" words in this description

2   However, most modern enterprises have developed item ontologies that **provide a body of content descriptors**.

the word *provide* would still be signalling to readers that *content descriptors* are to be viewed as "good" things. It would not be open to (存在…的可能性) readers to interpret *a body of content descriptors* as being problematic.

223 prosody: the example of due to

The commonly-used phrase *due to*—492/*mill.*—is not simply another way to say *because of.* Apart from having a number of other meanings (see its entry in Part 2), *due to* in its reason-result meaning is very commonly used to indicate 'blame for a particular outcome'. Thus in the following, *due to* assigns blame 指責.

1   ***Due to*** overlapping deadlines, it is not possible to participate in all auctions.

What is 'blamed' does not have to be something *intrinsically* bad. In the following example, the elements that are being blamed as the source of problems include things that are not in themselves negative, such as *increases in the number of users.*

2   Security management is becoming increasingly difficult, in large part ***due to*** increases in the number of users, protocols, applications, network elements, topological constraints, and functionality expectations.

224 readers: who are they?

Based on how the material is presented, the audience appears to be computer science students/researchers with a good background in mathematics and statistical methods. If this is not the intended audience, then much of this material is not adequately defined or explained.—Reviewer

The primary readers of a research paper are its reviewers but we should also consider the needs of other researchers too. These readers may be from a variety of language backgrounds and may not be experts in the specific area a paper addresses. They may not have a deep knowledge of the research agenda of the field, may not always be able to see all of the implications or the importance of the work, or may not assume many things which the author might regard as obvious or basic. In short, as the author of the above comment suggests, research writers cannot write in a way that presumes that the reader 'will know what I mean' or can 'work it out'.

225 redundancy

Research papers are highly redundant—i.e,. they repeat the same information in different places or using different words. Of course, this is largely because different information serves different purposes in different contexts. But there are also two very practical reasons for redundancy. First, redundancy supports an easy-reference format where various sections are more or less self-contained. Second, redundancy of content and terminology makes it easier to check for irrelevancies and omissions.

Redundancy is particularly obvious in the use of summaries and overviews and the frequent repetition of terms. For example, it is common, and in fact desirable, for the same material and words to appear a paper's title, Abstract, Introduction (especially Stage 3), Experiments, and Conclusion.

226 Related work: three types of Related Work

A paper might have as many as three related works, although only one—the one typically found at Section 2 —normally uses a heading such as Related Work or Literature Review. This is the type of related work that is the focus of the following material but for clarity and convenience all three types are first briefly described in the following.

1 The 'Related work' in the Introduction

The Introduction contains what is effectively a "related work" between the statement of the technical problem (in this book referred to as Stage 1) and the statement of the response to the problem (Stage 3). Its purpose is usually to critique previous approaches to the technical problem(s) and thereby identify and justify potential solutions. It does not, however, mention the proposed solution.

2 The Related Work section

The *Related work,* is found in its own section between the Introduction and the methods section. It explains and justifies the choices of tools, equipment, approaches, theory, etc. to be used in addressing the technical problem and related subproblems.

This related work may provide the reader with background needed to understand the tools or approach. It may and often does refer to the proposed solution and justifies proposed approaches to the problem, schemes, tools, methods, etc.

3 Related Work near the end of a paper

The third related work, sometimes called *Review* or perhaps even *Discussion*, immediately precedes or even takes the place of the Conclusion and may be seen in papers where it may not be possible to demonstrate a contribution experimentally. Such a review may compare the proposed work/solution with similar or related work, that is, with work having the same purpose, tools, methods, etc. The main goal of this type of related work is to support claims to novelty and to describe contributions.

227 Related work: the Related Work or Literature Review

The "second" Related Work (typically found as Section 2) is concerned with describing, explaining, and justifying the proposed solution to the problems outlined in the Introduction and the relative merits – advantages and disadvantages – of tools, methods, approaches, etc..

This Related Work describes what will be done, what will be used, how it will be used, and how the proposed method if different from or an advance on other work. The task is to provide readers with the background they need to understand the work and contribution, including its novelty. A good Related Work will help to create a self-contained paper.

The Related Work may introduce background theories and terminologies. It may introduce, describe, explain, or justify tools, methods, approaches, courses of action, schemes, frameworks, models, systems, algorithms, metrics, standards, criteria, etc. In doing this it may compare and consider alternatives tools, or methods. This may require the discussion of earlier work in the field and their tools and approaches. Its point of reference in the Introduction is Stage 3, and it is careful to repeat the terminology used there.

228 Related work: do all papers require a Related Work?

A paper requires a second related work if its justification of materials and methods is long or complex. If the methods are standard, obvious, or the only available, they can be explained or justified in passing, say in the Methods. On the other hand, if the Methods is constantly being interrupted to discuss the work of others, a separate Related Work section is needed.

229 Related work: give it an identifying name

The Related Work should be given a suitable name. Suitable names include *Related Work, Previous Work, Prior Studies, Other Work,* or *Literature Review.* Readers will immediately understand such traditional headings. Less clear are novel headings such as *Anonymous Networks Revisited*, *Other Evaluation Methods, Research Challenges, On a Variety of Models* or *Background and Preliminaries* .

230 Related work: organizing a long second related work

The Related Work may be short or long. In either case, it should be in its own section called, usually, Related Work.

If the Related Work is long, it can begin with an overview paragraph. If it is short and has no overview paragraph, it will very typically begin by generalizing about how much work has been done in the area, categorizing or classifying the work to be discussed, or characterizing the work to be discussed as important, limited, etc.

Figure 33. Related work: an explicit overview

2.Related work
B2B logistics management and electronic commerce systems commonly integrate computing and communication technologies and process and transmit digitized data using a relatively small selection of standard technologies. Section 2.1 describes the advantages and disadvantages of some of these, in particular, RFID, JavaServer Page, and JavaBean. Section 2.2 focuses on database and information storage issues. Section 2.3 describes currently proffered solutions to a well-known logistics management problem, the Vehicle Routing Problem.

An explicit overview of Related work: An overview to a Related Work should be provided when it decomposes into multiple subtopics that are not siblings. The overview then provides a venue for unifying them, to provide common background, explanations and justifications all at once. Overviews also help readers 1) find content of interest, 2) understand the perspective from which it will be considered, and 3) easily navigate to it.
   The overview in this example is needed because its Related Work brings together a variety of different types of information. The overview is explicit and reader-friendly. It provides Section numbers in sequence and the arrangement of themes is the familiar hypertheme progression. Readers can be very confident that the terms used in this overview will match those used later in the text.

---

231 Related work: the overview paragraph

Any long or multi-focused section of a research paper can begin with an overview paragraph. The overview orients readers to the content and organisation of a section. It lets the reader know why the material is important or relevant to the material at the immediately higher level of the paper's hierarchy.

An overview for the Related Work (see Figure 33) should use the same words that were used in the Introduction, in particular Stage 3, which is its point of reference. It should also use all of the words from all of the subsequent next level of subheadings, discussing them in the same order in which they appear. The following are not informative overviews.

✗   2 RELATED WORK
    In this section, recent advances in the research areas relevant to our work are briefly summarized.

✗   2 RELATED WORK
    We discuss the areas of work relevant to our problem and discuss potential techniques and their limitations in addressing the problem.

Related: overviews: contents

Figure 34. Related work: no overview

2. Related work

Texture synthesis is a widely studied computer graphics problem. Common texture synthesis techniques include the **patch-based** [6], [7], [8], **pixel based** [4], [5], and **global** synthesis [3], [9], [10], [11]. Patch-based techniques usually achieve a higher-quality synthesis than pixel-based methods but global techniques are the most manageable, especially when used in conjunction with an intuitive cost metric, and are therefore highly suitable for fluid texturing.

An important class of **texture synthesis** techniques relevant to our work are those where texture is synthesized directly over a 3D **surface,** that is, **surface texture synthesis**. The primary goals of this technique are efficient representation of the texture, neighborhood construction, and parameterization to allow search in the input texture.

Related work. An explicit overview is not needed unless there are diverse sub-topics. This Related work has one major topic, Texture synthesis. Readers expect that all subsequent sub-topics will derive from it. Although there is no overview, readers will also expect parallel development of topics through parent-and-child paragraphs. Readers will rely on this and explicit paragraph topic statements as they navigate and search the following content.

232 Related work: without an explicit overview

A Related Work does not need an overview unless it is long and has diverse, multiple focuses. The two paragraphs in Figure 34 are from the beginning of a Related Work. They reason they do not offer an explicit overview is because, rather than a variety of unconnected topics, the entire content of the Related work has just one major topic, *texture synthesis,* and (readers would predict) everything that follows will be a subtopic of that topic.

Nonetheless, note the paragraphs are carefully organized from general to specific (the first paragraph introduces the general term *texture synthesis* and then different types of *texture synthesis*).

Both paragraphs are also in parallel and exploit standard patterns of theme development. The first paragraph applies *split progression* and the second applies *linear progression* (where something from the rheme of one sentence or clause is picked up in the theme of the next).

233 Related work: tense: simple present, simple past, present perfect:

All three of the tenses simple past, simple present, and present perfect are used in the Related Work, where they signal different degrees of "relevance to the current work". In general, the simple past signals the least relevance to current work, the simple present more relevance, and the present perfect signals the greatest relevance. As the present perfect is closely associated with generalizations about previous work, we often find it at the start of a related work.

1   In recent years, a number of researchers **have worked with** off-line images and **have obtained** very promising results [7-10].

The discussion may then move to using the simple past to signal research activities as less relevant.

2   To obtain the line parts, [49] **made use of** data types in the form of...

The next step may be to signal increasing relevance with the simple present.

3   To obtain the line parts, [49] **makes use of** data types that...

Finally, the present perfect is used to signal research activities as highly relevant—positively or negatively—to the problem.

4   To obtain the line parts, [49] **have recently made use of** data types in the form of...

234 relative clauses

Relative clauses add more information, usually to a noun phrase but also occasionally to a clause.

1   Relative clause adds more to a noun phrase

In the following example the noun phrase is *an index*. It is linked to the following clause with a relative pronoun, *that*.

1   Inefficient querying arises because the traversing approaches of the tree structure do not provide **an index** that can be used for querying.

Different situations call for different relative pronouns, e.g., *that, which, where, who, whose, where, why.*

1   This approach increases the amount of information contained in the new feature space. This is **the main reason** why mixed attack types from the original feature space can be distinguished in the new feature space.

2   Relative clause adds more to a clause

Relative clauses can also add more information to a clause. In the following example, the relative pronoun *which* refers to the entire preceding clause.

1   **Our location datasets are made up of timestamped GPS readings,** which means that we can compute cluster features according to...

Note: *that* in *means that* is not a relative pronoun. It is a complementizer for the verb mean.

235 relative clauses: defining and non-defining

There are two types of relative clauses, defining and non-defining. Defining relative clauses define the noun phrase.

1　There is **some preliminary work available on the THAX project [noun phrase]** which attempts to generate these kinds of delta-queries [42] **[defining relative clause]**.

Non-defining relative clauses, in contrast, do not define the noun phrase. Rather, they simply add more information *about* the noun phrase. They are separated from the noun phrase with a comma.

2　**One possible approach,** which we quickly discarded **[non-defining relative clause]**, was to develop more specific propagation techniques for each pair of data models.

3　**The system,** which has been modified to seek optimal surrogates, can reduce data transfer costs

Related: Part 2: based on: indirect use; based on: grounds-conclusion

236 relative clauses: omitting the relative pronoun and auxiliary

Research papers are always dense with lengthy noun phrases often containing one or more relative clauses. In different circumstances, we may like to shorten both defining and non-defining relative clauses by omitting certain material, specifically, either the object relative pronoun or the relative pronoun + auxiliary.

Generally speaking, we write full-length relative clauses when greater clarity is required. The full clause aids comprehension first because it slows reading and second because, within reason, using more grammatical words clarifies the relationships between content words and phrases.

In contrast, a shortened relative clause can very often have more than one reading, so using the full form can avoid potential ambiguities.

However, we do not write all relative clauses in their full form as it would give every part of a sentence equal emphasis and make reading difficult and tedious.

In general, we should use full relative clause forms in the Introduction when introducing and defining new concepts and terms. We can reduce them thereafter as we need.

237 relative clauses: defining: omitting object relative pronouns

We can omit object relative pronouns from defining relative clauses. In the following example, *that* is not the subject of the verb *send*. The subject of send is *a web site*. So we can omit the relative pronoun *that*.

Example 1
1   Cookies are <u>small bits of information that a web site sends</u> to a web browser.

Alternative omitting relative pronoun
2   Cookies are <u>small bits of information that a web site sends</u> to a web browser.

238 relative clauses: defining and non-defining: omitting relative pronoun + auxiliary

Whether a relative clause is defining or non-defining, we can omit the relative pronoun + auxiliary verb group, e.g., *is, has been*. The following example shows *that is* being omitted from a defining relative clause, leaving just the past participle *contained*.

1   On the contrary, this approach increases **the amount of information** <u>that is *contained* in the new feature space</u>.

The following example shows how the relative pronoun + auxiliary verbs can be removed from a non-defining relative clause. Again, all that is left is the past participle *(modified)*.

2   **The system,** <u>which has been *modified* to seek optimal surrogates</u>, **[non-defining relative clause]**. can reduce data transfer costs

239 relative clauses: fronting reduced non-defining relative clauses

We cannot usually front a defining relative clause, reduced or otherwise. However, we can front a reduced non-defining relative clause. Consider the following. In Example 1, the non-defining clause is reduced and then, in Alternative 1, is fronted. The result looks very similar to a subordinate (adverb) clause and, indeed, there may be some overlap of meaning.

Example 1
1   The system, **which has been modified to seek optimal surrogates**, can reduce data transfer costs.

Alternative 1: with reduced clause fronted
2   **Modified to seek optimal surrogates, the system** can reduce data transfer costs.

There are some drawbacks to fronting reduced non-defining relative clauses in this way. First they can be read as subordinate clauses. This is an especially common issue where *Based on* has been fronted (See Part 2, *based on*).

Second, these kinds of frontings can create unnecessarily long themes. In

the following example, the fronted non-defining clause *Containing detailed information about the search engine's search interface* is too long for the beginning of the sentence and pushes *probe terms* to the end of a very long theme, so that it is distant from its previous mention. Cohesion is undermined.

Example 2

3   First, **probe terms** are generated using domain-related data. <u>Containing detailed information about the search engine's search interface</u>, ***these probe terms*** <u>were used to create tailor-made profiles for each specialty search engine.</u>

It would be much more cohesive to place *these probe terms* at the start of the sentence—as given information repeated from the preceding sentence.

Alternative 2: different order

4   First, **probe terms** are generated using domain-related data. ***These probe terms***, <u>containing/which contain detailed information about the</u> <u>search engine's search interface</u>, <u>were used to create tailor-made profiles for each specialty search engine.</u>

Related: Part 2: based on

240 relative clauses: where

See: Part 2: where

241 relative clauses: purposes of tools and methods

Relative clauses can be used after a noun phrase to describe the purpose of a tool or method—what it is for.

Example 1

1   NIST Net [12] is <u>a network emulator</u> ***that emulates*** <u>performance dynamics in IP networks.</u>

Here the relative clause is defining *NIST Net* as a kind of network emulator that is *for a particular purpose*. This similar to saying either of the following.

Alternative 1a

2   NIST Net [12] is <u>a network emulator</u> ***that is used for emulating*** <u>performance dynamics in IP networks.</u>

Alternative 1b

3   NIST Net [12] is <u>a network emulator</u> ***that is used to emulate*** <u>performance dynamics in IP networks.</u>

242 relative clauses: purposes of tools and methods: short forms

There are two short forms of the defining relative clause when talking about the purpose of tools or methods.

1. *for* + verb + *ing*
2. *to* + infinitive

These two patterns are applied under different circumstances and are not interchangeable. For example, we can say

1   NIST Net [12] is **a network emulator for emulating** performance dynamics in IP networks.

but it would not be correct to say

✗   NIST Net [12] is **a network emulator to emulate** performance dynamics in IP networks.

The criteria for choosing between these reduced patterns are summarized in the next article and as can be seen there, they are rather obscure. The main point to note about both of these ways to reduce defining relative clauses is that, unlike adverb clauses, they have no mobility and so cannot be fronted.

Example

2   **The authors** sought to establish an automatic strategy ***for selecting principal components.***

Negative Example

✗   For selecting principal components, the authors sought to establish an automatic strategy.

243 relative clauses of purpose: to + infinitive vs for + verb + ing

There are three conditions which determine whether a relative clause of purpose is reduced to, essentially, *to* + infinitive or *for* + verb + *ing*.

1 subject of the clause is human: to + infinitive

Example 1

1   A user **[human]** can create both standard and customized mobile auction agents **that bid** at the auction server.

Reduction 1

2   **A user** can create both standard and customized mobile auction agents to bid at the auction server.

Of course, this is a defining relative clause and thus cannot be fronted.

Negative example: complement cannot be be fronted

✗   To bid at the auction server, a user can create both standard or customized mobile auction agents.

2 subject of the sentence is non-human: for + verb + ing

1   Further, a querying system based on sentence retrieval and summarization **[non-human]** would provide <u>an adaptable testbed</u> ***for testing all of the above-mentioned techniques.***

    Full form of defining relative clause

2   Cognitive science **[non-human]** defines a schema as <u>a structure</u> ***that represents generic concepts in memory [1]***.

    Reduced form: for + verb + ing

3   Cognitive science defines a schema as <u>a structure</u> ***for representing generic concepts in memory [1].***

    Negative example: defining relative clause cannot be fronted

×   ~~For representing generic concepts in memory, cognitive science~~ defines a schema as a structure [1].~~–~~

3 subject of the sentence is human but the object is an abstract noun: for + verb + ing

    Full form of defining relative clause

1   The authors **[human]** sought to establish <u>an automatic strategy</u> ***that selects principal components.***

    Reduced form: for + verb + ing

2   **The authors** sought to establish <u>an automatic strategy</u> ***for selecting principal components***.

    Negative example: defining relative clause cannot be fronted

×   ~~For selecting principal components, the authors~~ sought to establish an automatic strategy.

In computing research, abstract nouns—like *index* in the following—are commonly followed by verb + *ing* to mean "that are used for".

1   This is <u>a vital index</u> ***for indicating*** whether the values return by the nonlinear function is chaotic or periodic.

244 relative clauses: with

See: with: defining relative clause

245 Results-discussion: general

The Results and Discussion reports the results of the experiments, explains why those results were produced, and tells us how they are significant. The clarity of the results-discussion very much depends on good paragraphing. The basic skills involve introducing, describing, and referring to data or observations—often presented as tables, charts, and images—making suitably hedged claims about, and explaining those data and observations and making clear and well-organized comparisons.

Figure 35. A results-discussion paragraph (1)

[Introduction] Table II lists the errors (type and number) detected by the framework in the student specifications. **[Observation]** The framework identified many errors that violate generic properties. Most common were strong preconditions, **[Explanation]** which is not surprising given that these frequently appear in specifications and are often not classed as errors.	Description Observation Explanation/ Significance

Results-discussion paragraphs are commonly organized in these three stages

246 Results-discussion: paragraphs that discuss figures and graphics

The Results-Discussion section usually features more graphics than other parts of a research paper and the clarity and cohesion of the Results-Discussion requires strong, clear links between the text and the graphics.

When a paragraph in the Results principally discusses a graphic, we should follow the pattern "name it, describe it, discuss it" or, more specifically Description, Observation, Explanation as in Figure 35 and Figure 36.

A particular benefit of this three-step pattern is that the topic statement introduces the words that will be needed later in the paragraph. This supports writers in paraphrasing and referring to these concepts.

1 Introduce the figure

To introduce the figure or graphic, we use the same words that are used in its labels and caption and refer to a relevant criterion.

Consider how the following example specifically names and describes *Figs. 8, 9, and 10*. While it creates a lengthy sentence, note that the theme of the sentence (underlined) is relatively short.

1   The plots in Figs. 8, 9, and 10 report the average composed process execution time obtained by applying the unfolding and peeling techniques as a function of the budget constraint.

In contrast, the following topic statement is ineffective as it neither refers to anything specific nor helps readers predict content.

✗   From the above results, the following points are worthy of note.

2 Make an observation

Make a generalization or observation about the data or results

3 Explain the observation

This explanation may (for example) give reasons for a particular result or may explain the significance of a result.

Figure 36. A results-discussion paragraph (2)

[Introduction] *Fig. 14 compares the overhead of the greedy and on-demand proxy discovery protocols on the HDR uplink. Recall that in the greedy protocol only one client generates a proxy application while in the on-demand protocol multiple clients independently generate proxy applications.* **[Observation]** The overhead of the on-demand proxy discovery on the HDR uplink is as much as seven times greater than that of the greedy proxy discovery. This overhead increases as the client density increases in response to increases in the number of candidate proxy clients. **[Significance]** Thus, although the on-demand approach provides significant gains in throughput over the greedy approach, these come at the cost of much higher overheads on the HDR uplink.	Introduction/ Background to comparison Observation Explanation/ Significance of the details

A three-step results-discussion comparison paragraph. Note the parallelism of the discussion of the two protocols.

247 Results-discussion: verbs for introducing figures, table, etc

The most common verbs for introducing a graphic are show and show that. show introduces something as a fact and show that introduces an opinion or interpretation.

1 **Fig. 6 shows** the recognition accuracies for PAI and PA-T10 for each subject using 12 training samples per symbol.

2 **Figure 7 shows that** Vv does indeed affect the performance of SpyB.

Other verbs that can also be used to quite neutrally introduce the contents of graphics include *present, provide, set out,* and *give.* In particular, tables can *list* and *rank* and sometimes *report,* charts and graphs *chart* and *plot,* diagrams, pictures and images *depict* and *diagram* and all of them *classify, compare,* and *illustrate.*

248 Results-discussion: As Fig 2 shows...etc

When introducing graphics or results, writers should choose themes that quickly brings readers to both the topic and the verb. So, unless there is some good motive for placing other material first in the sentence, the following style for introducing graphics is ideal.

Example 1: A short, compact theme
1 Table V provides the correlations between....

The following example, in contrast, has a slightly less compact theme.

Example 2: A less compact theme
2 In Table V, we provide the correlations between....

This less compact theme is not necessarily faulty. This type of theme is in fact

common. But usually it will have some textual function, such as emphasis or signalling a change of topic.

Similarly, prepositional phrases *As we can see in Table 3,...* or *From Table 3,...* typically point to support or evidence for a claim or opinion. Compare the following two examples.

3   **Fig. 6 shows** the simulation results for map postprocessing. [Fact]

4   **As Fig. 6 shows,** the processed map is more accurate than the unprocessed map. [Claim]

There is a great difference in the meanings of these two example. On one hand, *Fig 6 shows....* simply introduces the contents of the figure. On the other, *As Fig 6 shows....* points to support for a claim or opinion.

Such phrases sometimes also appear at the end of a sentence. In the following example, *as shown in Figure 3* has been pushed out of sentence initial by the phrase *Like contextual factors*, which thus has the main text-organizing role for the sentence.

5   **Like contextual QoS factors**, user satisfaction QoS factors are fuzzy variables and in this framework directly or recursively fuzzify user-oriented QoS parameters, **as shown in Figure 3**.

249 Results-discussion: unmotivated passive to introduce graphics

A common error of the long theme type occurs when writers introduce a graphic using the passive voice. This often violates the expectation that short precedes long and that the end of the sentence is where we can find items in focus, such as important information or opinions.

Consider the following example, where readers are required to read a twenty-word theme—with no idea of the intended point of the sentence—and then abruptly stops.

Negative example 1 (long theme, uninformative rheme)

✗   In Fig. 2, the performance (bit rate) in a real WLAN VoIP session using session adaptation but without header compression is illustrated.

This sentence should be written in the active voice, with a compact theme.

Rewrite 1

1   **Fig. 2 illustrates** the performance (bit rate) in a real WLAN VoIP session using session adaptation but without header compression.

In particular, we should avoid statements such as the following.

Negative example 2

✗   As we can see in Table 3, the results are listed.

The way that this statement begins, with an *as* statement, in fact suggests that it will be followed by a claim or opinion. However, we are surprised to find instead

that it isimply ntroduces an indisputable fact, that *the results are listed.*

Rewrite 2

2   **Table 3** lists the results.

250 Results-discussion: we phrases, note that, etc

We can use *we*-phrases such as *we can see that* to present readers with conclusions that they otherwise might not have reached or details they might have overlooked.

1   Fig. 6 shows the recognition accuracies for PAI and PA-T10 for each subject using 12 training samples per symbol. **We can see that** subjects 5, 6, and 10 all improved their accuracy by 4 to 5 percent.

Such phrases are *emphatic*. They should be used only as needed we should not clutter 使雜亂 sentence-initial position with so many of these phrases that it damages cohesion and readability.

Fortunately this kind of overuse is easy to edit out. In Figure 37, the paragraph on the left uses three *we* phrases at sentence initial in five sentences. Are so many needed? On the right, these phrases are all removed. Although we might have kept *note that*—perhaps the reader's attention was required on that point—the paragraph is much easier to read when we can quickly find and identify the true topic of each sentence.

Other ways to direct the reader's attention to some fact or claim include using verbs such as *see, observe, note, consider, recall,* etc.

2   **Note that** both workflow diagrams in Figure 4 have well-defined workflow semantics while those in Figure 2 do not.

These kinds of phrases—*Note that... Notice that....* and so on—do the valuable job of alerting readers to a detail in a mass of data, a feature or point in a complex diagram, or some pertinent consideration or background.

3   **Note that** this sample is one of the biggest that we tested, at 16,329 nodes and H = 7.

The following use is also well motivated.

4   **As already noted,** the navigational graph NG contains various kinds of redundant information, such as recurring subpaths, and so can become quite large.

However, and again, these phrases can be overused and it is not unusual to read *Note that..., We notice that..., It is interesting to note that..., It is obvious that.., It was found that..., Interestingly,...* or *It is worth pointing out* when there really may not be anything in particular to notice or observe, that is especially interesting, or that is obviously worthy of particular attention. They are just unmotivated habits.

Ultimately the clarity and cohesion of our writing can be greatly improved

Figure 37. *we* phrases

With 'we' phrases

Figure 6 shows the mean increase for each algorithm as a function of input width. The second chart compares the solution cost of each algorithm with that of ROUND. **We observe that** the solutions obtained with both greedyVGS and CWC become less optimal as W increases. **We also observe that,** as in Mann et al. [2004], greedyVGS obtains better solutions than CWC. Finally, **we note that** the greedyVGS solutions are on average within 5% of the optimal solutions.

Without 'we' phrases

Figure 6 shows the mean increase for each algorithm as a function of input width. The second chart compares the solution cost of each algorithm with that of ROUND. The solutions obtained with both greedyVGS and CWC become less optimal as W increases and as in Mann et al. [2004], greedyVGS obtains better solutions than CWC. Finally, the greedyVGS solutions are on average within 5% of the optimal solutions.

by simply removing many such phrases and allowing the topic to appear nearer the beginning of the sentence so that the discussion can flow without interruption.

5   ~~It is noted that~~ The traditional OLAP approaches suffer from several problems including long processing times and the need for large working buffers.

6   Furthermore, ~~we have also noticed that~~ the overhead of the BLUE scheme is always smaller than that of the RED scheme.

7   These changes were ~~found to be~~ statistically significant (paired t-test, 20 observations, P-value (1-tail) = 0.010 and 0.004, respectively).

8   Figures 1, 2 and 3 plot the mean average precision against the hyper-parameter setting. ~~We can see that t~~The curves of the short and long queries behave very differently for the original queries yet similarly when the query reweighing is applied.

251 Results-discussion: hedging and emphasizing

The graphics that we talk about in the results are selected data of our observations. The results-discussion makes claims about these data and observations. These claims go to the heart of our claims of contribution and this makes them a particular target for challenges.

So we may need to hedge our claims, using words that limit the scope of our commitment to them and making them less vulnerable to criticism. Thus in Figure 38 the words *main, seems, arguably,* and *relatively* are all hedges.

Hedging can involve all kinds of language (See *hedging: variety of language*) and many hedging items are often used together. In the following example, the scope of the generalization is being hedged (limited) with the adjective *typical* and the phrase *of this kind.*

Figure 38. Hedging in the Results

There are two **main** observations to make about these results. First, there **is** greater variation in the percentage of faults detected with this technique than with the other FTS techniques. Second, the effectiveness of fault detection **seems** to have increased in a way that was less consistent and more variable on SING than on que-server, **arguably** because of the larger number of **relatively** difficult-to-detect faults in SING

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1   In a **typical** CM system, searches **of this kind** involve the developer checking out a version of the component, compiling the system, and then executing and testing the system for correctness.

Hedging is also achieved through conditional (condition-consequence, or grounds-conclusion) statements, as in the following use of *depending on*.

2   Note that including user behaviour can both increase and decrease response times, **depending on** the parameters.

And of course, modal verbs such as *may, must, could* also have an important role in signalling our commitment to the truth of a statement as do verbs such as *appear, seem* and *tend*.

3   This process **may have to be** repeated multiple times until a suitable version is found.

4   Routing path length **may not be** the best metric for representing the data transfer overhead.

5   The large average size of the bus scenario indicates that the nodes **tend** to be connected to more neighbors than in the WLAN scenario.

If authors believe a proposition to 100% true, we can also emphasize our commitment to a point of view.

6   **It is obvious that** there is a mutual dependency between programming languages and software engineering.

But we might even hedge emphasize. In the following, the hedge *almost* modifies the emphasizer *certainly*.

7   However, including all of the way-points into the results list **would almost certainly reduce** its overall relevance, so it was decided for this experiment only to include the last page.

The following example emphasizes with an adjective, *obvious,* and hedges with the adverb *relatively* and the past participle, *given*.

8   India, Ireland, and Israel were **obvious** choices, **given** the widespread knowledge of English and **relatively** low programmer salaries.

And verbs such as *indicate, show, suggest, prove,* and so on also signal our com-

mitment. In the following, the confidence that the authors have in the proposition is less than 100%.

9   This **suggests that** practitioners intending to apply test suite reduction may prefer functional grouping of test suites to…

10   The large average size of the bus scenario **indicates that** the nodes tend to be connected to more neighbors than in the WLAN scenario.

In the following, their confidence is 100%.

11   This **proves that** the method works well for the simplest case, that is, on a smooth object with basic geometry.

252 Results-discussion paragraphs: comparison

Results-discussion paragraphs often make comparisons and do so in quite standard ways, relying on parallelism and consistent word use. In Figure 36 on page 177 the discussion of the two protocols is 1) in the same order as in the topic statement, and 2) maximally similar at the sentence level and word use is consistent.

Further, the paragraph follows a general-to-particular pattern in the familiar results-discussion paragraph pattern, Introduction-Observation-Explanation. The example also features a variety of typical comparison-and-contrast language. The preference is for standard English comparisons forms such as *more than, less than, bigger, and smaller,* and *as…as…* and concession-contraexpectation language (*while* and *although*).

253 Results-discussion: comparison and persuasion: an extended example

The Results and Discussion section doesn't merely describe verified observations. It also seeks to persuade. In fact, the results-discussion is the most argumentative and persuasion-focused part of a paper. The following articles illustrate the operation of this language of comparison and persuasion in the results-discussion[2] with reference to the series of paragraphs in Figure 39 on page 185. The figure does not address every aspect of persuasion—for example, it does not consider connotation and prosody—but highlights only the persuasive roles of conjunctions, transitions, emphasizers and hedges, and modal verbs. The notes do give some attention to theme-rheme and given-new in creating parallelism but a for a closer discussion of how these are used to emphasize or highlight parts of a text, readers can turn to the discussion of Figure 12 on page 82, *graphics: a table supporting claims: placing data for impact.*

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2 The introduction to this series of paragraphs, setting out the items and criteria for comparison, can be found on page 68 at *Experiments and results: setup and overview.* Readers who compare that paragraph against these paragraphs will notice the consistent parallelism in wording and sequence.

1 Figure 39: parallelism

The example shows rigorous parallelism both between and within paragraphs. This emphasizes similarities and highlights contrasts. Items can be quickly found and compared because paragraphs are highly similar. Word use is consistent throughout e.g., *blur, smooth, sharp, surface*. There is no striving after variation for its own sake. Similar information in found in the same place in each paragraph, not least because the paragraphs tend to conform to the Introduce, Observe, Explain pattern.

2 Figure 39: paragraph organisation

These paragraphs are all complex—that is, they all compare more than two items and compare and rank them according to more than two criteria—yet the discussion is always clear. This is in part thanks to the familiar, discrete staging of the discussion The graphic is first named, and described, and then observations are made. Finally, the authors offer a comment on the reasons for, the operation of, or the importance or significance of what has been observed. Each stage is separate and the purpose of each stage is clear.

3 Figure 39: information order and focus: exploiting expectations of given-new

Sentences are arranged so that what appears in focus position conforms to or exploits information order expectations. Given information precedes new information (underlined in the following).

1   Once again, BF blurs sharp edges and MF preserves the sharp edges yet **this time MF also introduces false sharp edges**.

Information order expectations are exploited. Positives about the proposed method, or negatives about the other methods BF and MF are placed in focus position at the end of the sentence.

2   All four methods preserve most of the sharp edges. BF and MF even preserve sharp edges with quite acute angles between neighboring surfaces **but in other areas the surfaces are not particularly smooth.**

This ordering of information is controlled through the choices of active and passive, and choices of specific verbs, conjunctions, and transitions.

    In the next example, the concession that *there is little to choose between these two latter results* is conceded in a way that almost ensures we don't read it, placed after two sentence-initial adverbial elements and then subordinated. The main clause is then introduced with a hedge and a wordy claim that effectively buries the subordinate claim deep into the background of the sentence.

3   Ultimately, **although there is** little to choose between these two latter results, **we would suggest that the result produced using the proposed method is more faithful to the original surface.**

4 Figure 39: grammatical comparative forms

Standard comparative forms are used. In particular, the authors do not make comparisons using *when comparing* or *comparing* or *compared with*, which are often associated with vague and uninformative comparisons .

As noted elsewhere, at sentence initial such phrases 1) create long, empty themes, 2) make it more difficult to achieve a well-motivated parallelism and 3) complicate the use of suitable conjunctions and transitions. Such phrases are also often wrongly used in place of *as* and *than*.

Related: the compare-phrase problem

5 Figure 39: transitions

The transitions in this example perform multiple tasks: e,.g., *again,* organizing the argument and creating cohesion across paragraphs, e.g., *in contrast,* signalling semantic relations, and e.g., *again*, *ultimately, indeed* having a role in hedging and boosting.

6 Figure 39: hedging and emphasizing

Hedging refers to moderating the claims we make but we can also emphasize the claims we make about our own work and that of others. For example we might say that one thing is only *slightly better* or *much better* or perhaps *only in some cases better* than another.

There is a lot of hedging and boosting in this example. In part this is because the performance of the algorithms is being assessed subjectively: that is, the researchers are simply giving their opinion as to whether an edge is sharp or blurred but a reviewer might not see things as the authors do so the authors are careful in the way they make their claims.

The hedging and boosting in these examples takes a variety of forms, from the verb form *tends* to saying *All four methods preserve most of the sharp edges* to the use of *even*—signalling "this is surprising and special".

The passive-voice phrase *it can be seen*—very often overused—is well-used in this case as a careful hedge, an invitation to readers to look at the data and to agree with the authors' assessment. But the authors later also take hedged responsibility for their own views with the careful phrase *we would suggest.*

Figure 39. Results: comparison and persuasion

Fig. 4 shows results for denoising a model with sharp edges. **It can be seen that (M/T/E)** BF **tends to (M)** blur sharp edges and that **while (C)** MF preserves sharp edges it also makes flat areas uneven. **In contrast**, **(T)** both the proposed method and FVMF preserve sharp edges and flat areas **although (C)** **on closer examination (T/E)** also shows that the proposed approach produces a smoother final surface.

Fig. 5 shows results for denoising a cylinder (first faceted and then triangulated) with sharp edges and with both flat and curved surfaces. **Once again**, **(T/E)** BF blurs sharp edges and MF preserves the sharp edges **yet (C)** this time MF also introduces false sharp edges. **Again (T/E)** the proposed method and FVMF per-form the best, **as (C)** both preserve sharp edges and the surface characteristics. **Ultimately, (T/H/E) although (C)** there is little to choose between these two lat-ter results, **we would suggest that (M)** the result produced using the proposed method is more faithful to the original surface.

Fig. 6 shows results for denoising the fandisk model. All four methods preserve most of the sharp edges. BF and MF **even (E)** preserve sharp edges with **quite (H/E?)** acute angles between neighboring surfaces **but (C)** in other areas the sur-faces are **not particularly (H)** smooth. **In contrast, (T)** FVFM and the proposed approach blur sharp edges with acute angles **but (C) do (E)** produce smooth sur-faces and preserve **most (H)** sharp edges.

In this last test on fandisk, **although (C)** BF was noticably better able to preserve sharp edges than on the previous models, **this could be explained (M)** by the **relatively (H)** low noise levels of the fandisk model and the consequent need for few iterations. **Indeed, (T/E) when (C)** we repeated this test on the fandisk model after adding Gaussian noise, we **did (E)** find that BF blurred sharp edges **if (C)** any attempt was made to achieve a **reasonably (H)** smooth final surface.

Transitions (T), conjunctions (C), modal verbs (M), hedges (H) and emphasizers (E): This example uses a range of adverbial and modal language to persuade readers to accept a particular interpretation of the results. This is normal. Researchers are expected to present their work in the best light, so it is simply a matter of whether we do it well or not. In the case of this example, we may feel that its persuasive elements are too strong or obvious to be effective. But did we feel that way the first time we scanned it or only after becoming aware of its many devices?

Most of the language in this example is in fact very common in research writing. The conjunctions *while, although,* and *yet* express the familiar semantic relation concession-contraexpectation. In this example, their primary task is to problematize and devalue the performance of the competing models. The other conjunctions—simple contrast *(but)*, reason-result *(as)* condition-consequence *(if)*, and chronological sequence *(when)*—also to varying degrees establish and frame positive and negative expectations. The example uses many emphasizers. They may appear to have an additive quality e.g. *once again, again, ultimately, indeed,* as if they are simply organizing the content of the text, yet they are in fact operating to repeat certain conclusions while excluding alternatives.

Some of the language is deliberately ambiguous. The word *quite* (110/mill.) is a notorious hedge. In general, it could mean either that the relevant angles are <u>very</u> acute or <u>not</u> very acute at all! Here, the use of *quite* blurs a weak claim. Similarly ambiguous language in this example (and relevant corpus frequencies) include *not particularly <10 mill., relatively* (166/mill.), *reasonabl*y (25/mill) (*reasonable* 72/mill.).

7 Figure 39: semantic relations

The semantic relations that are signalled by transitions and conjunctions in this discussion include simple contrast—in contrast, but; chronological sequence—*when*; condition-consequence—*if*; concession-contraexpectation—*while, yet*, and *although*.

254 rhetorical questions

In one function, a rhetorical question is a question that we ask with the intention of answering it ourselves. In general, rhetorical questions should be avoided and should be rewritten as statements with supporting content.

Is there any time when we can ask a rhetorical question? Yes. When we are going to answer it immediately and directly.

1   Theoretically, any generating unit in the system could either offer or receive load-frequency control. This choice could be made in real time but, given that in real time the total generating capacity participating in the load frequency control may vary, [rhetorical question] **what are the implications of such an unpredictable operating environment? [immediate answer]** *One supposes that the system would be challenged to maintain near constant frequency and to closely track load and interchanges. We might also expect large frequency deviations when there is a lower proportion of generating capacity on load-frequency control relative to the total load.*

255 semantic relations

Semantic relations are meaning relations—such as time, cause, reason, resemblance, contrast, and addition—that, as readers or listeners, we assume exist between propositions. They are expressed within single clauses, between clauses, and within and between sentences.

Semantic relations are conceptual rather than linguistic phenomena. This means they can be perceived even when there is no explicit linguistic signalling. For example, we might perceive some kind of semantic relation between the following two propositions.

1   I like vanilla ice cream. She likes strawberry.

We might say the relation in this example is *contrast* and choose to explicitly signal that with suitable words.

2   I like vanilla ice cream **but** she likes strawberry.

However, in the absence of signalling, more than one interpretation of the relation between propositions may be possible. In these cases, specific words can signal the intended relation. Take the following set of (out-of-context) propositions.

3   He wouldn't pay me. I left.

We might interpret this as a *time* relation

4   He wouldn't pay me **then** I left.

However, we may be more likely to perceive a *reason* relationship.

5   He wouldn't pay me **so** I left.

256 semantic relations: the variety of ways to signal them

In the simple examples used in the previous article, semantic relations were perceived to exist when there was no explicitly signalling but could also be signalled with vocabulary items. Most obvious in this role are adverbs, prepositions, conjunctions, and transitions, sometimes referred to as connectives, logical connectors, or discourse markers.

Connectives such as the comparatives *in contrast, whereas,* and *compared with* are heavily used in academic, research, and other argumentative writing to signal semantic relations and help readers follow the organisation and logic of a discussion.

However, semantic relations are also signalled at different levels of a text by language features other than connectives, through verbs and grammatical constructions and through patterns of text organisation. For example, the signalling of matching relations (comparison and contrast) greatly depends on sentence and text parallelism, on words and grammar such as *more than, less than, -er, -est, as,...as...* and on the use of antonyms 反義詞.

Similarly, while we may expect that time relations are mostly signalled with conjunctions and prepositions such as *after, during, once, upon,* and *then,* in fact, other language features are also involved in time-signalling.

1   Caused by network congestion, a spike is a sudden, large increase in the network delay **followed by** a series of packets **arriving** almost simultaneously.

Most basically, the time relations in the preceding example are expressed first in time-step organisation, i.e., the events in the sentence are in "real-world" order, with what happened first being related before what happened next.

Second, time relations in the example are also signalled by the meaning of the verb *followed by* and in the grammar of the present participle *arriving (See participles: present participle clauses)*

Similarly, in the following example, the "means" 手段, 方法 member of the means-result relation is signalled with the *by* + verb + *ing* pattern.

2   We should be able to obtain more reliable pairwise conclusions **[result] by combining** automatic evaluation techniques with a reduced set of manual relevance judgments **[means]**.

And again showing the role of grammar in signalling semantic relations, in the following example, the idea of condition-consequence is signalled in both a single clause and in two clauses, but in both cases it uses *would be*.

Example 1: as a single clause

3   **Introducing** just one notion of concurrency in a language, like Thread in Java, **[condition] would be** too limiting.**[consequence]**

Alternative 1: as two clauses

4   **If we introduced** just one notion of concurrency in a language, like Thread in Java, **[condition]** it **would be** too limiting.**[consequence]**

In the next example, the meaning of the verb and the use of the present participle form *indicating* leads us to interpret the relation between the propositions involved as (probably) being grounds-conclusion.

5   It can be seen in Figure 4 that several thicker red edges are curving out from under the centre towards nodes and groups of nodes in the bottom layer **[grounds]**, **indicating** relationships that recur over several classifications **[conclusion]**.

Finally, we return to the point that not every semantic relation is always explicitly signalled with vocabulary. While the following example certainly does contains explicit cause-effect vocabulary items (like *as* and *because*), the reason-result relation between the propositions in the last two sentences—**[as a result]**—is not signalled and must be inferred by the reader.

6   Selection of the metric
    The next step was to choose a suitable metric. **As** a basic goal of our study was to develop an accessible, standardized usability metrics, we were concerned to choose a widely familiar numerical scale. We have chosen the 0-100 scale **because** people are generally familiar with it and it is easily transferred to a percentage system, with numerical values closer to a hundred being proportionally better than those closer to zero. **[As a result]** Even users who are not usability experts will find this scale intuitive and easy to use.

257 semantic relations: the categories considered in this book

Semantic relations can be classified in a variety of ways and at different levels of detail. In the following articles the focus is on just three sets of relations: cause-effect, temporal, and truth and validity (Table 28).

258 semantic relations: cause-effect

There are five cause-effect relations in this classification: reason-result, means-result, grounds-conclusion, condition-consequence, and means-purpose.

    The first three are cause-effect relations where the cause is seen as real-world

Table 28. Three sets of semantic relations					
Cause-effect	Reason--result	Means-result	Grounds-conclusion	Condition-consequence	Means-purpose
Temporal	Chronological sequence	Temporal overlap			
Truth and validity	Statement-affirmation	Statement-denial	Denial-correction	Concession-contraexpectation	

and human intentions are not relevant. The fourth relation, condition-consequence, may involve hypothetical situations and outcomes. In the fifth, means-purpose, the distinction of *intention* is fundamental.

The vocabulary of cause-effect is very large and includes not just connectives and conjunctions but also nouns (reason, goal purpose, result) and verbs (cause, lead to), grammar such as participle clauses, and constructions such as causatives. In the following example the verb make signals the relation means-result.

Example 1
1   These transformations **[means] make** the integrity constraints explicit **[result]** during the reverse engineering phase that produces the wrapper schema (see 3.2)

Rewritten with the abstract noun *way*, it still signals means-result.

Alternative 1: way signals means-result
2   These transformations **[means] are one way that** the integrity constraints are made explicit **[result]** during the reverse engineering phase that produces the wrapper schema (see 3.2)

Or we might see a reason-result relation between statements in adjacent sentences signalled with the adverb phrase *As a result*.

3   In the latter case, c has a narrower semantics than d. **[reason]** *As a result,* some properties of the concept c may not be found in d. **[result]**

This variety of ways of signalling cause-effect provides great flexibility in managing theme-rheme, given-new, and in achieving parallelism.

1 Reason-Result

This relation presents real-world causation where the causing element is the *reason* for the result. The focus is on *why*, and intentions are not relevant.

1   In this example, the analyst would quickly see that *because of* an off-by-one error, **[reason]** the property does not hold on this program **[result].**

2   Each view refers to a different table **[reason]** *so* there are no merging views **[result]** and *as each index is defined over a single column* **[reason],** there is no reduction either. **[result]**

2 Means-Result

This relation presents real-world causation where the causing element is the means by which the Result is/was/will be achieved. The focus is on *how*. Intention is not relevant. The use of *by* + verb + *ing*, as in the following example, is very common.

1   We developed several of our own properties for Rezone **[result]** by reverse engineering it. **[means]**

In particular, writers should take care not to make the common mistake of confusing *in order to* (means-purpose) and *by* + verb + *ing* (means-result).

Related: in order to: means-purpose: intentions

3 Grounds-Conclusion

This relation presents real-world causation where the Grounds (基礎) element is the *basis* for the Conclusion.

1   ***Based on*** these experiments **[grounds]**, the A-set algorithms should be sufficiently tractable for use in practical applications. **[conclusion]**

2   These results **[grounds]** *suggest that* MTC is a useful classification technique for use in imbalanced data analysis. **[conclusion]**

4 Condition-Consequence

This relation is a cause-effect relation where the Condition element is hypothetical. The Consequence depends on the Condition element.

1   ***Suppose that*** we insert N elements at the front of an array of size dN (d > 1) **[condition]**. Since elements are always inserted at the front, rebalances are found only at the leftmost node w. **[consequence]**

2   In fact, all the application domains that use semantic Web services can benefit from our proposed mediation architecture **[consequence]** *as long as* the WSDL documents of composed Web services are properly annotated with the necessary semantic information **[condition]**.

5 Means-Purpose

This presents causation where the Means element involves actions taken with the *intention* of achieving a certain outcome.

1   RSDL connects the exported queries with other metadata information **[means]** *so that* a user of the Web services over a relational database has a coherent picture of both the data and access methods **[purpose]**.

Example 1
2   Note that *in order to* recreate the original views **[purpose]**, we sometimes have to add additional columns in the merged view **[means]**.

Here is the same relation expressed in one clause using *require*.

Alternative 1
3   Note that recreating the original views **[purpose]** sometimes *requires* the addition of additional columns in the merged view **[means].**

259 semantic relations: temporal

1 Chronological sequence

The *chronological sequence* relation can refer both to being *in* real-world sequence (which this book calls *time-step order*) , illustrated in the first example, and *out of* real-world sequence, as in the second.

> Chronological order: time-step order using before
> 1 **[this happens first]** The originator of the application must acquire the MM's IP address **before [this happens next]** it can launch a connection.

> Chronological order: out of sequence using before
> 2 **[this happens subsequently] Before** it can launch a connection, **[this happens previously]** the originator of the application must acquire the MM's IP address.

2 Temporal overlap

This relation presents two events or activities as partly or wholly overlapping in time. Conjunctions and prepositions such as *as, while*, *during, at the same time* etc. may signal this relation.

> 1 The latter two applications run over UDP but UDP is not a reliable protocol so packets that are lost **during** handoff are not recovered.

Temporal overlap can also be signalled using a present participle clause. Although this is not found in our corpus, the following invented examples illustrate the usage.

> 2 **Putting on his coat,** he walked out of the room.

> 3 **He put on his cost while** he walked out of the room.

In computing research the present participle clause is very commonly used to signal reason-result (See *participles: present participle clauses; as: temporal overlap*)

260 semantic relations: truth and validity

There are four truth and validity relations: Statement-Affirmation; Statement-Denial; Denial-Correction; and Concession-contraexpectation. All of these are common in research writing.

1 Statement-Affirmation

This involves a statement (in writing, reported speech) and an affirmation of that statement as true. The use of emphasizers—e.g. *obviously, clearly, indeed*—reinforce the truth value of a clause or the part of clause to which they apply.

> 1 It has been said that **[statement]** an isolated Web site is less valuable, and **[affirmation]** indeed, a site that is not connected to the rest of the Web cannot derive value from external contacts.

2 Statement-Denial

This involves a statement or proposition and the use of negation or an antonym to deny its truth or validity.

1   It might be assumed that **[statement]** internal and external guard periods **have very similar functions**. But in fact **[denial] their functions are very different**.

3 Denial-Correction

This involves a Denial element that is presented in the negative and a Correction element that contradicts it by replacing it with something that is not an antonym.

1   The goal of LWSDL **is [denial] not to specify** which language should be used in the semantic description of WSDL. **It is [correction] to define** how to carry out the semantic annotation.

Related: abstract nouns: signalling nouns: omitting signalling noun

4 Concession-Contraexpectation

This relation involves a Concession element that invites an inference but the validity of that inference is, "unexpectedly", denied. This relation is very common in research writing as it invites the question *why?* and thus is often found with reason-result relations and problem-solution patterns.

1   **[concession]** *Although* this transformation language is simple, **[contraexpectation]** *it is* powerful enough to express all linear transformations on first-order graphs.

2   This transformation language is simple *but it is* powerful enough to express all linear transformations on first-order graphs.

3   This transformation language is simple*. However, it is* powerful enough to express all linear transformations on first-order graphs.

4   This transformation language is simple. *Nonetheless, it is* powerful enough to express all linear transformations on first-order graphs.

5   *While t*his transformation language is simple, *it is* powerful enough to express all linear transformations on first-order graphs.

6   This transformation language is simple, *yet it is* powerful enough to express all linear transformations on first-order graphs.

7   This transformation language is simple, *yet* powerful enough to express all linear transformations on first-order graphs.

Related: although and while, however and yet

261 tense

Four tenses are commonly used in computing and IT research reports, the simple present, the simple past, the present perfect, and the past perfect, illustrated below.

1 Simple present

1   Of course, the availability of more online services **attracts** more individual and corporate users and this **leads to** the creation of even more online information and services.

2 Simple past (past participle)

1   Technological advances and commercial opportunities **resulted in** the deployment of numerous interconnected, non-research computer networks.

3 Present perfect (has/have + past participle)

1   Technological advances and commercial opportunities **have resulted** in the deployment of numerous interconnected, non-research computer networks.

4 Past perfect (had + past participle)

1   Technological advances and commercial opportunities **had resulted** in the deployment of numerous interconnected, non-research computer networks.

Related: tense: in conditionals

262 tense: in factual conditionals

Factual conditional statements (See *Part 2, if and when*) can be written with both clauses in the present tense.

1 Factual conditional: present tense in both clauses

1   If it _**is**_ our goal to limit the average delay of packets or the average queue size, we _**can**_ use the approach outlined in Section 3.

263 tense: in hypothetical conditionals

Hypothetical conditional statements (See Part 1, if and when) can be written as present or past conditions, using respectively the past or past perfect plus a suitable modal verb, would, could, should, or might.

1 Hypothetical conditional (present condition)

1   **If** all of the details of the client access patterns **were** available, **it would be possible** to identify the organisation with the optimal access latency.**]**

2 Hypothetical conditional (past condition)

1   Because our evaluation of the effects of the filter parameters relies on an analysis of variance, we used a variety of texture datasets and computed the output variable for each singly. **If we had grouped** all the textures together, **we would have obtained** only a single output value for each combination of parameters, which **would have been** of little value for subsequent comparisons.

264 **tense: simple present vs simple past**

The setup is, at the first instance, a recount of what we did or of what happened in a particular case, so for that purpose we use personal pronouns and the simple past.

1   **We canceled** the baseline by applying the cubic spline.

2   In all experiments **we used** the Nearest Neighbor (NN) classifier with Euclidean distance.

3   **We established** ROI coordinates using the algorithm proposed in [8] and then used the coordinates from each image to crop the ROI.

4   The corrupted signal **was decomposed** by applying the Meyer wavelet and **this allowed us** to compute the energy ratio.

However, the setup may also contain brief descriptions of standard methods or procedures, in which case we use the simple present and no (human) personal pronouns are used.

5   As XDU fragments **are received**, they **enter** into a queue in the Reassembly Manager.

265 **terminologies: similar terminologies, different meanings**

The same terms can have quite different meanings in different fields. For example, feature-based means something different in pattern recognition than in robotics and the term ontology has a different meaning in computing than in philosophy. When confusion is possible, writers may draw the reader's attention to such differences in usage.

1   Figure 2 shows the distribution of values for the MODIS Estimated Motion Index (EMI) variable. **(The term "index" used as a MODIS variable name does not have the same meaning as in computer science.)**

2   The scene-based location-sensing method collects and extracts features from a scene. **Such features (known as "fingerprints" but they should not be confused with the "fingerprints" of location fingerprinting)** are usually specific and unique to that scene and so can be used to estimate the location of the observer or of objects that the observer observes in the scene.

Even within a single field, a term can have a variety of meanings. For example, in network computing the term *portability* refers either to the ability to switch between networks with acceptable Quality-of-Service or to the physical dimensions of a device.

Of course, context will normally clarify meaning but if writers do foresee possible confusion, they usually clarify, at their first appearance, how they will

Page requests from web crawlers make up a significant proportion of traffic on the internet. Crawlers that operate on behalf of search engines are generally welcome at web sites **[why welcome these crawlers?] because** the search listings they produce will bring visitors. Some sites, however, restrict nonhuman (crawler) access **[why restrict access?]** either **because** it consumes expensive bandwidth or **because** it requires their server to generate certain expensive resources. Another motivation for restricting crawler traffic is that sites sometimes wish to prevent their content being mirrored elsewhere. **[how/in what way do they restrict crawler traffic?]** <u>There are</u> generally-accepted conventions that are supposed to govern the behavior of crawlers, such as that crawlers not request pages in rapid succession (a "courtesy pause" is expected) but these conventions are not enforced by any outside authority and for the most parts it is merely hoped that crawlers will comply with them.	Introduces topic, key `words: page requests; web crawlers. We anticipate we `will be told the "how and why" of `their relationship Why: reason-result, and cause-effect, and causative language: *because, require, motivation, preven*t *There are* in this case ignals a change of topic or focus How/In what way: They govern the behavior of crawlers essentially through social pressure, "*generally accepted conventions*"

Text-type: Explanation. How and why. This explanation text explains "how web sites react to web crawlers and why they react that way"

Figure 40. Explanation: saying how and why

use certain words in their paper. In the following example, the authors make it clear that, as used in their paper, divide and partition are interchangeable terms.

3   Partition analysis (PA) involves **dividing (partitioning)** the system's input domain into a finite set of subdomains...

On the other hand, it is also possible for apparently quite different words to be used as synonyms. Their synonymy should noted.

4   Also depicted are the resolution levels of the coefficients relative to levels in the tree **(in the remainder of this paper we use the terms "node" and "coefficient" interchangeably)**.

266 **text-types**

Text-types are staged stretches of text—from a single sentence to a paragraph or more—that exhibit language features associated with certain common purposes for writing.

For example, we are all familiar with the text-type "instruction" where the purpose is to tell us how to do something. We would be easily able to identify the features of an instruction in a user manual or cookbook and we would all be able to identify the stages of a recipe, from listing the ingredients, to preparing them, cooking them, and perhaps optionally there would be suggestions for serving them the resulting dish.

Other text-types are just as familiar, although perhaps the stages are not as recognizable. The most heavily-used text-types in science and engineering writing would be Explanations, Instructions, Procedures, and Recounts.

267 text-types: explanations

The text-type explanation (Figure 40) describes and explains events, situations, or behaviours in terms of how and why: how or why something occurs or how or why something works or is done in a particular way.

The first phase of an explanation is typically to identify the topic and imply that it requires explanation. An explanation will tend to be organized from general-to-specific (first the topic then details about the topic).

Despite its name, the text-type *Explanation* is not the same thing as the type of reason-result explanation that is a common supporting pattern for procedures, recounts, and instructions. Rather, Explanation refers to a stretch of text that has the overall purpose of explaining and where each stage or feature of the explanation operates towards that overall goal.

268 text types: instructions

Instructions (how to do it) (Figure 41) tell us how to carry out a task in a sequence of typical or ideal steps. They most typically appear in a methods or experimental section and often appear as algorithms. And of course they are a core element of user manuals. The essential quality of an instruction is that it is enabling: if people follow an instruction, it should help them achieve something.

Instructions may be written in the form of a paragraph, possibly supported with numbers, enumeration, or time-step words or they may be set off from the rest of the text, presented vertically, using bullets or numbers. In research papers, instructions occur in both formats, in-text and presented vertically.

An instruction begins by telling readers its goal, purpose, or outcome. It is time-step organized and is consistent in tense and word use. Individual steps/instructions may be supported with background or explanation.

Instructions are written in parallel and typically begin each step with a verb in the imperative mood (in bold in Figure 41).

In less formal contexts writers may adopt a conversational tone, using personal pronouns and avoiding the imperative but this is not appropriate for a research paper.

269 text types: procedures

Procedures are descriptions of how something is done or how it happens. Procedures are very frequent in computing research writing. Table 29 on page 198 lists the defining features of a procedure. In particular, they use the same tense throughout, usually the present tense. In this connection, writers should not confuse by the passive voice with the past tense. The past participle in the pas-

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Figure 41. Instruction: saying how to do it

There are two approaches to creating functionally-grouped test cases at different levels of granularity.

States or implies goal, outcome, purpose

Approach 1: Randomly **select** groups of n test grains from each bucket without replacement until fewer than n test grains remain. **Repeat** for each bucket. **Combine** remaining test grains into a single pool and from this pool randomly **select** groups of test cases of size n until none remain.

Introduces tools, methods, materials

Uses imperatives (bold italics)

Approach 2: Randomly **select** groups of n test grains from each bucket without replacement until fewer than n test grains remain. **Treat** remaining test grains as one final group (smaller than n). **Repeat** for each bucket.

Describes steps, events in sequence, until....

Uses the present tense for every step

Text type: **Instruction:** how to do it Optional feature: Background: reasons/explanation/definitions
Optional feature: Opinion as to the value or significance of the procedure

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sive does not signal tense. The tense of the passive is signalled in the auxiliary verb (*is, was, were,* etc).

270 text-types: procedures: state goal, result, or outcome

The goal of a procedure should may be stated explicitly. In the following example the phrasing *way....is to...* clearly signals a procedure.

1   A straightforward **way** to calculate the result without the need for a central server **is to**...

However, in the following example, it is only from experience that readers know that the introductory statement about Adaboost will probably be followed by a description of how it works.

2   **Adaptive Boosting (AdaBoost) [28] is a machine learning algorithm that is used with other algorithms to improve their performance.** Adaboost takes a series of weak classifiers and...

If the procedure is being described in conjunction with a diagram, we begin by naming and describing the diagram. Notice the variety of the sequence-marking language in this example: participles, and adverbs *(initially, ultimately)*, the verb *taking turns,* and also the standard words, *then* and *finally*.

3   **Figure 4 shows the data flow in standard Linux. Each connection has a matching socket buffer**. Data streaming into each socket buffer is processed by the TCP and the IP. This processing initially keeps the packet streams of each connection separate but ultimately all the streams feed into a single priority queue (up to 100 packets), taking equal turns at feeding into the queue, subject to TCP windowing constraints. Finally, packets feed out of this queue into a short Ethernet card queue and then out to the network.

Table 29. A procedure: features of a procedure

1. State (or implies) goal, outcome, purpose

2. Introduce tools, methods, materials

3. Describe steps, events, activities in "real-world sequence"

4. Use the same tense (typically present tense) for every step.
    - It is also possible to write a procedure in the simple past, as long as it is consistent, but it is not a good habit because of the potential for confusion with a recount

5. Optionally provide background: definitions, reasons for or explanations of steps, e.g. how data was prepared or why this method was used.

6. Optionally offer an opinion as to the value or significance of the procedure or process.

7. Take care with personal pronouns.
    - Because procedures describe ideal activities, there is usually no need to say "who did it" so *I/we/they,* etc—while not impossible— are typically not required.

271 text-types: procedures: order of activities: time-step words

Procedures are written in time-order, reflecting a real-world sequence or order of events, as in the following sentence.

1   The first node passes its value to the next node **[this happens first],** which calculates the current max value **[this happens next]**, the difference between the value it has just received and its own value.

Time-step words and participles (See next article) may support or signal this time organisation. Time-step words include conjunctions that relate events only one-directionally such as *first, second, then, next,* and *until.* Also included are words and phrases that signal temporal overlap, such as *as, while* and *at the same time.* Procedures use the sequence words to get a real-world order of events.

2   ***We first*** extract the watermark information ***and then*** scale it down ***and*** embed it in the x-coordinate of the original mesh.

If the procedure is written in strict time-step order and not interrupted, few or even no sequence words may be required. The following procedure uses none.

3   We extract the watermark information, scale it down, ***and*** embed it in the x-coordinate of the original mesh.

The example in Figure 42 is written in strict time sequence. It uses only two sequence words (bold italics). Note that one function of the word *Finally* is to signal the return to the procedure description, which has been interrupted with some background material, a definition (underlined).

Figure 42. A procedure: providing reasons as background

Adaptive Boosting (AdaBoost) [28] is a machine learning algorithm that is used with other algorithms to improve their performance. Adaboost takes a series of weak classifiers and calls them repeatedly in a series of rounds $t = 1,...T$ on the training data to generate a sequence of weak hypotheses. Each weak hypothesis is associated with a weight that is adjusted after each round according to how it performed on the training set. **At the same time**, the training set is biased with a separate set of weights bias *so as to* increase the importance of incorrectly classified examples. These examples become the focus of weak learners in subsequent rounds. **Finally,** a linear combination of the weak hypotheses and their weights are used to form a strong hypothesis for use in classification.	States or implies goal,outcome, purpose Introduces tools, methods, materials (e.g. weak classifiers...) Describes steps, events in sequence Background to a step: reasons Uses the present tense for every step No personal pronouns

Text-type: Procedure. How it is done or how it happen.: Optional feature: Background: reasons/explanation/definitions; Optional feature: Opinion as to the value or significance of the procedure

272 text-types: procedures: background material interrupting steps

The steps of a procedure may be interrupted with various types of background material. In Figure 42, the background material is a reason-result explanation. In Figure 43, the background material is a definition/description. Background material may be in a different tense from the steps of the procedure.

273 text-types: procedures: present participles: steps and outcomes

Present participle clauses are often a feature in procedures, where they are used to signal time order and reason-result. They have the particular qualities of being concise and tending to de-emphasize information. For example, in the following, the use of a present participle clause de-emphasizes the first step, perhaps because this step is merely standard.

> Example 1
> 1 **Extracting the watermark information, we** scale it down and embed it in the x-coordinate of the original mesh.

Written more fully, with time-step words, it might look like this.

> Alternative 1
> 2 **We first extract** the watermark information and **then** scale it down and embed it in the x-coordinate of the original mesh.

Participles are also commonly used to signal (usually final) steps or perhaps results or outcomes.

> 3 Finally, each specialty search engine was assigned a score for its relevance to various ontologies and domains, thus **producing** [outcome] the hierarchical specialty search engine directory.

Figure 43. A procedure: providing definition as background

[States purpose of activity] A straightforward way to calculate the result without the need for a central server **[introduces method]** is to arrange the nodes in a ring and then send a global value from node to node around the ring. **[real-world sequence]**, This begins with the first node passing its value to the next node which *(then)* calculates the current max value, **[background: definition]** *(which is)* the difference between the value it has just received and its own value. **[return to procedure]** The node then passes this current max value to the next node in the ring. The output at the end of the round will be the global max value.

States or implies goal, outcome, purpose

Introduces tools, methods, materials

Describes steps, events in sequence

Background to a step: definition

Uses the present tense for every step

No personal pronouns

Text-type: Procedure. How it is done or how it happens: Optional: Background: reasons/ explanations/definitions. Optional: Opinion as to the significance of the procedure

---

For similar reasons, we often find that relative clauses in procedures are written as present participles rather than in their full form.

4   If the input picture contains explicit relations, that is, the relations have a graphical representation, its attribute-based representation is augmented with an array, COUNTER, **containing** an entry for each explicit relation.

274 text-types: recounts

Recounts in research reports typically relate what we or someone else did. Thus an experimental setup or of an experiment is typically mostly written as a recount because it describes what you or someone else did.

Recounts can and often do make use of personal subjects and personal pronouns such as *we* and *they*.

Recounts: personal subjects
1   Before starting on a task, **the subjects** recorded the current time in their diaries. When **they** completed the task, **they** recorded the total time (in seconds) for that task. Nonproductive time between the tasks was not included. In analyzing their reports, **we** considered only those time periods for completed tasks that produced correct solutions.

In general, a recount will use one tense consistently, typically the simple past but recounts do occur in the present tense when authors are describing what they are currently doing in their own research.

2   In this paper **we present** a technique for using...

Recounts are often distinguished from procedures by the use of conjunctions such as *after, before,* and *when,* which allow us to relate events out of sequence. (In contrast, procedures rely on unidirectional adverbs and conjunctions such as *next, then,* and *until.*)

Figure 44. A recount: saying what happened

Figure 2 illustrates the search engine's document sampling process. <u>First</u>, probe terms were generated using domain-related data. These probe terms, containing detailed information about the search engine's search interface, were used to create tailor-made profiles for each specialty search engine. The terms and information from the profiles were <u>then</u> used to generate probe queries. <u>Submitting</u> a query to the target search engine returned a search result page. If the result page contained one or more search results, it was <u>passed on to</u> **the URL result extraction module.** *As different search engines have different styles and formats for the result page, the extraction process had to be customized, and this information was also stored in the search engines profiles.* **After extraction,** documents associated with the URLs were fetched and saved as sample documents. A basic stemming method [1] was <u>then</u> applied to the sampled documents. Based on a hand-built dictionary, this categorized words in the documents into semantic classes. <u>Finally</u>, each specialty search engine was assigned a score for its relevance to various ontologies and domains, <u>thus producing</u> the hierarchical search engine directory.

Right column annotations:
What we did.
Time organized
Time words
Present participle clauses

Background to steps: reasons
After extraction signals a return to discussion of the procedure

Return to recount

Sequence/time words: The description is time-ordered and both tense and word use are consistent. It uses one-directional time words for steps *(first, then, finally)*. The time-word *after* is used to signal background and explanation. In this example, *After extraction* signals a return to the recount, which had been interrupted by background information.

Sequence/reason-result: The sequence of events is also signalled with present participle clauses *(submitting, producing)*.

Active-passive: The passive voice is used both to manage subject and given and new and to omit the agents, which are not needed in this discussion.

Subordination: Background information is also provided in the recount through two other subordinate (participle) clauses, *containing...* and *Based on....* These are both non-defining relative clauses. They have been placed early in their sentences to support overall chronological organisation.

Recounts: tenses: past tenses and time conjunctions

3   **Before** starting on a task, the subjects **recorded** the current time in their diaries. **When** they **completed** the task, they **recorded** the total time (in seconds) for that task. Nonproductive time between the tasks **was not included**. In analyzing their reports, we **considered** only those time periods for completed tasks that **produced** correct solutions.

The example in Figure 44 is a recount because it recounts (re-tells) what *we* did, although the authors have omitted the agents (themselves) from the description. This explains the heavy use of the passive voice.

There is no doubt that this particular recount looks very similar to a procedure but it is not a procedure because procedures say what *usually* or *ideally* is done or happens. This example, however, tells what did in fact happen on some occasion or some series of occasions. It could very easily be written as a proce-

dure simply by changing it to the present tense but this would mislead readers and deny the authors the credit for their contribution.

In the sciences, recounts and procedures often look very similar (because humans and time markers are often left out of the story) so it is not at all rare for beginning research writers to mix them up, making it hard for readers to know whose work is being discussed.

275 theme-rheme

The structural component of cohesion refers to how information is organized in clauses and sentences. There are two such structural components: theme-rheme—concerned with what the clause/message is about, who it is for, and how it fits into the text and context—and given-new—which addresses the identification and ordering of information in the clause.

Any clause (or sentence) can be analysed as being composed of a theme and a rheme. For the purposes of this book, we adopt a simple definition in which the theme starts with the first word of the clause and extends as far as but not including the first finite verb (the verb that is marked for tense). The rheme is then the finite verb plus everything that follows it.

1   **[Theme]** Our simulation **[Finite verb]** involved the construction involved the construction of four taxonomies **[Rheme]**.

As the preceding example suggests, the theme and the subject of the clause can be the same, but the theme may also contain elements other than just a subject. In the following example, the theme is made up of an adverbial element, *in the latter case*, and the subject *c*.

2   **[Theme]** In the latter case, *c* **[Finite verb]** has a narrower semantics than *d* **[Rheme]**

When sentences are made up of more than one clause, we can choose to analyse for theme-rheme in two ways, as a single sentence with just one theme-rheme relation or as two clauses with two theme-rheme relations.

The following sentence is made up of two clauses, i.e., a main clause and a subordinate clause. We can analyse theme-rheme for the entire sentence:

3   **[Theme]** The differences **[Rheme]** are statistically significant on only a few of the metrics although it appears that Diama outperforms Google when used alone.

The following analyses the same sentence but this time we reverse the order of clauses as subordinate-main. This changes the theme.

4   **[Theme]** Although it appears that Diama outperforms Google when used alone, the differences **[Rheme]** are statistically significant on only a few of the metrics.

The following analyses each clause independently for its theme and rheme.

5   **[Theme]** Although it **[Rheme]** <u>appears that Diama outperforms Google when used alone</u>, **[Theme]** the differences **[Rheme]** <u>are statistically significant on only a few of the metrics</u>.

276 theme: marked and unmarked themes: fronting

English is a theme-rheme language. Not all of the world's languages are theme-rheme. Many East Asian languages—Chinese, Japanese, Korean, Vietnamese, Indonesian—are topic-comment languages and as such operate with some different assumptions about how to begin messages and about the logical and other relations that hold between sentences and between the parts of a sentence. Often, these assumptions cannot be successfully mapped to English.

Sometimes English does apply what looks like a topic-comment—as opposed to theme-rheme—pattern but this is not really topic-comment. Rather, it is what is called a marked theme. A marked theme—the opposite is an unmarked theme—occurs when some part of a clause or sentence that we might normally expect to occur later in the sentence is, as we say, fronted, and instead appears at the start of the sentence. This is typically done for emphasis. So, instead of saying

1   I hate <u>drum solos</u>.

we might use a marked theme:

2   <u>Drum solos</u>, I hate them.

When themes are marked, they are "unusual" (but not impossible or unlikely) and so readers tend to notice them more. How acceptable readers find a particular fronting depends on whether they can understand why it is being done. It is common to front adverbial elements of time and place, in particular to clarify that the adverbial refers to the whole sentence and not just a part of it.

Example 1
3   We describe in detail <u>the optimization of the color correction algorithms **in this section.**</u>

Alternative 1
4   **In this section,** we describe in detail <u>the optimization of the color correction algorithms.</u>

In fact, this is so common that we may not even consider it fronting.

In research writing, motives for fronting are often textual, that is, the purpose is often to emphasize a change of topic, to support parallelism, or to introduce background. In these roles, prepositional phrases, that is, a preposition followed by a noun phrase, regularly appear at sentence-initial position, in particular certain familiar set phrases. e.g., *As mentioned earlier, By default, By definition, By this we mean, For example, For various reasons, In this paper, In previous work, In reality, In fact, In addition, In conclusion, In summary, In particular, On this assumption, To this end, Under the circumstances* and so on.

Such phrases are usually short, familiar, and no special analysis is required for the reader to understand what they mean. Readers also find themes acceptable many themes that front subordinate clauses.

> Example 2
>
> 5   KPCA and KFDA-based extraction is computationally inefficient **when the training sample set is large**.[subordinate clause]

> Alternative 2
>
> 6   **When the training sample set is large, [subordinate clause]** KPCA and KFDA-based extraction is computationally inefficient.

Less typically, we sometimes find the *complement* of a verb, noun, or adjective fronted to sentence initial position.

> Example 3
>
> 7   The renovation work for the lab <u>will soon be completed</u> ***with the support of the Campus Development Office.*** [complement of the verb *complete*]

> Alternative 3. Fronted complement
>
> 8   ***With the support of the Campus Development Office***, the renovation work for the lab <u>will soon be completed</u>.

Normally, we try to avoid splitting up a verb + complement combination (here, *completed with*) in this way. In this case, however, readers would easily recognize the motivation for fronting *With the support of the Campus Development Office* as being to highlight its role as an appreciated sponsor.

However, the use of numerous marked themes—and this includes very familiar connectives and transitions and even subordination—will undermine the structural cohesion of our writing. For example, we should not begin multiple sentences with the following type of fronted For.

> ?   **For unlabeled samples, the learner** selects samples and request for label prior to learning.

Out of context, it is hard to say whether this is an acceptable fronting. It might be acceptable if done for reasons of emphasis or parallelism. But it also might be just a mistake. The following, however is wrong and is typical of this kind of fronting error.

> Negative example 4
>
> ×   **For data mining processing, two main techniques** have been applied traditio~~nally.~~

> Rewrite 4
>
> 9   **Two main techniques** have traditionally been applied in data mining processing.

The importance of this issue of fronting is that if done poorly, it can conflict with the reader's expectations of how ideas and words refer to each other across the text, and the associated poor theme choices can produce patterns of development that do not match any expected patterns of topic theme development (See next article).

Figure 45. Theme progression: linear

Adaboost takes a series of weak classifiers and calls them repeatedly in a series of rounds $t = 1,...T$ on the training data to generate a sequence of *weak hypotheses*. Each **weak hypothesis** is associated with a *weight* that is adjusted after each round according to how it performed on *the training set*. At the same time, **the training set** is biased with a separate set of weights so as to increase the importance of *incorrectly classified examples*. **These examples** become the focus of weak learners in subsequent rounds. Finally, a linear combination of the **weak hypotheses** and **their weights** are used to form a strong hypothesis for use in classification.

Linear progression operates by taking as part of the theme some element from the preceding rheme. As seen in this example, linear progression is a dominant feature of procedures. The pattern of linear progression is broken in the final sentence, when the desciption of the procedure reaches its end and the theme uses given information (weak hypotheses and their weights) from the beginning of the procedure. Overall, this kind of theme management very much depends on the ability to appropriately use active and passive voice.

---

277 theme: four patterns of theme development

A text that is constructed with good themes, progressing through the text in a more-or-less expected way, will be perceived as flowing, well-reasoned, and persuasive. In doing this, a text—a paragraph for example— will exploit various combinations of four basic modes of *theme[3] progression: linear, constant, hypertheme,* and *split.*

278 theme: linear progression

In *linear* progression, an item from the rheme of a first sentence becomes part of the theme in the following sentence, typically adding more information to a preceding statement. This pattern is common in argumentative texts, where details and elaborations are provided in support of earlier statements. It is also common in procedures, where the pattern supports real-world sequencing of events.

In argumentative essays, topics often progress through themes linearly. The topic may be modified with adverbial elements such as transitions *(first, however, on the other hand, nonetheless…)* as they add to the theme and relate it to earlier points.

A failure to exploit linear progression may produce writing that lacks depth, as writers are not telling us more about the ideas they have introduced in preceding rhemes. The discussion will seem superficial.

Figure 45 provides three clear examples of linear progression from one sen-

---

3 As discussed in *theme-rheme,* the Theme is everything up to the finite verb. In the various types of theme progression, however, it is not in fact common for an entire theme to progress. Rather, some items or topic or elements of the theme progress. So the terminology is unfortunately loose. This book usually refers to the progression through a text of *items, elements* and *topics* (which may be selected from the theme or rheme)..
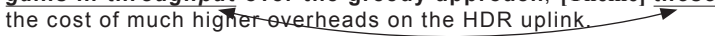
tence to the next:

1. *weak hypothesis* in one rheme (at the end of the sentence) is re-used in the immediately following theme.

2. *the training set* in one rheme (in the noun phrase at the end of the sentence) appears again in the immediately following theme.

3. *incorrectly classified examples* becomes *These examples*

Linear progression is not limited to taking an element from the rheme of one sentence and placing it in the theme of the following sentence. It also happens *within* a sentence where the rheme of one clause becomes the theme of the following clause.

279 theme: constant progression

In constant progression (Figure 46) an element of the theme of one sentence is retained in the theme of the following sentence.

1   Thus, although the on-demand approach **[Rheme]** <u>provides</u> **significant gains in throughput** **over the greedy approach**, **[Theme]** *<u>these</u>* come at the cost of much higher overheads on the HDR uplink.

A good example of constant progression can be found in the listing of the difficulties of goal reaching in the example in Figure 25 on page 141.

280 theme: split & hypertheme progression

In split progression (Figure 47) items from a rheme are taken (in parallel) as the themes of following sentences. Split progressions is very commonly used to categorize and introduce areas of knowledge, for example in the introduction, related work or in the methods. A good example of constant progression can be found in the comparison of video-encoding methods in

 theme: hypertheme progression

In hypertheme progression, an overarching hypertheme is retained and repeated in subsequent sentences. By "hypertheme" we mean an overall topic that may not be explicitly mentioned, or that may be represented only by a hypernym (a superordinate term like *dog* > *spaniel*).

Consider the example in Figure 48. Even though it is not explicitly stated, we know that the hypertheme is "contributors of relevant work in this area". The following individual themes provide specific examples of that hypertheme.

Figure 46. Theme progression: constant

Figure 2 illustrates the design our design for the specialty search engine's document sampling process. **First, probe terms** **[theme]** were generated using domain-related data. **These probe terms**, containing detailed information about the search engine's search interface, **[theme]** were used to create tailor-made profiles for each specialty search engine.

Figure 47. Theme progression: split

Data security in the factory is ensured by applying a combination of techniques, including **encryption, digital signatures, and authentication. Encryption** ensures data cannot be read without proper authorization; **signatures** ensure that senders of data are who they claim to be; **authentication** ensures that only the intended recipient receives the data.

Figure 48. Theme progression: hypertheme

Weiskopf et al. [32] proposed several interactive clipping methods that made good use of the capabilities of GPUs. **Viola et al. [34]** developed an innovative importance-based approach for focus context volume visualization]. **Rheingans and Ebert [36]** introduced volume illustration techniques [18], [20], [28] that provided alternative ways to use abstraction techniques such as nonphotorealistic rendering in focus context visualization. **Bruckner and Groeller [5] and Correa et al. [9]** proposed new volume manipulation techniques for use in illustration and visualization. **Kruger et al. [21]** proposed a context-preserving hotspot visualization technique that allowed users to interactively visualize a volume data set. **Wang et al. [45]** developed an interactive volume lens that magnified regions of interest while at the same time preserving context by compressing other regions. **Kim and Varshney [12]** used a visual saliency-based operator to focus on regions in a volume.

The hypertheme topic may not be explicitly named but instances of it are retained in the theme throughout the paragraph. Here the hypertheme is "research activity" as represented by "names of researchers". Another familair example is in Stage 4 of the Introduction, the outline of the paper, which develops a hypertheme of "these are the sections of the paper". The purpose of hypertheme progression is to allow comparison, to make it easy to search for and identify the beginning and end of each listed element. It's technique is parallelism. "Elegant variation" may be hard to resist, but it is counter-productive.

281 time-step organisation: language features

Time-step organisation is basic to describing how to do things—procedures and instructions—as well as describing what we or others did, recounts. It is often also an organisational feature in cause-effect explanation.

The primary skill in time-step organisation is to organize paragraphs and sentences in chronological (time organized) sequence. Notice how in the following procedure, what happens first appears first in the sentence and what happens next appears next.

1   A CCD sensor converts optical signals into electrical signals. These signals are **then** transported across the chip and stored in the sensor array where the charge is converted to voltage and amplified and an analog-to-digital converter digitizes the signals [3].

In this example, time-step organisation comes from exploiting active and passive voice to place subjects and objects in the right place in the sentence. Theme development is *linear*, with elements from the rheme appearing in the following theme. In such a simple and well-organized example, the use of *then* is not essential and it could easily be omitted

Time-step words and conjunctions

Other language features are also involved in time-step organisation. In the following example there is just one time-or-step word, *first*. On the other hand, the conjunction *as* signals the semantic relation of temporal overlap—two events taking place simultaneously.

Participle clauses

Present participle clauses are very often involved in time-signalling (and reason-result discussion as well). In this next example, the present participle *applying* signals that the events in the participle clause occur first and those in the main clause occur next.

2   The search module operates as follows. **First**, a search object is created to manage the fetching threads. This object reads all the URLs into memory and indexes them to ensure that no page is fetched more than once. **As** the fetcher threads retrieve pages **[temporal overlap]**, the search object monitors counts how many pages have been fetched and, **applying** a formula that calculates what fraction of a page has been retrieved **(present participle clause]**), aborts excessively delayed fetches.

In the following example, the most important feature of time organisation is, as usual, the ordering of the events in the sentences. There are no time words at all: the only explicit signalling is the verb *starts* and the use, again, of a present participle clause.

3   Query execution **starts** [verb] at the root of the quadtree and propagates down through branches of the tree, **identifying** situations where data objects intersect with query objects **[present participle clause]**. In a P2P system, this tree traversal is realized as a series of peer visits, where the Micro P2P lookup method is used to transmitted the query from a parent block b in the quadtree to the peers that store the child blocks.

When do we need time words?

Time words are most important when a description is long, or when it is reported out-of-order, or involves a mix of text-types—for example, providing background to or explanation of a step may require the use of cause-effect or reason-result organisation.

We may also need time words when a text is read in conjunction with a figure or graphic as they can more clearly signal steps or help readers find their place as they switch their attention between the text and the figure.

282 time-step organisation: one-directional time words

Certain adverbs and conjunctions that are used in time-organized descriptions are essentially one-directional. That is, unlike the conjunctions *after* and *before,* they describe events only in real-world in ideal time order, whether events are in sequence or overlapping. This is an advantage because using them help us keep time-step descriptions in good order.

Some of these words are very common and are used for multiple purpose (*as, while*, *at the same time* and *then*, all signal a variety of relations) but others are most common in time-step description: *during— 482/mill., next—493., mill, until—189/mill.,* and *final/ly,—(414/mill)* are all core vocabulary for these purposes, along with the use of present participles. Here are the core items.

as, at the same time, first, second, third,..., during, further, finally, initially, in turn, last, lastly, next, simultaneously, subsequent to, subsequently, then, thereby, ultimately, until, while

The fact that these words permit events to be ordered only in strict time-step sequence means that they should always be a writers first choice in both recounts and procedures.

1   In [3], the authors report using edge information to locate candidate exudates. **First**, because most of the retinal vessels exhibited strong edges, they used morphological closing to erase all vessels in the retinal images. They **then** calculated the variation in the local intensity of each pixel within a local window, using Equation 4 where i is the mean intensity. **Next**, all candidates in the original image were filled by using morphological reconstruction to generate the background image. **Finally** the exudates were segmented by thresholding the difference between the original image and the background image. This procedure is illustrated in Figure 3.12.

The special advantage of using these one-directional time words, particularly in

describing procedures and instructions, is that they make the description easy to follow and make it easy to check if we are leaving out or passing over steps. (For an example of the use of time words for overlapping events, readers might like to consider the example at *graphics: architectures and flowcharts: general advice.*

283 time-step organisation: words that can signal out-of-time-order

Many time-words can be used without regard to the "real-world" order of events or the order in which activities are carried out, specifically *after, before, when, once, prior to,* and *afterwards.* Consider in the following sentence how the two subordinate clauses introduced with *before* and *after* can be easily swapped with their main clauses.

1   **Before they were controlled for class size**, the metrics were strongly as-sociated with fault-proneness but **after controlling for this variable** the association between the metrics and fault-proneness disappeared.

2   The metrics were strongly associated with fault-proneness **before they were controlled for class size** but the association between the metrics and fault-proneness disappeared **after controlling for this variable**.

This mobility is a valuable feature in a time-related description and is commonly exploited when providing background to and explanations of steps or activities, to control the order of cause-effect, or to create parallelism.

Related: cause-effect organisation: three basic motivations for ordering cause-effect

284 time-step: mobility of first, then, next, etc

Sequence words like *first, second, often, then, next,* and *finally* display some mobility and writers must make a decision about where to put them. Take finally for example.

1   Finally, these also pass to the compressed data storage unit.

2   These finally also pass to the compressed data storage unit.

3   These also finally pass to the compressed data storage unit.

All three of these placements are grammatically acceptable although the first is the certainly the most common.

The main issue in placing *finally, first, then* or any other such mobile element is its function at sentence-initial. In the examples above, it is probable that the authors of 1) place *Finally* first because they think it most important to signal to readers that "this is a description of a procedure/argument/explanation and this is the final element".

In 2), the authors start the sentence with *These*, perhaps as a signal, "keep in mind the things I just referred to in the previous sentence".

In 3), even the idea of *also* is regarded as more important than signalling that "this is the last step in a procedure/explanation/argument".

285 titles

The title highlights the contribution of the research. To be minimally adequate, the title must refer to at least two of three following three elements.

1. *Problem*: This may be either a general problem area or a specific technical problem
2. *Response*: This is the response to the problem, whether it is an approach, tool, technique, algorithm, theory, framework, a method of testing or evaluating, etc.
3. *Outcomes*: These include results, findings, applications, etc

Single words, terms, or phrases such as On non-linear methods and Towards software security may be suitable for survey papers but they are not adequate titles for reports of research as they fail to specify or indicate any problem, response, or outcome.

286 titles: length

There is no word limit for a title. A title should use as many words as are required to describe the relevant problem, response, or outcome.

> Automated Sign Recognition Using an Adap-
> tive Writer-Independent Sign Recognizer

A good title highlights the contribution, whether it is in the problem area, response/method, or outcome. At ten words, the title in the example above is about average length but titles can be much longer. If more words are needed, they should be used.

287 titles: capitalization

Titles commonly use "headline style", capitalizing the first and last words and all nouns, pronouns, verbs, adjectives, and adverbs. We do not capitalize *a, an, the, and, but, for, nor, or, so, yet, of, to, as, toward, with, under,* or *between*. The word *using* should be capitalized. In a compound, the word *based* is hyphenated and lower-case e.g., *Model-based*.

288 titles: abstract nouns: theory, model, framework,...

Abstract nouns such as *theory, system, model, framework, approach, scheme, method,* and *technique* are common in titles. Exactly the same words should be used in the abstract and in the paper itself.

While some of these abstract words do share some areas of meaning or may be synonymous in some contexts—e.g., *algorithm* and *method* and *technique* are sometimes interchangeable—in general they are not. For example, *approach* and *method* are quite different: in fact an *approach* often involves deploying a

number of individual *methods.* These *methods* may include *techniques* or *algorithms* or *mechanisms.* In most contexts these are all are different things.

As usual in research writing, it is best to choose one term for one idea and to use that term consistently.

289 titles: three signs of problems
See Table 30.

290 verbs: dynamic vs stative: relational verbs
Verbs can be classified as either *dynamic* or *state (stative).* There are a number of ways to define these two verb types. One is to say that dynamic verbs describe activities, events and actions that have beginnings and ends whereas the statives refer to states or conditions. Another difference is that dynamic verbs have "their own time", i.e. We can *run* or *eat* faster, or slower but stative verbs do not have their own time, that is, we can't *allow* or *correspond* faster. Dynamic verbs are thus acceptable in continuous tenses.

1   I **am working** hard

But statives are not acceptable in continuous tenses.

2   Two plus two **is equaling** four.

If a verb that is normally stative is used in a continuous tense, it is being used with a (different) dynamic meaning.

Stative use of *consider*
3   I **consider** myself lucky. (This is my opinion about myself)

Dynamic use of *consider*
4   I **am considering** what to do next. (I am making a plan)

Stative verbs are very common in computer research writing. For example, *correspond* occurs in our corpus in various forms (but mostly as an adjective, *corresponding*) with the very high frequency of *909/mill.* And *involve,* another stative, has a very high frequency of *386/mill.* The following provides just a sampling of stative verbs that are used in computing research writing.

associated with, be, belong to, call, categorize as, class as, classify as, concern, consider, consist of, constitute, contain, cost, correspond, count as, deem, define as, denote, depend on, deserve, desire, equal, exhibit, expect, display, fit, exemplify, explain, have, indicate, know as, match, mean, name, need, prefer, possess, recall, refer to, refer to as, regard as, related to, rely on, represent, require, resemble, see as, seem, sound, stand for, suit, view as

Stative verbs can be subclassified as *perception* verbs, *cognition* verbs, and *relational* verbs. The relational verbs denote a relation between two entities, defining, naming, exemplifying, classifying, and describing. They suggest that there

Table 30. Titles: three signs of problems

The following are signs of a problem with the title, or perhaps with the Introduction.

1. The title is just a single word, term, or phrase

2. The most general-level words from the title do not appear in the first paragraph of the Introduction

3. Some of the words in the title do not appear in the Introduction, or even in the entire paper.
   • This problem may occur if the title is too general or if the paper uses a synonym for the term in the title—or what the writer believes is a synonym.

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is some degree of identity between the items on either side of the verb, that they are somehow associated, similar, parallel, or comparable or that possession and attributes are involved.

Part 2

Words, synonyms, paraphrases

Entries, Part 2

291 a priori 先驗的(地)

292 abandon 摒棄

293 ability: the ability to 能力, 能耐, 才能

294 ability: to the best of our ability 盡全力

295 able to, can, could 能, 可, 會 (可能性) 可能

296 about (approximately) 大概, 近乎

297 about (a topic) 在...身上, 在...的性格中

298 above (prep) 在...之上, 超過

299 above (adj) 在上文

300 abundant 豐富的, 富裕的

301 accelerate 促進, 促使...早日發生

302 accept 接受,

303 acceptable 可接受的

304 accepted: widely-accepted 廣泛接受的

305 access (n) 通入

306 accidentally 意外地, 偶然地, 附帶地

307 accommodate 適應, 相符

308 accompanied by 隨著...發生, 伴有

309 accompany 附有, 隨著...發生, 伴有

310 accompanying (adj) 附有的 隨著的, 伴有的

311 accomplish 完成, 實現, 達到

312 accord with (跟...) 一致, 符合

313 accordance: in accordance with (與...) 一致, 和諧, 符合

314 according to + parameter 取決於, 據...所載, 據...所說, 根據, 按照

315 according to + authority 取決於, 據...所載, 據...所說, 根據

316 accordingly: appropriately 照著, 相應地, 因此, 於是

317 account for 說明

318 account: on account of 因為, 由於

319 account: take account of 考慮到

320 account: take into account 考慮到

321 accurate vs precise

322 achieve, accomplish, get, obtain, carry out/perform, complete, reach 完成, 實現 達到, 贏得

323 achieve/accomplish, get/obtain: goals and results

324 acknowledge 就...表示謝忱

325 acquire 取得, 獲得 學到, 養成 捕獲

326 act: act as 作為

327 act in accordance with 符合

328 act like 起某種作用

329 act on (upon) 起作用, 見效

330 actually 實際上, 其實上

331 add 添加, 增加

332 add...to 添加, 增加

333 addition: in addition 另外

334 addition: in addition to 除...之外(還)

335 additional

336 address (vb) 應付, 滿足

337 adequate vs enough/sufficient

338 adjacent 毗連的, 鄰接的

339 admit: allow to enter/appear 准許進入, 准許...進入, 容許, 有餘地

340 admit: concede 承認

341 admittedly 誠然地

342 adopt 採取, 採納

343 advance (n) 先進

344 advance: in advance 預先

345 advantage (in) 利益, 好處

346 advantage: take advantage of 利用

347 advantageous (adj) 有利的, 有助的, 有益的

348 advent 出現, 到來

349 advice (n): not countable 勸告, 忠告 :

350 advocate 擁護, 提倡, 主張

351 affect (vb) 影響, 對...發生作用

352 after

353 after and once: given information

354 after all, 終究, 到底

355 aggravate 加重, 增劇, 使之惡化

356 agree with 吻合, 一致, 適合

357 agree: it is agreed that

358 aid in 幫助, 救助, 支援

359 aid: with the aid/assistance of 幫助, 救助, 援助

360 aim is to 目標, 目的

361 aim to (vb) 致力, 意欲, 旨在

362 aim: with the aim of 目標, 目的

363 aimed at 將...針對, 以...用於

364 akin to 同類的, 近似的

365 albeit 儘管, 雖然

366 alike: both…and… 一樣地, 相似地

367 alike: similar 相同的, 相像的

368 all but (one) 所有都是但只有這個除外

369 alleviate 減輕, 緩和

370 allocate 分派, 分配

371 allow and require: important verbs

372 allow: causative verb 令(它)成為可能

373 allow: transitive vs semi-causative 考慮到

374 allow for 考慮到

375 almost 幾乎, 差不多

376 alone (just, only) 只有, 僅, 單單

377 alongside 在旁邊, 靠攏著, 並排地

378 along with 與...在一起, 在...以外

379 also: between subject and verb

380 also: at initial position

381 also vs in addition at sentence-intial 與...相對

382 alternate (vb) 輪流的

383 alternate (adj) vs alternative (adj) 輪流的 vs 非此即彼的

384 alternative (n) (to) 選擇, 二擇一

386 although and while vs however and yet

387 always 永遠, 一直

388 ambiguous 不含糊的

389 ameliorate 改善, 改良

390 amenable (to) 肯順從的, 經得起檢驗(或考查)的

391 ample 大量的, 豐富的, 充裕的

392 amply 充足地, 廣闊地, 詳細地

393 among and between: do they express number?

394 among: selecting individuals from a group

395 among and between: space and direction

396 amount: the amount of 數量

397 amount to (vb) 相當於

398 anyway 無論如何, 不管怎樣, 至少, 反正

399 apart: far apart 相間隔地

400 apart from 除開, 除...之外

401 apparent vs obvious 表面的 (未必真實的) vs 明顯的

402 apparently 表面上, 似乎

403 appear: publish 出版, 發表

404 appear: occur 出現, 顯露

405 appear: seem 似乎, 看來好像

406 applicable (to) 適當的, 合適的

407 apply: reasoning/relevance

408 apply for/to: seek permission or authorization

409 apply (to): use 應用, 實施

410 appreciate: grateful 感謝, 感激

411 appreciate: understand 體會, 領會, 察知

412 approach (n) 方法, 門徑, 態度

413 approach to + verb + -ing

414 approach for + verb + -ing

415 approach (vb) 接近, 靠近, 即將達到

416 appropriate (adj) 適當的, 恰當的, 相稱的

417 approximate (vb): estimate 大致估計

418 approximate (vb): be similar to 接近

419 approximate/ly 大概, 近乎

420 arbitrary vs random 任意的 vs 隨機的

421 architecture 結構, 構造, 系統內部結構

422 area, field, domain, discipline

423 arguably 雄辯地, 可以認為

424 argue that 主張, 認為

425 argument 理由, 論據, 論點

426 arise 產生, 出現, 形成

427 arise from 由...引起

428 around (approximately) 大約

429 around (vicinity) 在...附近

430 as

431 as: reason-result

432 as: temporal overlap

433 as: introducing graphics in support of claims

434 as: a complementizer for verbs

435 as in (prep): similarity

436 as (prep): "in the role of" 作為, 以...的身分, 當作

437 as...as...: comparison 跟...一樣地, 同樣地 (對比性)

438 as...as...: extent and degree 跟...一樣地, 同樣地 (延伸性)

439 as long as: condition 只要

440 as many as: up to 和...一樣多

441 as many...(as) 和...一樣多

442 as: not as many...(as) vs fewer... (than) 比較少

443 as much...(as) 同樣多的

444 as: not as much...(as) vs less... (than) 不太多 vs 較少

445 as many/much as possible 盡量
446 as soon as 一經..., 立即..., 一...就...
447 as such 像這樣
448 as: (twice) as many...(as) (兩)倍
449 as well as, both...and..., not only... but also...
450 ascertain 查明, 確定, 弄清
451 aside from 除此之外
452 assertion (about) 斷言, 言明
453 assess 對...進行估價, 評價
454 assign...(to) 分配, 分派 派定, 指定, 選派
455 assist 幫助, 協助
456 assist in 幫助, 協助
457 assist: with the assistance of 在的幫助下
458 assume 假設
459 assumption 假定, 設想
460 assured 確定的,
461 attempt to 試圖, 企圖, 試圖做
462 attempt: in an attempt to 企圖, 嘗試
463 attend 出席, 參加
464 attended by 伴隨, 帶有, 陪同, 護送
465 attend to 照料, 處理
466 attention (n) 注意, 注意力, 專心
467 attributable to 可歸因於...的, 可歸屬的, 以...為緣故的
468 attribute (n) 特性, 特徵, 特色
469 attribute to 把...歸因於, 把...歸咎於
470 augment 擴大, 增加, 加強, 提高
471 augment with 增添與
472 authority 權威人士, 專家, 泰斗
473 authoritative 權威性的, 可信賴的
474 available 可用的, 在手邊的, 可利用的
475 availability (n) 有效, 有益, 可利用性
476 available (to) 可用的, 在手邊的, 可利用的
477 average (adj) 平均的
478 average (vb) 算出...的平均數, 將...平均分配, 平均達到, 平均做到
479 avoid 避免, 避開, 躲開
480 aware of 知道的, 察覺的
481 aware that 知道
482 balance (n) 平衡
483 balance (vb) 平衡
484 barely, hardly, scarcely, only just 僅僅, 勉強, 幾乎沒有 幾乎不可能, 簡直不可能
485 barrier to 障礙, 阻礙

486 based on: indirect use
487 based on: grounds-conclusion
488 basically 在根本上
489 basis: on the basis of 根據
490 bear (vb) 支持, 承受, 承擔
491 bear a...resemblance (to) 具有相似
492 bear in mind 記住
493 bear out
494 bearing: have a bearing on 與有關
495 because: as, since, because
496 because: it is because vs It is because
497 because of
498 because: this is because
499 because + verb: replaced with a present participle
500 become: change 變成,, 成為, 變得, 開始變得
501 before and prior to
502 beforehand 預先, 事先
503 behalf: on behalf of 代表, 利益
504 behave like 起某種作用
505 being: as, because, since
506 belong
507 below 在...以下
508 beneficial (adj) 有益的, 有利的, 有幫助的
509 benefit (n) 利益, 好處, 優勢
510 benefit (from)(vb) 得益, 受惠
511 beside 在...近旁, 在旁邊
512 besides + comma 此外, 而且, 加之
513 besides + noun 在...之外, 除...之外
514 better than...at... 更 在...上比較優勝
515 between
516 beyond 此外
517 beyond: go beyond
518 bias towards (vb) 傾向, 趨勢, 偏愛
519 biased towards (n) 偏向於
520 block ...from 阻擋, 妨礙, 阻止
521 both 兩者(都), 兩個(都), 雙方(都)
522 both...and...
523 both do not vs neither does 兩者不是 vs 兩者都不是
524 both...and...fail to vs neither ...nor does
525 bottleneck 障礙物, 隘路
526 breadth寬度, 幅度

527 bring/brought: bring 的過去式與過去
分詞)

528 bring about 引起

529 bring advantages/improvements/
benefits

530 brings us to

531 bring: give/provide an ability

532 bring together: combine

533 bring together: introduce

534 broad 廣泛的, 非限制的, 各式各樣的

535 budget (n) 預算, 預算費, 生活費, 經費

536 burden (n) 負擔

537 burden: ease the burden (on), 緩和負
擔

538 burden: shift the burden (of...
from...to...) 轉移負擔

539 burden (vb) 負擔

540 by: complementizer for a verb:
means-result, extent

541 by: passive voice

542 by + verb + ing: means-result

543 by + verb + ing at sentence initial:
three simple rules of thumb

544 call

545 call for 需要

546 can vs able to

547 can be + verb at the end of a main
clause

548 candidate

549 cannot, not able to, unable to, fails
to

550 capability 能力, 才能 性能, 功能, 耐受力

551 capability of vs ability to

552 capable of 能...的, 可...的 有...能力的,
有...本領的

553 capacity 容量, 容積

554 care: take care 小心, 注意

555 carry out 完成, 實行

556 carry out, conduct, perform, hap-
pen, occur, take place 發生, 舉行:

557 case: case-by-case 在逐 項 的基 基礎
上

558 case: in case (of): problem + pre-
caution 預防措施 ,免得

559 case: in the case of, in cases of:
situations and circumstances 至於

560 case: in any case 無論如何

561 case: not the case: "not so" 可是實際
情況並非如此

562 catch up 趕上

563 cause (n) 原因, 起因

564 cause (vb): cause-effect and causa-
tive

565 cause-effect verbs

566 caution 小心, 謹慎

567 cease 停止, 結束

568 certain (particular) 某些

569 certain: to a certain extent 在一定程
度上

570 certain that (without any doubt) 確
信的, 有把握的, 一定會的

571 chance: possibility, probability,
likelihood 可能性

572 chance: by chance 偶然地, 意外地

573 chance: due to, owing to 由於機會

574 characteristic (n) 特性, 特徵, 特色

575 characteristic (adj) 特有的, 獨特的, 典
型的, 表示特性的

576 characterize...as... 具有...的特徵, 以...
為特徵

577 characterized by

578 check (vb) 檢查, 檢驗, 核對

579 choice

580 circumvent 以智取勝, 規避, 防止...發生

581 cite as 引用, 引...為證, 舉出

582 claim (n)

583 class (n) 種類

584 class, classify (vb) 把...分類, 把...分等
級, 把...歸入某類(或某等級)

585 close to 在附近, 接近於

586 closeness

587 come about: happen/occur 發生

588 come about from

589 come at the cost of

590 come (too) close (to) 靠(太)近

591 come from: source of 來自

592 come to a conclusion/agreement/
decision 得出結論

593 come to: change

594 come to mind: think of

595 come together: meet

596 comment and make comments

597 common 普通的, 常見的

598 common: have in common (with) 共同的, 共有的

599 common: it is common for/to 普通的, 常見的

600 common to: shared characteristic

601 compact (adj) 緊湊的, 小巧的, 小型的

602 comparable: may be validly compared 可比較的

603 comparable with: similar to

604 compare (vb) 比較

605 compare...with...

606 compatible (adj) 兼容

607 compensate for 補償

608 complement (vb) vs supplement (vb)

609 competitive/ly 競爭/地

610 complete (adj) 完整的, 全部的

611 completeness 完整, 完全, 徹底

612 complicate (vb) 複雜化

613 complicated (adj) 複雜的, 難懂的, 結構複雜的

614 comply (with) (對要求、命令等)依從, 順從, 遵從

615 component 機器、設備、構成要素, 零件, 成分

616 composed of 由...組成

617 comprehensive 廣泛的, 無所不包的, 綜合的

618 compress 壓, 壓緊, 壓縮 / 使緊密

619 comprise 包含, 包括

620 compromise (n) 妥協, 和解

621 compromise (vb) 妥協

622 compromise (vb) 連累, 危及

623 conceal 隱蔽, 隱藏, 隱瞞

624 concede (勉強)承認

625 concern (n) 使擔心, 使不安, 關於.

626 concern (vb) 關於 涉及, 關係到, 影響到

627 concern: as far as...is concerned

628 concerning: at given position

629 concise 簡明的, 簡潔的, 簡要的

630 conclude 結束

631 conclude (that) 推斷出, 斷定

632 conclusions: draw/come to/arrive at/reach...(about) 結論, 推論, 決定 從這些事實中引出了不同的結論

633 conclusion(s) vs the Conclusion 結尾 vs 結論, 決定

634 conclusive 決定性的, 確實的, 最終的

635 conduct (vb)

636 confer 授予

637 confidence: degree, level

638 confident 確信的, 有信心的, 自信的

639 confine...to 把...限制在

640 confirm 堅定, 加強

641 confirm that 堅定, 加強

642 conflict (with) 相衝突 互相相衝突

643 conform (to) 符合

644 conjunction: in conjunction with 同一道, 同一路

645 consequence (n) 結果, 後果

646 consequence: as a consequence 結果

647 consequently 結果, 因此, 必然地

648 conservative 穩當的, 謹慎的, 保守的

649 consider: to be a topic or focus 集中於

650 consider: include in thinking or planning 考慮, 細想

651 consider: viewpoint 認為, 把...視為

652 consider: directive: take for example

653 considerable 相當大的, 相當多的

654 consideration 需要考慮的事, 動機

655 consideration: take into consideration 考慮

656 consideration: under consideration 考慮

657 considering: taking into consideration

658 consist in 在於

659 consist of 由...構成

660 consistent across 始終如一的, 前後一致的

661 consistent with 與...一致的, 符合的

662 consistently 一貫地, 固守地

663 constant (adj): unchanging 固定的, 不變的

664 constantly: without cease 不停的, 接連不斷的, 持續的

665 constitute 由...構成/構成, 組成

666 constitute: disclaimer 放棄, 拒絕, 不承諾

667 constrain 限制, 束縛, 拘禁

668 constraint: verb collocation 限制
669 consume 消耗, 花費, 耗盡
670 consumption 用盡
671 containing and including verbs
672 contain 包含, 容納
673 contend
674 contention
675 contiguous 接觸的, 鄰近的
676 contradict 與...矛盾, 與...抵觸
677 contradictory 矛盾的, 對立的
678 contrary: on the contrary 正正相反
679 contrary: the contrary of, the opposite of 對立面
680 contrary to vs unlike: different meanings
681 contrast: by contrast, in contrast 相比之下
682 contrast: in contrast with
683 contribute (to) 促成
684 contribution 貢獻
685 controversy 爭論, 辯論, 爭議
686 convention: by convention 慣例, 習俗, 常規
687 conventional 習慣的, 慣例的
688 conversely vs in contrast 相反地 vs 相比之下
689 convey 傳達, 傳遞, 表達
690 cope (with) 競爭, 對付, 妥善處理
691 corresponding (adj) 符合的, 一致的, 相同的#對應的, 相當的
692 cost (vb) 花費
693 cost (n) 費用, 成本
694 cost: the cost of
695 cost: tradeoffs: at the cost of vs at the expense of
696 costly 昂貴的, 代價高的
697 could:
698 count as
699 count on 依靠, 指望
700 counter (n) and (vb) 反方向地, 相反地
701 couple (vb) 結合
702 cover 包含, 適用於
703 criterion, criteria 標準
704 critical 緊要的, 關鍵性的, 危急的
705 critique 批評,評論,評論文章
706 crucial 關鍵

707 current 現時的, 當前的, 現行的
708 currently 現在 一般 流暢地
709 custom (adj)
710 customary 習慣上的, 慣常的, 合乎習俗的
711 customize 度身訂做
712 custom-made 訂製的, 非現成的
713 damage (vb) 損害, 毀壞
714 data: singular or plural?
715 date (n) 日期, 日子
716 date back to (vb) 回到去(某些)日子
717 dated: out of date 過時 舊式的, 不流行的
718 date: to date (prep) 迄今
719 deal: a good/great deal of 數量, 大量
720 deal with 應付, 處理
721 decide 決定, 是...的決定因素, 形成, 影響
722 decline (n) 下降, 下跌, 減少
723 decline (vb) 下降, 下跌, 減少
724 decrease as vs decrease along with
725 deem (to be) 認為, 以為, 視作 持某種看法, 作某種評價
726 deem it 認為, 以為, 視作
727 default
728 default: by default
729 define 確定...的界線
730 define as... 解釋, 給...下定義
731 definition 定義, 釋義
732 definition: by definition
733 definitive
734 degrade 降低, 降級 使剝削, 剝蝕
735 delegate...to (vb) 派定, 指定, 選派
736 delete 刪除
737 deliberate (adj) 故意的, 蓄意的
738 deliberately 故意地, 蓄意地
739 demand (n) 需要, 需求
740 demand for (n)
741 demand (vb)
742 demanding 高需求的
743 demonstrate 示範操作(產品), 展示
744 denote...as... 指稱
745 deny (vb) 拒絕給予
746 deny that 否定, 否認
747 depend on 依靠, 信賴
748 dependable 可靠的
749 dependent on 取決於..., 依靠, 信賴

750 depending on 依靠
751 depict
752 deplete
753 deploy 使展開, 使疏開
754 derive 衍生出, 導出
755 derive from 衍生出, 導出
756 describe 描述
757 describe how + subject
758 describe how to
759 design for
760 designed to
761 desirable 值得嚮往的, 值得擁有的, 令人
滿意的 富有魅力的, 引起慾望的
762 desire (n) 慾望
763 desire: that is desired/the desired
764 despite 不管, 儘管, 任憑
765 detail (n) 細節
766 detailed (adj) 詳細的
767 detail (vb)
768 detail: in detail (adv)
769 detect 查出
770 deteriorate 惡化
771 deterioration in 惡化
772 determine: cause-effect
773 determine: decide upon or choose
774 determine: find out
775 determining factor 決定因素
776 developed (adj)
777 devise 設計, 發明, 策劃, 想出
778 devoid of
779 devote to 將...奉獻(給)
780 diagram (vb)
781 dictate 命令
782 differ (in) 不同
783 differ from...in... 不同
784 differ from...in that... 不同
785 differentiate 區分
786 different vs various 各種的 vs 各項
787 different from 不同的
788 different kinds of 各種的
789 difficult: it is difficult to 困難的
790 difficulty 難事, 難處, 難題
791 dilemma 困境, 進退兩難
792 diminish vs decrease
793 discard 拋棄, 摒棄, 丟棄
794 discipline 學科

795 disclose 露出, 顯露, 揭發, 透露, 公開
796 discover 發現
797 discover that
798 display 顯示, 表現, 顯露
799 disprove 證明...是虛假的, 反駁
800 disregard 不理會, 不顧
801 dissimilar 不同的
802 distant from 遠的, 久遠的, 遠離的
803 distinct 與其他不同的, 有區別的
804 distinction between 差別, 對比
805 distinctive 有特色的, 特殊的
806 distinguish (between) 區別
807 distribution: follow, conform to,
obey
808 domain 領土, 領地, 領土權 地區, 區域
領域, 範圍
809 doubt: undoubtedly
810 doubt: no doubt 無疑地, 的確, 可能
811 doubt: it is doubtful that
812 doubt: cast doubt
813 dramatic/ally 戲劇般的, 戲劇性的
814 *dramatic* is a very strong claim.
815 draw (from) 獲取, 得到
816 draw conclusion/s 推斷出結論, 作出結
論, 形成結論
817 draw on 利用
818 drawback 缺點, 短處, 不利條件
819 drive 迫使, 逼迫
820 drop (n) 落下, 下降
821 drop (vb) 下降
822 due (to): thanks 應支付的, 欠款的, 欠
的
823 due: time and schedules 到期的 預定
應到的, 預期的, 約定的
824 due to, because of, owing to, thanks
to 因為, 由於 ,幸虧
825 due to: signalling "to blame for a
problem"
826 due to chance
827 ease (burden) 減輕, 緩和
828 ease: for ease of
829 ease: make easier 減輕, 緩和
830 ease of use
831 easy to
832 easy: make it easy to...
833 easy: make it easy for...

834 effect (n): collocation

835 effect (n) vs affect (vb)

836 effect (vb) 造成, 產生, 招致 實現, 達到 (目的)

837 effect: the effect of...on...

838 effect: in effect: practical result 實際 上

839 effect: in effect: operative 有效, 生效, 在實行中

840 effect: side-effect 副作用

841 effect: take effect 見效, 生效

842 effective (at) 有效的

843 effectively: focussing adverb 有功效 地

844 effectively: sentence adverb 實際上

845 efficient 效率高的, 有能力的, 能勝任的

846 effort: require, spend, etc. 努力, 盡力

847 effort: with little effort

848 elaborate (adj) 複雜的

849 elaborate (up)on (vb) 詳細說明

850 elapse (from…until…): time (時間) 過去, 消逝

851 eliminate (from consideration) 排除, 消除, 消滅

852 emerge 顯露, 暴露

853 emerging 新興的

854 emphasis…on… 強調, 重視, 重點

855 emphasis: with an emphasis on

856 emphasize that 強調, 著重

857 empirical 以經驗(或觀察)為依據的, 經 驗主義的

858 employ 使用, 利用

859 enable: causative 使...能夠, 賦予...能力

860 enable: semi-causative 使...成為可能

861 enclose 圍著, 圈起, 關閉著

862 encompass 包含

863 encounter (vb) 遭遇(敵人), 遇到(困難, 危險等)

864 encourage 促進, 助長, 激發

865 encourage: causative 鼓勵, 慫恿

866 end: in the end 最後, 終於

867 end: to this end 目的, 目標

868 end up 結束

869 endeavor (n) 努力, 盡力

870 endeavor to 努力, 力圖

871 enforce

872 engaged in 從事於, 忙於, 埋頭致力於

873 enhance vs improve 改進, 改善, 增進

874 enjoy 享有(利益, 權利, 聲譽等)

875 enough (adj/adv) 足夠的, 充足的

876 ensure (that) 保證, 擔保

877 entail 必需, 使承擔

878 entire, the 全部的, 整個的

879 entirely 全部的, 整個的 全然的, 完全的

880 entirety: the entirety of 全部, 全體, 完 全

881 entirety: in its/their entirety 全面地, 從總體上看

882 entitled to 給...權力(或資格)

883 equal 比得上, 敵得過

884 equal to 相等的事物, 相等的數量 等於

885 equally 相同地, 同樣地

886 equipped with vs equipped to 裝備, 配備

887 equivalent (to) (adj) 相等的, 相同的

888 err (on the side of) (vb) 犯錯誤, (書 刊, 儀器等)出差錯

889 erroneous/ly 錯誤的, 不正確的

890 especially 特地, 專門地

891 especially: an especially 特別, 尤其, 格外, 主要

892 essential for/that 必要的, 不可缺的

893 essentially 本質的, 實質的, 基本的

894 establish: set up 建立, 設立, 創辦

895 establish: prove 確定, 證實, 表明

896 estimate (n) and (vb) 估計, 估量

897 estimated (adj) 大約的. 大致估計

898 evaluate 估...的價 對...評價, 為...鑑定

899 even (emphasis) 甚至, 連

900 even if 甚至若果

901 even so: nonetheless 即使如此

902 even though 即使, 雖然

903 evidence (n) 證明

904 evidence (vb) 證明 顯示, 表明

905 evident 明顯的, 明白的

906 exacerbate 使之惡化, 使...加重, 使...發 怒

907 exactly 確切地, 精確地, 完全地

908 exactly like: sentence initial

909 examine 檢查, 細查

910 exceed 超過, 勝過 超出

911 except 除...之外

912 exception: with the exception (of/ that) 除...之外

913 exception: without exception 沒有例 外 :

914 excess (adj)

915 excess: an excess of 過量, 過剩

916 excess: in excess of 超越, 超過

917 excessive 過度的, 過分的, 極度的

918 exchange 交換, 調換, 兌換

919 exclude 排除在外, 不包括

920 excluding 除...之外

921 exert force/influence/pressure on 運用, 行使, 發揮, 施加

922 exhaust 用完, 耗盡

923 exhaustive/ly 徹底的, 詳盡無疑的

924 exhibit 表示, 顯出, 展出

925 exist 存在

926 existence

927 existing 現存的, 現行的[B]

928 expect 預期

929 expect that

930 expectation: in the expectation that

931 expected: the expected (adj)

932 expected: as expected

933 expected: to be expected

934 expend 消費, 花費(時間, 精力等)

935 expenditure 消費, 支出, 支出額, 經費

936 expense: at the expense 以...為代價

937 expense: come at the expense of

938 experience (n) 經歷, 閱歷

939 experience has shown 經驗, 體驗

940 experience (vb) 經歷, 體驗

941 experiment (n) 實驗, 試驗

942 experiment vs experiment on/with

943 experiment on vs experiment with

944 expire 滿期, 屆期

945 expiry, expiration 終結, 滿期

946 exploit

947 explore whether 探究, 探索

948 expose 揭露, 揭發

949 express #表達, 陳述, 表示

950 extend 延長, 延伸, 擴大, 擴展

951 extensive 廣大的, 廣闊的, 廣泛的, 大規模的

952 extent 程度, 限度, 範圍

953 extent: to a certain extent 在一定程度上

954 extra 額外的, 外加的

955 extremely 極端地, 極其, 非常

956　face (n) 臉, 面孔

957 face: on the face of it 從表面看

958 face (vb): difficulties, problems, facts

959 facilitate: semi-causative verb 使容易 促進, 幫助

960 fact: in fact 事實上

961 fact: the fact that

962 factor (n) 因素

963 fail to 失敗, 不能, 忘記

964 failing: noun vs participle

965 failure 失敗的嘗試 (或經驗

966 fall (n) 下降, 減少

967 fall (vb) 下降, 減退, 減弱

968 fall behind 落在後面

969 falls below

970 fall into a class, category, pattern

971 fall off

972 fall on, near, in the vicinity of

973 fall outside

974 fall within

975 familiar (adj) 熟悉 常見的, 普通的

976 familiar with 懂得, 熟絡, 熟悉

977 far from

978 farther vs further

979 farther (away) from 遠從

980 far: by far 顯然, 到很大程度, 很, 極

981 fashion 方式

982 fashion (vb) 製作,形成, 把...塑造成

983 fault (n) 缺點

984 favor: in favor of 贊成..., 支持..., 有利於...

985 favorable

986 feasible 可行的, 可實行的

987 feature (n) 特徵, 特色

988 feature (vb) 特載, 以...作為號召

989 feel 有感覺, 覺得

990 few 很少數, 幾乎沒有

991 few, fewer vs less, many vs much: countable and uncountable

992 fewer: the fewer...the more...

993 field 領域, 專業

994 find 找到

995 find that + opinion 發現, 碰上

996 find it + opinion e.g., easy/hard/possible ...

997 finding (n) 調查(或研究)的結果

998 first: at first 起先

999 fit 適合於

1000 fit: see fit

1001 fix (vb) 修理, 校準, 整理, 收拾

1002 fix...at/to... 確定, 決定

1003 fixed (adj) 固定的 確定的, 不變的, 不動的

1004 fluctuate 波動, 變動, 動搖

1005 focus (n) (注意, 活動等的)中心, 集中點, 重點

1006 focus on 使聚焦 調節(鏡頭等)的焦距

1007 follow: conform to

1008 follow: as follows 下面的, 下述的

1009 followed by: tracked 沿著...行進

1010 followed by: rank 跟隨

1011 followed by: sequence

1012 following

1013 for: overview

1014 for: in multi-word verbs

1015 for: complementizer

1016 for: in titles

1017 for: fronted

1018 for + time: duration

1019 for: purpose or use of general-class things

1020 for: abstract noun + for + verb + ing

1021 for: in order for: if: hypothetical

1022 for which, for whom

1023 force 強迫, 迫使

1024 force: causative #強迫, 迫使

1025 foster 培養, 促進

1026 fraction 小部分, 片段, 碎片

1027 framework 構造, 機構, 組織, 架構, 骨架

1028 free of/from 免除...

1029 freely available (to) 自由地, 無拘束地 大量地, 無節制地

1030 free to 隨意的, 不受約束的

1031 fulfil 履行, 實現 實行, 執行, 服從

1032 function (vb) 工作, 運行

1033 function as 起作用

1034 fundamental 基礎的, 根本的, 十分重要的 原始的, 主要的

1035 further (adj) 另外的, 進一步的, 深一層的

1036 further/furthermore (adv) 而且, 此外, 再者

1037 gap 分歧, 隔閡, 差距

1038 generalization 普遍化, 概括, 綜合, 歸納

1039 generally speaking 一般來說

1040 genuinely 真誠地, 誠實地

1041 get vs to be

1042 get: ascertain, determine, find, obtain, receive

1043 get + adjective: change 變成, 成為

1044 get: causative

1045 get: numerical or experimental result

1046 get rid of 擺脫

1047 get to: arrive at, reach 到達

1048 get an opportunity (to)

1049 give, offer, produce, provide, yield

1050 give, offer, produce, provide, yield vs lead to, result in

1051 give rise to and arise from 引起

1052 give up 放棄

1053 given (adj) 規定的, 特定的

1054 given that

1055 glance: at first glance

1056 go through 經歷

1057 goal: achieve a goal 目的, 目標

1058 goal: the goal is to: means-pur pose 目的, 目標

1059 goal: with the goal of 目的, 目標

1060 going on 發生

1061 gradually 逐步地, 漸漸地

1062 grant (vb) 同意, 准予

1063 granted (adv) 假定, 就算

1064 granted: taken for granted 假定, 就算

1065 gratitude: grateful, gratefully 感謝的, 感激的...

1066 grow...with...., grow...as... 增大, 增加, 發展

1067 growing (adj) 增大, 增加, 發展

1068 growth 增長, 增大, 發展

1069 guarantee (that) 保證, 擔保

1070 guess 猜測, 推測 :

1071 had: if: inversion

1072 hamper 妨礙, 阻礙
1073 hand: at/to hand, near to hand 在手邊
1074 handicap (of)
1075 handle
1076 happen（偶然）發生
1077 happen: it sometimes happens that
1078 happen: if...happen to 碰巧
1079 hardly 幾乎不可能, 簡直不可能
1080 hardly ever
1081 harm (n) 損傷, 傷害, 危害
1082 harm (vb) 損害, 傷害, 危害
1083 harmful 有害的
1084 have to vs must 必須
1085 have to: do not have to vs must not
1086 having: because
1087 having: if
1088 help (to) + verb 幫助
1089 help in + noun phrase 幫助, 有用
1090 help: with(out) the help/aid/assistance of vs use
1091 hence因此, 由此
1092 henceforth 今後, 從今以後
1093 hereafter 此後, 今後
1094 hide (hidden) 把...藏起來, 隱藏
1095 hierarchy 等級制度, 階層
1096 highlight (vb) 顯著, 突出, 強調
1097 hinder 妨礙, 阻礙
1098 hint (at) 暗示, 示意
1099 hitherto 迄今, 至此
1100 hold: contain 容納, 包含
1101 hold: point of view 認為, 持有(見解等)
1102 hold: assumption, condition 有效, 適用
1103 hurdle 欄, 跳欄
1104 hypothesis 假說, 前提
1105 hypothetical 假設地, 假定地
1106 I: personal pronouns in research writing
1107 ideal 理想的, 完美的
1108 ideally 理想地 觀念上
1109 identical (to/with) 同一的 完全相同的, 完全相似的
1110 if: had
1111 if and when: conditionals: tense
1112 if and when: types of conditions
1113 if and when: factual conditions: two types
1114 if and when: factuals: zero conditions (truisms): tense
1115 if and when: factuals: (probably) true conditions
1116 if and when: hypothetical conditions
1117 if and when: present tense hypotheticals: use of modal verbs
1118 if and when: past tense hypothetical: use of past perfect
1119 if and when: past tense hypotheticals: omitting if
1120 ignore vs neglect 不顧, 不理會, 忽視 vs 忽視, 忽略
1121 illustrate: show in a diagram 插圖於(書籍等), 圖解
1122 illustrate: provide an example (用圖, 實例等)說明, 闡明
1123 illustrate that: demonstrate, show
1124 immediate/ly (adv) 立即的, 即刻的, 直接的 最接近的, 緊接的
1125 impact (n) (on) 影響, 作用 衝擊, 撞擊, 碰撞
1126 impact (n): collocation
1127 impact: the impact of…on…
1128 impact (vb) 壓緊, 擠滿
1129 impair 削弱, 減少 損害, 損傷
1130 impede 妨礙, 阻礙, 阻止
1131 impediment 妨礙, 阻礙, 障礙物
1132 imperative mood 極重要的說法
1133 impetus 推動
1134 implication (of) 含意, 言外之意, 暗示
1135 implicit 內含的, 固有的 不言明的, 含蓄的
1136 implement 履行, 實施, 執行
1137 imply 暗指, 暗示, 意味著
1138 imply that
1139 imprecise 不嚴密的, 不精確的, 不正確的
1140 impose (on) 加(負擔等)於
1141 improve 改進, 改善, 增進
1142 in order for + noun + to + verb: condition-consequence

1143 in order that: a hypothetical or future outcome

1144 in order to: means-purpose: inten tions

1145 include: 包括, 包含

1146 inclusion (n) 包括, 包含

1147 inclusive (adj) 包含的, 包括的

1148 inconclusive 非決定性的, 不確定的

1149 incorporate (into) 包含, 加上, 吸收

1150 incorporate into 包含, 加上, 吸收

1151 increase (vb) 增大, 增加, 增強

1152 increased (adj)

1153 increasing with: simultaneous change

1154 increasingly: more and more 漸增地, 越來越多

1155 increase by + an amount

1156 increased by + how it is done

1157 incremental 增加的, 增值的

1158 incur 招致, 惹起, 帶來, 遭受

1159 indeed (加強語氣)真正地, 確實, 實在

1160 indefinitely 不定地, 無限期地

1161 independent of 獨立於

1162 indicate 表明, 象徵, 暗示

1163 indicate that: imply that 表明, 象徵, 暗示

1164 indicate: unless otherwise indi cated 指示, 指出

1165 indication 徵兆

1166 infer 推斷, 推論

1167 inferior (地位等)低等的, 下級的, 低於...的 (質量等)次的, 較差的, 次於...的

1168 influence (n) have an influence on 影響, 作用

1169 influence (vb) 影響

1170 inform: tell 通知, 告知, 報告

1171 inform: contribute to 鼓舞, 激勵, 驅使

1172 information 報告, 消息, 報導, 情報資料, 資訊

1173 inherently 固有地, 天性地

1174 inhibit 禁止

1175 initial (adj)

1176 initially (adv) 最初, 開頭

1177 initiate 開始, 創始, 開始實施

1178 input into 投入

1179 inputting

1180 input: ~~inputted~~

1181 insight into 洞悉, 深刻的理解

1182 inspiration 靈感

1183 inspire: inspired by 有靈感的:從....得到啟示

1184 instance 實例[

1185 instead (of) 作為替代

1186 instructions

1187 integrate into vs integrate with

1188 intend to 想要, 打算

1189 intend as/to be 打算將...成為, 為...而準備

1190 intention 意圖, 意向, 目的

1191 intentionally 有意地, 故意地

1192 interact (with) 互相作用, 互相影響 互動

1193 interaction 互相影響 互動

1194 interest (n): common collocants

1195 interest: the + noun + of (no) inter-est

1196 interfere with 妨礙, 衝突, 抵觸

1197 intervene in 插進, 介入, 介於中間

1198 introduce: work, research, methods 介紹, 引見

1199 introduce: add things 引進, 傳入, 採用

1200 invaluable 非常貴重的, 無價的, 無法估價的

1201 invariably 不變地, 永恒地

1202 investigate 調查, 研究

1203 involve 需要, 包含, 意味著

1204 involved in: engaged in 專注於..., 忙於...

1205 involved (adj): complicated 複雜的

1206 irrespective of 與...無關的, 不用理會...的

1207 issue (vb) 發行, 發佈 發給

1208 issue (n) 問題, 爭論, 爭議

1209 issues vs problems

1210 it: pronoun: referring to previous information

1211 it: pronoun: preparatory object

1212 it is possible vs can + passive

1213 it is necessary vs is required

1214 it is difficult/hard/easy

1215 it is worth

1216 it took... + time/duration 持續, 持久, 持續期

1217 itself: by itself 單獨地

1218 jeopardize 困於危險境地,

1219 judge 審判,評判, 裁決

1220 just: only 僅僅, 只是

1221 just as many: equally as many

1222 just like: identical

1223 keep + noun + adj 使...保持在

1224 keep: retain, preserve (長期或永久) 持有, 保有

1225 keep + verb + ing: continue 繼續不斷

1226 keep: maintain (without change)

1227 keep: maintain, store 存放, 保留, 保存

1228 keep from: causative 阻止, 妨礙, 控制住

1229 keep track of 記錄

1230 keep pace with 跟上

1231 keep up with: keep pace with 跟上

1232 kind: a kind of: type 種類

1233 kind of + adj: sort of: more or less 有點兒

1234 know 知道, 了解, 懂得

1235 know of (no), we know of, that we know of

1236 knowledge 知識, 學識, 學問

1237 knowledge: to our knowledge

1238 knowledge: prior knowledge 預知的知識

1239 known as 通認

1240 known: as is well known 出名的, 眾所周知的

1241 lack (n) 欠缺, 不足, 沒有, 缺少東西

1242 lack (vb) 缺少, 不足, 沒有

1243 large: by and large 總的說來

1244 largely 主要地,主力地

1245 last: recent 最近的, 緊接前面的

1246 last: final 最後的

1247 last (vb) 持續

1248 launch 發動, 開辦

1249 lay/laid 準備, 安排, 擬定

1250 lead to: route 指向

1251 lead to: indirect reason-result 導致

1252 lead to: indirect or direct causation?

1253 lead to: cannot be used in the passive

1254 lead to: not means-result

1255 least: at least 至少

1256 leave aside 不考慮

1257 leave out: omit 省去

1258 leave unchanged: does not change

1259 left to (leave to)

1260 legitimate 正當的, 合理的. 合法的

1261 less: the less...the more, etc

1262 less than 比....還少

1263 less...than: not as much...as

1264 lessen 變小, 變少, 減輕 使變小, 使變少, 使減輕

1265 let vs allow and permit

1266 leverage (vb)

1267 liable to: have a tendency to 易患...的, 易...的

1268 lie in (differences) (事情)在於, (錯誤等)發現於

1269 lie on (can be found on) 位於

1270 like (vb) 喜歡

1271 like: for example 像, 如

1272 like: similar to 像, 如

1273 likely 很可能的

1274 likely to 有(做...)的可能

1275 likely: it is likely that 很可能的

1276 liken 把...比作

1277 likelihood 可能, 可能性

1278 limit (n) 限度, 限制, 極限

1279 limit (vb) 限制, 限定

1280 limited (adj) 有限的

1281 limited to: scope 不多的

1282 line: in line with 與...一致

1283 list (vb) 把...編列成表, 把...編入目錄 , 列舉

1284 locate 探出, 找出

1285 long: as long as 只要

1286 long: so long as 只要

1287 long: how long it takes...to 長時間, 長時期

1288 longer: no longer

1289 look: look like 看起來像... (一樣)

1290 lower and raise (vb) 放下, 降下, 放低

1291 lower (than) (adj) 較低的

1292 made up of

1293 maintain (store) 維持, 保持, 使之繼續

1294 maintain (opinion) 堅持, 主張, 斷言

1295 maintain (upkeep) 維修, 保養

1296 majority 多數, 過半數, 大多數

1297 make sure, make certain 查明, 設法確保, 確定

1298 make it + adj + to 使得, 使...做....

1299 make it + adj + for + to 使得, 使...做...

1300 make this possible by 使...變得有可能

1301 make up 構成.

1302 make up for 補償

1303 make use of 利用

1304 many: not many vs few 不太多的 vs 很少數的

1305 marginal 微小的, 不重要的

1306 marginally 少量地, 最低限度地

1307 mask 掩飾, 偽裝, 遮蔽

1308 match (n) 相配者

1309 match (vb) 比較, 使...成對, 使...相配

1310 matter (n) 事態, 情勢

1311 matter: to be a matter of 事情, 問題, 事件

1312 matter: as a matter of fact 事實上

1313 matter (vb) 有關係, 要緊

1314 matter: does not matter 沒有關係, 不要緊

1315 matter: no matter 無論...

1316 maximally 最大地, 最高地

1317 maximize 使...增加至最大限度

1318 may vs might

1319 mean (that) (言詞等)表示...的意思

1320 means (n) 手段, 方法, 工具

1321 means: by means of 用, 以

1322 meant: is meant to: intended to(言詞等)表示...的意思

1323 meantime and meanwhile: do not mean "in addition" or "also"

1324 mention 提到, 說起

1325 merely 提到, 說起

1326 metric 公尺的, 公制的

1327 mind: keep/bear in mind that 把...記在心

1328 mind: with...in mind 把....記在心

1329 minimal (adj) 最小的, 極微的 最低限度地

1330 minimally 最低限度地

1331 minimize 使...減到最小, 使...縮到最小

1332 minimum 最小量, 最小數, 最低限度

1333 misleading 使人誤解的, 騙人的, 迷惑人的

1334 miss: overlook

1335 miss: opportunity

1336 missing 缺掉的

1337 mitigate 使緩和, 減輕

1338 modify 更改, 修改

1339 monitor (vb) 監控, 監聽, 監測, 監視

1340 more and more (adv) 越來越

1341 more or less (adv) 多少有些, 大約

1342 more: the more...the more... (由於...)越發, 更加

1343 moreover: a reinforcing reason 並且, 加之, 此外

1344 most: at most 至多

1345 motivate 給...動機, 刺激, 激發

1346 motivated by 使...緩和, 減輕

1347 motive 動機, 主旨, 目的

1348 multiple 由許多部分組成的, 複合的, 多樣的

1349 must 必須, 得

1350 must be vs require

1351 narrow (adj)

1352 narrow (vb) 使...變窄,限制, 縮小 (範圍等)

1353 nature: by its nature 天性地, 固有地

1354 near (adj) 近的

1355 near (vb)

1356 nearby (adj) 附近的

1357 nearly 幾乎, 差不多

1358 necessarily: not necessarily: not have to (不)必定, (不) 必然地

1359 necessary 必要的, 必需的

1360 necessary: it is necessary to/for/that

1361 necessary: the necessary (adj) 必然的, 無法避免的

1362 necessitate (that) (vb): require

1363 need, require, must, have to, should: meanings

1364 need, require, must, have to, should: grammar

1365 need (vb) (n) (adj)

1366 need: inanimate entities 生活窮困

1367 need: depend on, rely on 依靠, 信賴

1368 need: need not + verb: no obliga
tion or requirement

1369 needless/ly

1370 neglect 忽視, 忽略

1371 negligible 可以忽略的, 無關緊要的, 微
不足道的

1372 neighboring 鄰近的

1373 no longer 不再

1374 nevertheless 仍然, 不過, 然而

1375 none 一點兒也沒有, 沒有任何人,無一
人, 無一個

1376 nonetheless and yet 仍然

1377 nonetheless: position in the clause

1378 normal/ly 正常的/地

1379 not only....it also...: inversion 不
僅...而且

1380 not only...but also... 不僅...而且

1381 note (that) 提到, 指明, 注意, 注目, 注
意到

1382 notice 提到, 談到

1383 noticeable 值得注意的, 重要的

1384 notwithstanding 儘管

1385 notwithstanding that 雖然, 儘管

1386 number: a number of

1387 number: the number of: how
many

1388 numerous 許多的, 很多的

1389 obey: rules, principles 服從, 聽從,
執行, 遵守

1390 object (n): object of study vs
objectives of study

1391 objective (n) 目標的

1392 objective: with the objective of

1393 observe: see 觀察, 觀測, 監視

1394 observe: say 說,評述, 評論

1395 obsolete 廢棄的,淘汰的,過時的,老式的

1396 obtain 得到, 獲得

1397 obviate (the need to/for) 排除, 消除

1398 obvious: it is obvious that 明顯的,
顯著的

1399 obviously (adj) 明顯地, 顯然地

1400 occupy (with): busy with 忙碌於...,
從事於...

1401 occupy: position 居 (某種地位)

1402 occur: two meanings

1403 offer 給予, 提供, 拿出, 出示

1404 omit 遺漏, 省略, 刪去]

1405 once

1406 once: frequency 一次, 一回, 昔日, 曾
經, 一旦, 一經

1407 once: at once: immediately 馬上, 立
刻

1408 once: (all) at once: simultane
ously/together

1409 one 一個人, 任何人

1410 one-size-fits-all

1411 ongoing 繼續下去 前進的, 進行的, 不
間 斷的

1412 only just

1413 onset 開始

1414 open question 一個尚未解決的問題。

1415 open to 願意接受的

1416 opportunity: collocation 機會, 良機

1417 opportunity to 機會, 良機

1418 oppose: as opposed to 反對

1419 opt for/to 選擇

1420 optimal 最理想的

1421 option 選擇, 選擇自由

1422 optional 隨意的, 非必須的

1423 originally 起初, 原來

1424 originate from 發源, 來自, 產生]

1425 ostensible/ostensibly 外表的, 假裝的

1426 otherwise 否則, 不然

1427 ought to 應當, 應該 該

1428 out of 從(數個)裡

1429 outcome 結果, 結局, 後果

1430 outline: of an introduction

1431 outline (n) 外形, 輪廓, 提綱, 概要, 要
點, 草案

1432 outline (vb) 概述, 略述

1433 outperform 在操作或性能上)勝過

1434 over: more than

1435 overall (adj) 從頭到尾的, 從一端到另
一端的

1436 overall (adv) 總的, 全部的, 全面的

1437 overcome (vb) 戰勝, 克服

1438 overlook 看漏, 忽略

1439 overly 過度地, 極度地

1440 overwhelm (vb) 淹沒

1441 owe: owing to 由於

1442 part: on the part of 在...方面

1443 partial/y 部分的, 局部的, 不完全的

1444 participant 參加者

1445 particular, in 特別地, 尤其 特別地, 明確地, 具體地

1446 particularly 特別, 尤其 詳細地, 詳盡地 具體地, 明確地

1447 pass (test) (考試等)及格, 通過, 被批准

1448 pass (by) 經過, 穿過, 越過, 超過

1449 pass (on/along) to 傳遞, 傳達, 傳(球)

1450 pass up (opportunity)拒絕, 放棄

1451 pass: time passes (時間)推移, 流逝, 變化, 轉化

1452 peak (n) 山頂, 山峰, (有尖峰的)山

1453 peak (adj) 最高的, 高峰的

1454 peak (vb) 達到高峰

1455 perceive...as... 察覺, 感知

1456 perception 認識, 觀念, 看法

1457 perform (機器)運轉, (人)行動, 表現

1458 performance: the performance of 機器等的性能, (人的)技能

1459 periodically. 週期性地, 定期地, 偶爾

1460 permit: causative 允許, 許可, 准許

1461 pertain to 有關

1462 pitfall 陷阱, 圈套

1463 place: in place of

1464 place: take the place of 代替

1465 plague (vb)

1466 plan to 打算

1467 plentiful 豐富的, 充足的, 多的,富裕的, 豐產的

1468 plot 標繪, 繪製...的圖

1469 point 要點, 中心思想

1470 point of 要點, 中心思想

1471 point of view 觀點, 見地

1472 point out 指出

1473 point to 指向, 對準, 朝向]

1474 policy 策略, 手段:

1475 popular 民眾的, 大眾的

1476 portion (一)部分

1477 pose: a problem/threat 造成, 引起

1478 pose as + (a type of) + problem

1479 possess 擁有, 持有, 具有, 佔有

1480 possible: it is possible to + verb有可能的

1481 possible: it is possible that + clause 有可能的

1482 possibilities 發展前途, 潛在價值

1483 possibility, any/the/this 可能的事, 可能發生的事

1484 practicable 能實行的, 行得通的

1485 practical (adj) 實踐的, 實際的

1486 practically: two uses 幾乎, 差不多 vs 實際上, 事實上

1487 practice (n) 習慣, 常規, 慣例

1488 practice: in practice 實行, 實施, 實踐

1489 precaution: take precautions 預防措施

1490 precede 在...之前

1491 precisely 精確地, 準確地

1492 precision 精確(性), 精密(度), 準確(性), 確切(性)

1493 preclude 排除, 防止, 杜絕

1494 predictable/predictability

1495 preparatory it

1496 prepositional phrases

1497 prefer 寧可, 寧願(選擇), 更喜歡

1498 prefer: would prefer to + verb and would rather + verb...than...

1499 preferable 更好的, 更可取的, 更合意的

1500 preferred (adj) 更好的, 被喜好的, 優先的

1501 preference (for) 更加的喜愛, 偏愛

1502 preference: in preference to

1503 preliminary 預備的, 初步的, 開始的

1504 preliminary to 初步, 開端, 預備

1505 prerequisite 名詞 首要事物, 必要條件, 前提

1506 prescribe 規定, 指定

1507 presence: (in) the presence of 出席, 在場, 存在

1508 present (vb): appear 呈現, 描述, 出示

1509 present (vb): exist 出席的, 在場的

1510 present (vb): problems 引起(問題), 造成(困難)

1511 present (adj): current, this 出席的, 在場的

1512 preserve 保護, 維護

1513 presumably 據推測, 大概, 可能, 想必

1514 prevent: transitive verb

1515 prevent: semi-causative 阻止, 制止, 妨礙

1516 prevent.... from...: causative 阻止, 制止, 妨礙

1517 primarily 首要地, 主要地, 根本上

1518 primary 首要地, 主要地, 根本上

1519 principal 主要的, 首要的, 最重要的

1520 principally 大部分, 主要地

1521 principle 原理, 構造, 工作方式

1522 principle: in principle 原則上

1523 prior knowledge 預先學得什麼知識

1524 prior to 在前, 居先

1525 priority 優先權

1526 privilege (n) 特權, 優待

1527 probable 有充分根據(但未經證實)的, 可信的

1528 probability

1529 problem (n) and (vb)

1530 problematic 問題的, 疑難的, 不確定的

1531 procedure 程序, 手續, 步驟

1532 procedure: text-type

1533 proceed to 開始, 著手, 出發

1534 proceed with 繼續進行, 繼續做(或講) 下去

1535 produce 生產, 出產, 製造, 創作

1536 progress (n) 前進, 行進

1537 progress (vb) 前進, 進行

1538 progress: in progress 進行, 進展

1539 prohibit (1) 禁止

1540 prohibit (2) 妨礙, 阻止, 使不可能

1541 prohibitive 過高的

1542 promote 促進, 發揚, 引起

1543 prompt (n) 提示, 提示臺詞

1544 prompt (adj) 敏捷的, 及時的, 迅速的

1545 promptly (adv) 準時地, 正(指時間)

1546 prompt (vb) (1) 提示, 給

1547 prompt (vb) (2) 引起, 激起

1548 prone: error-prone 易出錯

1549 prone to 有...傾向, 易於...

1550 proper 適合的, 適當的, 恰當的

1551 proposition 陳述, 主張, 論點

1552 proportion: in proportion to 與...成 比例, 與...相稱

1553 prove that 證明, 證實

1554 prove to be + adj 表現, 顯示

1555 provide 提供

1556 provide...with the ability to

1557 provided that 以...為條件, 假如

1558 proximity 接近, 鄰近, 親近

1559 proxy (for) 代理人, 代理權

1560 purpose 目的, 意圖

1561 purpose: the purpose of...is to... 用 途, 效用, 效果

1562 purpose: on purpose 故意, 有目的地

1563 pursue 追求, 向...求愛

1564 put another way

1565 put in place

1566 quality (1) 質, 質量

1567 quality (2) 特性 品質

1568 quantify 為...定量, 以數量表示

1569 quantity 數量, 分量

1570 question: in question 討論中的, 考慮 中的

1571 raise (1) 增加, 提高, 提升

1572 raise (2) 提出, 發出

1573 random: at random 任意行動, 隨機 過程

1574 range: a range of 知識等的範圍, 區域

1575 range from...to.... (在一定範圍內)變 動, 變化

1576 range between...and.... (在一定範圍 內)變動, 變化

1577 range: out of range

1578 rank (vb) 列為..., 把...分等, 把...評級

1579 rare/ly 很少, 難得 稀有的, 罕見的

1580 rather: quite 相當, 頗, 有點兒

1581 rather (than) vs instead (of) 反而 vs 作為替代

1582 rationale (behind/for) 基本理由(理 論基礎)

1583 reach: arrive at destination, goal 抵 達,到達,達到

1584 reach + number/amount/range/ limit 達到, 延伸

1585 reach a conclusion 抵達, 到達, 達到

1586 reach: out of reach 拿不到的地方

1587 readily 無困難地, 容易地

1588 realistic 現實的, 注重實際的, 實際可行 的

1589 reality: in reality 實際上

1590 realize: be/become aware of 領悟, 了解, 認識到

1591 realize: make real 實現, 使...成為事 實

1592 reap 獲得, 得到

1593 reason (n)

1594 reason: reason-result language

1595 reason why 理由, 原因, 動機

1596 reason: for a variety of reasons

1597 reason for

1598 reasonable 有理智的, 有理性的, 合理的

1599 reasonably

1600 reasoning 推論, 推理 論據, 理由

1601 recall 回想, 回憶, 使...想起 記得

1602 recent 最近的, 近來的, 近代的

1603 recipient 接受者, 受領者, 接受器, 容器

1604 receive: well-received 很受歡迎

1605 recounts

1606 recur 再發生, 復發

1607 reduce 減少, 縮小, 降低

1608 reduction: a reduction in 減少, 削減

1609 refer the interested reader to

1610 referred to as

1611 reference: with reference to 關於

1612 reflect 反映, 表現

1613 refute 駁斥, 反駁, 駁倒

1614 regard: with regard to 關於

1615 regardless of 不注意的, 不留心的, 不關心的

1616 regular/ly 有規律地#定期地, 定期地

1617 relate to 符合

1618 related (adj)有關, 涉及

1619 relatively 相對地, 比較而言

1620 reliable 可信賴的, 可靠的, 確實的

1621 reliant on 依賴的, 依靠的

1622 relieve 緩和, 減輕, 解除

1623 rely on 依賴, 依靠

1624 remain + adjective: no change 保持, 仍是

1625 remain: are still, are yet 留待, 尚待

1626 remainder 剩餘物, 其餘的人

1627 remaining (adj) 剩餘的, 剩下的

1628 remains to be seen

1629 remark(s) (n) 言辭, 談論, 評論

1630 remark (vb) 談論, 議論, 評論

1631 remarkable 值得注意的, 非凡的, 卓越的

1632 remedy (n) 治療, 治療法, 藥物

1633 remedy (vb) 補救, 糾正, 去除

1634 remove 脫掉, 去掉, 消除

1635 render 使得, 使...成為

1636 replace (vb) 取代, 以...代替

1637 represent 象徵, 表示 作為...的代表

1638 representative 代表性的, 典型的 典型

1639 require 需要

1640 require: as required

1641 requirements: satisfy requirements 要求, 必要條件, 規定

1642 resemble 像, 類似]

1643 reservations (about)

1644 resistant 有抵抗性

1645 resolve 議決, 解決, 解答

1646 resort to 依靠, 求助於

1647 resources (n) 資源

1648 respect: in some respects

1649 respect: in this respect 關於, 涉及

1650 respect: with respect to 有關

1651 respectable 不錯的, 相當的, 可觀的

1652 respectively 分別地, 各自地

1653 respond (to) 對...有反應

1654 respondent 被訪者, 接受訪問者

1655 response: in response to 反應, 響應

1656 responsible for 需負責任的, 承擔責任的

1657 responsibility of...(to) 職責, 任務, 義務, 負擔

1658 rest 剩餘部分, 其餘的人, 其餘

1659 restrict...to... 限制, 限定, 約束

1660 result (n) 結果, 成果, 效果

1661 result: as a result 結果；所以

1662 result: as a result of 由於

1663 result from: indirect causes and effects 產生, 起因於

1664 result in: direct: reason-result 導致, 結果是

1665 resulting in: indirect result: end of a chain of events: negative 導致, 結果是

1666 resulting (adj)

1667 retain

1668 reveal 展現, 顯露出揭示, 揭露, 暴露, 洩露

1669 revolve around

1670 rise (n) (數量, 程度等)增加, 上漲

1671 rise (vb) 上升, 升起, 上漲, 升高, 增加

1672 rising (adj) 上升的, 升起的, 增大的, 成長中的

1673 role (have/play) 角色 作用, 任務

1674 role is to 作用, 任務

1675 roughly 粗糙地

1676 roughly speaking

1677 route

1678 rule out 排除

1679 run 運轉, 進行 : 開動 (機器)

1680 run into 偶遇

1681 run out of 被用完, 被耗盡, 將(貯存的...)用完

1682 safeguard 保護, 防衛

1683 said: is said to be

1684 sake: for the sake of 目的, 理由, 緣故, 利益

1685 same: the same 同一的

1686 same: the same as 同一的

1687 same: the same number of...

1688 satisfy 符合, 達到 (要求, 標準等)

1689 say 比如說, 例如, 估計, 約莫

1690 scarce 缺乏的, 不足的, 稀有的, 珍貴的

1691 scarcely

1692 search vs search for 搜查, 搜尋

1693 secondary 次要的, 從屬的, 輔助的

1694 see as: be seen as 將...看作, 認為

1695 see that 看見, 看到

1696 see: as can be seen

1697 seek (sought) 尋找, 探索, 追求

1698 seek (sought) to 企圖, 試圖

1699 seem 看來好像, 似乎

1700 seem: there seems/appears 似乎存在, 好像發生

1701 seemingly 表面上, 似乎是

1702 seldom 不常, 很少, 難得

1703 sense: in the sense that/of 意義, 意思

1704 sense: make sense

1705 sequence 序列

1706 serve as (function) 適用, 有用, 足夠

1707 serve to (purpose) 適用, 有用, 足夠

1708 set aside

1709 set up 豎立, 建造

1710 settle 解決(問題等), 結束(爭端, 糾紛等)

1711 several 幾個的, 數個的

1712 shallow 淺的

1713 shortcoming 缺點, 短處

1714 shortcut 捷徑, 近路, 快捷辦法

1715 shortage 缺少, 不足, 匱乏

1716 should

1717 show (1)

1718 show (2) 證明, 表明

1719 show that

1720 side-effect 副作用

1721 sign 徵象, 前兆

1722 significant/significantly 有意義的, 大的

1723 significant: statistically

1724 similar 相像的, 相仿的, 類似的

1725 similar to 相像的, 相仿的, 類似的

1726 similarly 同樣地, 相仿地

1727 simple (adj) 簡單的

1728 simplicity 簡單, 簡易, 簡明

1729 simplify 簡化, 精簡, 使單純, 使...平易

1730 simplistic 過分單純化的, 過分簡單化的

1731 simply 純粹地, 完全地, 簡直

1732 simulation 偽裝, 模仿

1733 single: a single 單一的, 單個的, 個別的

1734 slight 輕微的, 微小的, 少量的

1735 slow (down) (vb) 使慢, 放慢

1736 so 這麼, 那麼,

1737 so as to 以便

1738 so far

1739 so long as

1740 so (that) 為了如此, ..., 以至於...., 以便

1741 so-called, the 所謂的

1742 sole 單獨的, 唯一的

1743 solely 單獨地, 唯一地 僅僅, 完全

1744 solution (to) 解答, 解決 (辦法), 解釋

1745 somewhat 有點, 稍微

1746 sort (vb) 把...分類 vs sort out 挑選, 區分

1747 sought: seek 的過去式和過去分詞

1748 source: source of

1749 space (vb) 在...留出間隔, 隔開

1750 space (n) 空間

1751 space: for reasons of space

1752 specifically 特別地, 明確地, 具體地

1753 speculate that 思索, 沈思, 推測

1754 speed up 促進, 加快...的速度

1755 spend

1756 spend time 花(時間, 精力)

1757 spend time on 在...花(時間)

1758 spite: in spite of 不管, 儘管, 任憑

1759 split...into 把...劃分

1760 spur 鞭策, 鼓勵

1761 stand for 代表, 象徵

1762 stand out (from)

1763 startup (n) 新的企業

1764 state

1765 state that 1. 陳述, 聲明, 說明

1766 stay: not change 繼續, 保持

1767 stay the same

1768 stay: not leave/depart 停留, 逗留

1769 stem from 起源於, 由...而造成

1770 steep 急劇升降的, 大起大落的

1771 stereotype 鉛版印刷

1772 still 儘管如此, 然而, (雖然...)還是

1773 straightforward 一直向前的, 徑直的
      簡單的, 易懂的, 易做的

1774 stress on (n) 著重於...

1775 stress (vb) 強調, 著重

1776 strict (adj) 嚴謹的, 精確的

1777 strictly speaking 嚴厲地

1778 strive 努力, 苦幹, 奮鬥

1779 structure (n) 結構, 構造, 組織

1780 study: well-studied, heavily-stud
      ied

1781 stumbling block (to) 絆腳石, 困難,
      阻礙物, 障礙

1782 subjective 主觀的, 主觀上的

1783 subject (n)

1784 subject to 以...為條件的, 須經...的

1785 subjected to 使...隸屬, 使...服從

1786 subsequent 後來的, 其後的, 隨後的

1787 subsequent work

1788 substantial/ly 相當多的/地, 大大的/地

1789 substitute...with...

1790 substitute (n/vb) vs replace/ment:
      opinion about functional perform
      ance

1791 such (adj): kind, type 這樣的, 這類
      的

1792 such as 如此...的, 使...那樣的, 例如

1793 such that

1794 such...that... 如此的...(以致)

1795 suffer

1796 suffer from 受損害, 受損失

1797 suffice 足夠

1798 sufficient

1799 sufficiently 足夠地, 充分地

1800 suggest (1): propose 建議, 提議

1801 suggest (2): imply 暗示, 啟發, 使人
      想起, 使人聯想到

1802 suggest that: imply 暗示, 啟發 使人
      想起, 使人聯想到]

1803 suggested (adj)建議, 提議

1804 suitable for 適當的, 合適的, 適宜的

1805 suited: suited to 合適的, 相稱的

1806 suited: ill-suited 不適合的

1807 suited: well-suited 適當的, 便利的

1808 superfluous 適當的, 便利的

1809 superior to 較高的

1810 supervise

1811 supplement (n) (to) 增補, 補充

1812 supplement with (vb) 增補, 補充

1813 support (1)

1814 support (2) 保持, 維持, 使...進行下去

1815 support (3) 保持, 維持, 使...進行下去

1816 suppose 假定

1817 supposed 假定的, 想像上的, 被信以為
      真的

1818 supposedly 據稱, 大概上

1819 supposing (that) 假如, 如果

1820 sure that 確信的, 有把握的

1821 sure: make sure (that) 查明, 設法確
      保, 確定

1822 surpass 勝過, 優於, 大於, 多於

1823 surprise (n) 驚奇, 詫異, 使人驚訝的事,
      意外的事

1824 surprise (vb) 使吃驚, 使感到意外

1825 surprising 令人驚異的, 驚人的, 出人意
      外的

1826 surprisingly 驚人地, 出人意外地

1827 surround 周圍的, 附近的

1828 sustain 持久的, 持續的

1829 swap 交換, 交易

1830 switch (vb)

1831 symptom

1832 tailor to 修改, 使合適

1833 tackle 著手對付(或處理)

1834 take 拿

1835 take 需要, 花費, 佔用

1836 take as: uses

1837 take: as an example, for example
      以...為例

1838 take from

1839 take part (in) 參加

1840 take a photograph

1841 take steps 採取步驟(或措施)

1842 take the place of 代替

1843 take place

1844 take + time + for + noun 需要, 花費, 佔用

1845 take + time + to + verb 需要, 花費, 佔用

1846 take turns 輪流

1847 take the view that

1848 take (up): consume space

1849 take up: consume time

1850 take up: a topic, a direction of discussion

1851 target (adj) 目標

1852 target (n) 靶子, 攻擊的目標

1853 target (vb) 把...作為目標(或對象), 規定...的指標

1854 targeted (adj)

1855 targeted at 把...對準

1856 taxonomy (n) 分類法

1857 teach us that

1858 technique 技巧, 技術, 技法

1859 tedious 繁瑣

1860 tell us that, hard to tell

1861 adj + to tell....if/what/whether...

1862 tend to (liable to, prone to) 傾向, 易於, 有...的傾向

1863 tendency 傾向, 癖性

1864 tentative 試驗性的, 嘗試的

1865 term (n) 專門名詞, 術語, (一般的)詞, 名稱

1866 term (vb) 把...稱為, 把...叫做

1867 terms: in terms of 就...而論, 在...方面

1868 thank (vb)

1869 thanks (n): gratitude

1870 that (pn): that of

1871 then: sequence 然後, 接著

1872 then: if...(then)...

1873 there is/are: introducing a new topic 存在

1874 thereafter 之後, 以後

1875 thereby 因此, 由此, 從而

1876 thereof 其

1877 think it 認為, 以為

1878 think: think of as 把...看作

1879 this/these and it/they: pronouns

1880 this, these, and those: as adjectives

1881 thorough 周密的, 完善的

1882 thoroughly 徹底地, 認真仔細地

1883 those (pn) 那些

1884 throughout 遍及, 遍佈 貫穿, 從頭到尾

1885 throw away 扔掉

1886 time: at a time

1887 time: at the same time

1888 time consuming 費時的, 曠日持久的

1889 time: by + time

1890 time: from time to time

1891 time: leave (enough) time

1892 time: one at a time

1893 time: over time

1894 time: take time

1895 timely 及時的, 適時的

1896 to + verb at sentence initial: when can we do it?

1897 to be: future or intended action

1898 together with 連同, 和

1899 token: by the same token

1900 tolerate 有抗藥性

1901 too 也, 還, 而且

1902 total (adj) 總計的, 總括的, 全體的

1903 track (n) 行蹤, 軌道, 足跡

1904 track (vb) 跟蹤, 追蹤

1905 trade-off between...and... 交換, 交易

1906 traditional 傳統的, 慣例的, 因襲的

1907 trajectory

1908 transaction 交易

1909 transform from...into... 使...改變, 使...改觀, 將...改成

1910 traverse 橫渡, 橫越, 越過, 穿過

1911 treat...as... 對待, 看待, 把...看作

1912 trend (n) 趨勢, 傾向, 時尚

1913 trend (vb) 趨向, 傾向

1914 trends: verbs for talking about change and trends

1915 trigger 觸發, 引起

1916 trouble 煩惱, 憂慮

1917 trough: 低谷

1918 try to 試圖, 努力

1919 turn + adjective 變得, 成為

1920 turn: in turn 依次, 輪到

1921 turn into/turn...into...: become 使....變成

1922 turn out 結果是, 證明是

1923 typical 代表性, 作為特色, 典型

1924 typicall/y 代表的/性地, 典型的/地

237

1925 ubiquitous 到處存在的, 普遍存在的

1926 ultimate 最後的, 最終的

1927 ultimately 最後, 終極地

1928 unable to 不能的, 不會的

1929 uncertain 不明確的, 含糊的, 不確定的

1930 under

1931 underestimate

1932 undergo 經歷, 經受, 忍受 接受(治療, 檢查等)

1933 underline 1. 在...的下面劃線 2. 強調, 使突出

1934 undermine 暗中破壞, 逐漸損害

1935 undertake: carry out 試圖, 著手做, 進行, 從事

1936 undertaking (n) 事業

1937 underwent 的過去式

1938 undeniably 不可否認地, 確鑿無疑地

1939 undoubtedly 毫無疑問地, 肯定地

1940 unexpected 想不到的, 意外的, 突如其來的

1941 unforeseen 未預見到的, 預料之外的

1942 unfortunately . 不幸地, 遺憾地, 可惜

1943 universally 普遍地, 一般地

1944 unless 如果不, 除非 , 除...外

1945 unlike 不像, 和...不同

1946 unlikely 不太可能的, 靠不住的

1947 unsure (of) 缺乏信心的, 無把握的

1948 until (conj) 直到...時, 到...為止

1949 until + time 直到...時, 到...為止

1950 up to + extent

1951 up to the limits of

1952 up to/until now 到目前為止

1953 update (n) (vb)

1954 up-to-date (adj) 最新的, 包含最新信息的

1955 upon

1956 uptake 舉起, 拿起

1957 use: the use-family verbs and phrases 用, 使用

1958 use: adopt 採取, 採納, 吸收

1959 use: apply (to/on) 應用, 實施

1960 use: employ 使用, 利用

1961 use: exploit

1962 use: leverage (vb)

1963 use: make use of 利用

1964 use: means: by means of

1965 use: resort to 依靠, 求助於 訴諸, 憑藉, 求助

1966 use: utilize 利用

1967 use: the use of: nominalization: as subject and object

1968 use: "to use" as a subject: alternatives

1969 use: by using: means-result

1970 users: the user 使用者, 用戶

1971 use up: process and result 用完, 耗盡

1972 usual/ly 通常的, 平常的, 慣常的

1973 utilize 利用

1974 vague 模糊不清的, 朦朧的

1975 valid 有根據的, 確鑿的, 令人信服的

1976 validate 承認...為正當, 確認, 證實

1977 validity 正當, 正確, 確實

1978 valley 山谷

1979 valuable 有用的, 有價值的, 值錢的, 貴重的

1980 value 重要性, 益處

1981 variety: a variety of 種種: 其中一種

1982 various 不同的, 各種各樣的, 形形色色的

1983 vary 使不同, 變更, 修改 使多樣化

1984 vary over

1985 vary with 隨...而變化

1986 vary between....and.... /from ...to...

1987 venture 冒險, 冒險事業, 投機活動

1988 verify that 證明, 證實, 証實,檢驗

1989 version

1990 via: route, way, use 經由, 取道

1991 vice versa 反之亦然

1992 vicinity: in the vicinity of 附近地區, 近處, 近鄰...

1993 view...as... 看待, 考慮, 將...看成是

1994 virtually 實際上, 事實上, 差不多

1995 virtue 優點, 長處

1996 vital 極其重要的, 必不可少的

1997 violate 違犯, 違背, 違反

1998 vulnerable to 易受傷的

1999 warrant (vb) 授權給, 批准, 使有(正當)理由, 成為...的根據

2000 waste (n) 浪費, 濫用

2001 waste (vb) 浪費, 濫用, 未充分利用

2002 wasteful (adj) 浪費的, 揮霍的, 耗費的

2003 way

2004 we: personal pronouns in research writing

2005 weak (能力等)弱的, 差的

2006 weakly

2007 weaken 削弱, 減弱, 減少, 使...變弱, 使...變淡 變弱, 變衰弱

2008 weakness 弱點, 缺點

2009 were: hypothetical

2010 were: if: inversion

2011 when

2012 whenever 無論什麼時候, 每當

2013 where: relative pronoun

2014 whereas: simple contrast

2015 whereby #靠那個, 藉以

2016 wherein 在那時, 在那方面, 在那裡

2017 whether: complement of verb (引導名詞子句)是否

2018 whether: (conj) (與or連用, 引導副詞子句)不管是...(或是)

2019 while 當...的時候, 和...同時, 而, 然而, 雖然, 儘管

2020 while: concession-contraexpectation 雖然, 儘管雖然, 儘管

2021 while: temporal overlap 當...的時候, 和...同時

2022 while: simple contrast 而, 然而

2023 whole: the whole 全部的, 全體的, 所有的

2024 whole: as a whole 作為一個整體, 整個看來

2025 whole: on the whole 一般說來, 就全(整)體而論

2026 wide 廣闊的, 廣泛的

2027 widely 範圍廣地, 廣泛地 遠, 大大地

2028 widespread 普遍的, 廣泛的

2029 wild cards 百搭卡

2030 will

2031 willing 願意的, 樂意的

2032 with: as a complementizer

2033 with: reducing a defining relative clause

2034 with: instrumental with and use/using

2035 with: introducing a marked theme

2036 with: accompanying circumstance

2037 with the goal of + verb + ing

2038 without: unless they have

2039 withstand 抵擋, 反抗, 禁得起

2040 work (n) 成果, 產品

2041 work on (vb) 起作用, 行得通

2042 worsen 使)更壞, (使)惡化

2043 worst case 最糟情況的, 作最壞打算的

2044 worth + verb + ing 值得(做...) 有(...的)價值,

2045 worthwhile: make...worthwhile 值得花費時間, 值得做的

2046 would

2047 yet, although, however, while

2048 yet another (this list is long)

2049 yet: remains, still (與比較級運用)更, 益發

2050 yet: concession-contraexpectation 而, 然而

2051 yield (vb) 出產, 結出(果實), 產生(效果, 收益...

Words, synonyms, paraphrases

291 **a priori** 先驗的(地)

a priori knowledge is obtained from general principles or reasoning rather than by experience or experiment. This term is often written in *italics*. It should not be confused with *prior to* (*before, in advance, etc.*) or *prior knowledge.*

> 1 Clustering algorithms define structures that are not known **a priori** ~~in advance~~, so whatever clustering method is used, the final partition requires evaluation [22].

Related: before, previously, prior, prior knowledge, prior to,

292 **abandon** 摒棄

> 1 We should also point out that the participants at no time became frustrated with the natural language interface so as to **abandon**/*give up* their querying attempts.

Related: take up

293 **ability: the ability to** 能力, 能耐 , 才能

> 1 To integrate the units into pre-existing architecture, we developed a new class of services that demonstrate/exhibit/have/possess/show **the ability to** decode the information transported by the...

> 2 The interaction techniques described here give/offer/provide **the ability to** both directly and indirectly change and redefine representations.

Related: capability of vs ability to, capacity

294 **ability: to the best of our ability** 盡全力

> 1 **To the best of our ability**/*As far as we were able/As best we could/As much as possible*, **we kept the animated** syntax and the static syntax the same while applying...

Related: able to and can, capable of vs able to/can, capacity, capability

295 **able to, can, could** 能, 可, 會 (可能性)可能

able to can show tense e.g., <u>*was able to,*</u> and can be used with modal verbs e.g., <u>*must be able to*</u>. This means it can be used as an alternative to *can/could* when it might be unclear whether *could* is being used as a past tense or hypothetically.

Example 1: ambiguous use of could
1 This is a good indication of the amount of space that we **could [ambiguous]** reduce after the proposed transformation.

Alternative 1a: unambiguous use of *able to*
2 This is a good indication of the amount of space that we **were able to [past tense]** reduce after the proposed transformation.

Alternative 1b: able to used with a modal verb
3 This is a good indication of the amount of space that we **might be able to [hypothetical]** reduce after the proposed transformation.

Related: modal verbs, cannot, capable of, enable: causative, enable: semi-causative, fail to

296 **about (approximately)** 大概, 近乎
1 More specifically, with three nodes and a search range of three hops, the gain in throughput is **about**/*approximately/around/roughly* 65 percent.

Related: about, accurately, approximately, around, more or less, precisely, roughly

297 **about (a topic)** 在...身上, 在...的性格中
1 The most expensive strategy would crawl every document on the Web and apply a document classifier which would determine whether a page **is about**/*concerns/refers to* tennis (for example) and so should be in-dexed or....

Related: involve

298 **above (prep)** 在...之上, 超過
1 When the probability is **above**/*higher than/more than/over/greater than* 50%, the number of hops is proportional to popularity.

Related: below, less than, lower than, under

299 **above (adj)** 在上文
1 **The above**/*The preceding/This* expression can be used to compute Step 3 in Algorithm 2.

2 The purpose of the small point placement algorithm is to satisfying <u>the two criteria outlined</u> **above**.

300 **abundant** 豐富的, 富裕的
1 As there is **abundant**/*a lot of/ample/plenty of/a great deal of/no shortage of* information freely available on the Web...

Related: adequate, enough, excess, sufficient, too much

301 **accelerate** 促進, 促使...早日發生
1 The use of the fast Fourier transform (FFT) [40], [41] greatly **acceler-ates**/*speeds up* the whole process and can also....

302 **accept** 接受,

1 Admission control mechanisms either **accept** or <u>reject</u> video and voice flows according to the available budget.

2 Some transactions have strictly bounded delays but others are more flexible and can **accept**/*bear/cope with/handle/tolerate* some completion delays and therefore lower bandwidths.

303 **acceptable** 可接受的

1 Packet losses within this interval **are acceptable**/*tolerable/can be accepted/are reasonable/can be tolerated* but handoff frequency should be low and, in particular, we should avoid...

304 **accepted: widely-accepted** 廣泛接受的

1 Unfortunately, there is currently no **widely-accepted**, independent standard for representing music information.

305 **access (n)** 通入

The noun *access* collocates with the following verbs.

allow	允許	block	塊	ease	容易
forbid	禁止,	gain	得到,	grant	津貼
permit	允許,	prohibit	禁止	prevent	防止

Note that to *gain access* can have the a negative connotation. In the following, it is associated with "intruding on someone's privacy".

1 Of course, under this approach, designers and managers of building systems will **gain increased access to** information about occupant behavior but this should <u>intrude only minimally on occupants' privacy</u>.

Related: connotation, intruder

306 **accidentally** 意外地, 偶然地, 附帶地

1 Although a single user might **accidentally**/*by accident/unintentionally* send a message to all addresses in their address book, such events are so rare that...

Related: deliberately, intentionally, purposely

307 **accommodate** 適應, 相符

1 Peers should be situated in the vicinity of neighbors that are more likely to **accommodate**/*handle/satisfy* their information needs.

2 In order to **accommodate**/*allow for/deal with* the dynamism of the time correlations, the join windows tend to be large, which can overload the system.

Related: cope with, problem (n): "problem" verbs

308 **accompanied by** 隨著...發生, 伴有

Example 1: one clause
1 Changes in data scheme transitions **may be accompanied by** changes to the visual mappings.

Alternative 1a: two clauses
2 *Along with* changes in data scheme transitions, *there may be* changes to the visual mappings.

Alternative 1b: two clauses
3 *If there are* changes in data scheme transitions, *there may be* changes to the visual mappings.

Related: in conjunction with

309 **accompany** 附有, 隨著...發生, 伴有
1 We suppose that the increases in fault detection effectiveness that **accompany**/*come with* such increases in granularity can be at least partially attributed to the "observer effect".

310 **accompanying (adj)** 附有的 隨著的, 伴有的
1 An exhaustive discussion of the features and transitions in this system is beyond the scope of this paper, so for present purposes we focus on the animated transitions in Figures 1-5. All of these are also found in the **accompanying** video figure.

311 **accomplish** 完成, 實現, 達到
1 When spoken dialogs are used, the system will seek to **accomplish**/*achieve/realize* some primary goal while at the same time recursively pursuing a number of subgoals.

312 **accord with** (跟...) 一致, 符合
1 As can be seen in Fig. 1, this classification **a**ccords with/agrees with/conforms with/matches/is in conformity with our observation that...

Related: conflict with

313 **accordance: in accordance with** (與...) 一致, 和諧, 符合
1 The results are certainly **in accordance with**/*agree with/conform to/match* the model but the authors might consider...

314 **according to + parameter** 取決於, 據...所載, 據...所說, 根據, 按照
1 Given these limitations, we might have organized the data **according to**/*with reference to* space, time or attribute using multiple alternative hierarchies but...

315 **according to + authority** 取決於, 據...所載, 據...所說, 根據,

The "authority" 權威人士, 專家, in this pattern might be a person, rules, regulations, a figure, a table, etc.

> 1 **According to** a recent survey by Ke et al. [2005], our proposed approach falls into the category of...

Related: accord, accordingly, in accordance with

316 **accordingly: appropriately** 照著, 相應地, 因此, 於是

> 1 The base station then updates its proxy table entry for the destination client and sets the proxy client **accordingly**/*to accord with the updates to the table*/*to match the updates to the table*.

317 **account for** 說明

> 1 Eliminating the SYN-drop advantage improved VARE by less than 5% in the baseline case and 30% in the case study. By itself, this is not enough to **account for**/*explain* SRPT's big improvement over VARE.

Related: account for, attribute to, drive, explain, inspire, motivate, cause-effect and reason-result verbs

318 **account: on account of** 因為, 由於

> 1 The greedy proxy discovery method is unable to locate the target **on account of**/*because of*/*due to*/*owing to* the local minimum at Client B.

Related: due to: signalling "to blame for a problem"

319 **account: take account of** 考慮到

take account of and *take into account* are interchangeable.

> 1 We calculate the probability that the highest bidder wins by first **taking account of**/*taking into account*/*taking into consideration*/*considering* all of the conditions under which it does not win.

320 **account: take into account** 考慮到

See account: take account of

321 **accurate vs precise**

accurate and *precise* have different, though commonly confused, meanings. If something is *accurate*, it is <u>correct</u>. In contrast, something can be *precise*, yet be <u>incorrect</u>. For example , a clock may show the time very *precisely* as 10:10:10:01 a.m. Yet if it is 10:30, that is not the correct time and the clock is not *accurate*.

Related: exactly, precisely

322 **achieve, accomplish, get, obtain, carry out/perform, complete, reach** 完成, 實現 達到, 贏得

These verbs are discussed and compared together here because they are quite commonly confused. The main differences are that

1. *achieve/accomplish* and *get/obtain* refer to results and

2. *carry out* and *perform* refer to activities.

For other verbs that talk about outcomes and results, also see *give, offer, produce, provide, yield:* compared.

323 **achieve/accomplish, get/obtain: goals and results**

We *achieve* or *accomplish,* and *get* or *obtain* results, goals, and outcomes. The differences in their meanings revolve around whether the outcomes are *intended* and whether they are *positive or neutral*.

1 *achieve* **and** *accomplish:* **intended (positive) results**

achieve and *accomplish* both introduce goals or outcomes or results that are in-tended (and therefore positive). They have a positive connotation of "success" so if we say *results* are *achieved*, or *accomplished* readers suppose that we regard them as good results.

1 These implications can be used to **achieve** *higher coverage with smaller suites* [intended, positive result] by targeting requirements that...

2 Consequently, their detector **achieves** *high rates of detection with many fewer false positives* [intended, positive result].

3 The developers meet each morning and each person briefly summarizes what [intended positive result] they **accomplished** the previous day, the problems they encountered, and what [intended positive result] they plan to **accomplish** today.

Often, the goals that are *achieved* are specified. In the following, the specified goal is *load balance.*

4 The number and locations of the index nodes on a ring, as well as the shape of the ring, can change to adaptively tolerate node failures and **achieve** *load balance.*

Note that *achieve* and *accomplish* do not introduce activities. The following is a bit puzzling, unless we wish to emphasize that *the subspace mapping* is some kind of positive outcome.

? **In order to achieve** *the subspace mapping* [intended/positive result?], **we** applied a statistical approach.

The intended meaning (neutral description of "how we do or did it"), is probably one of the following.

5   **We carried out/performed** the subspace mapping by applying a statitical approach

6   We **mapped the subspace** using a statistical approach.

And similarly for *accomplish*.

7   A PTP-based similarity search **[activity]** is ~~accomplished~~ **carried out/performed** by applying metric properties to prune the search space.

2   get/obtain: neutral results

obtain—779/*mill.*—is very frequent in the corpus. *get* can often be used instead of *obtain* but *get* has many uses, e.g. *ascertain, determine, find, obtain, receive,…* so the more specific *obtain* is usually preferred.

   get and *obtain* introduce goals, outcomes, or results but do not provide any information about intentions. They also have no particular connotation or attitude, so they are also neutral about the quality or value of a result.

1   Since the best overall results were **obtained [neutral]/ achieved [positive]** with the Leon query engine, in this section we report only those.

2   When a match is found, we return true. But if we **get/obtain** a result that is greater than min, we return false.

3   carry out, perform: activites and tasks

We *carry out, perform,* and *complete* activites and tasks. *(~~achieve, accomplish~~)*

1   A PTP-based similarity search **[activity]** is **carried out/performed** by applying metric properties to prune the search space. **[means]**

   We do not *accomplish* activities.

2   A PTP-based similarity search **[activity]** is ~~accomplished~~ by applying metric properties to prune the search space. **[means]**

4   complete: activites and tasks

complete emphasizes that a task or activity has been carried out to the end. It is neutral and for that reason is <u>not</u> interchangeable with the positive *achieve* or *accomplish*.

1   It is not necesary for an individual task to be **completed/carried out** ~~achieved/accomplished~~ in less than a day for it to be useful to the overall project.

5   reach: destinations, conclusions, limits

We *reach 1. destinations* 2. *conclusions* 3. *limits. reach* is neutral. It does not suggest "success". In the following examples, the ideas of 'destination' and 'limit' are conflated 合併.

1   The only way we know that **we have reached** <u>the end of a string</u> is that we encounter a non-character symbol.

2 Elements in the virtual hashtable are swapped out of main memory once the specified cache size **is reached**.

Related: give, offer, produce, provide, yield: performance

324 **acknowledge** 就...表示謝忱
1 The authors would like to **acknowledge** the assistance/contributions/support of...

Related: appreciate, concede, due to: thanks, grateful, like, thank (vb), thanks (n)

325 **acquire** 取得, 獲得 學到, 養成 捕獲
We *acquire* things, but <u>not</u> results, goals, or outcomes (for that we use *get* and *obtain*).

1 Since mobile nodes can now be traced using methods that were previously infeasible, they are also vulnerable to passive adversaries who can **acquire**/*obtain/get hold of* their private motion patterns and other network metrics.

326 **act: act as** 作為
1 Therefore, the start and end positions of a symbol can **act as**/*be/serve as* good symbol discriminators.

327 **act in accordance with** 符合
1 This framework requires agents to **act in accordance with**/*conform to* the social conventions that apply in auctions.

328 **act like** 起某種作用
1 Formals **act like**/*behave like* "wild cards" and are matched against earlier values when...

329 **act on (upon)** 起作用, 見效
1 Any function/operator that realizes features in an implementation may *act on/affect/operate on* a set of parameters.

330 **actually** 實際上, 其實上
actually emphasizes the truth value of an entire clause or the part of clause that it is adjacent to.

1 The World Wide Web is indeed a huge, scale-free network. However, the average distance between nodes is such that it **actually**/*in fact* requires just an average of 19 clicks to get anywhere we want.

Related: actually, as a matter of fact, certainly, clearly, indeed, in fact, of course, plainly, really, undoubtedly, obviously,

331 **add** 添加, 增加
1 An extensible modeling language for software systems requires a way to extend or change constructs so as to **add** or modify features **[direct object]**.

Related: augment, complement, supplement

332 **add...to** 添加, 增加

    1 We have also **added** Gaussian noise terms **[direct object] to** the functions **[indirect object]**.

333 **addition: in addition** 另外

 See also vs in addition at sentence-intial

334 **addition: in addition to** 除...之外(還)

See also vs in addition at sentence-intial

335 **additional**

See further

336 **address (vb)** 應付, 滿足

address introduces a topic or problem in a neutral way. It does not suggest any particular attitude towards a problem (See *tackle*).

    1 This line of research has had some success but nonetheless <u>fails</u> to **address**/consider the quite common scenarios discussed in the introduction.

Related: problem (n): verb collocations *e.g.,* cope with, deal with, face, handle

337 **adequate vs enough/sufficient**

adequate refers to both quantity and quality. The intended meaning must be identified in context. In the following example, readers may interpret *adequate data* as data that is "of the right quantity" or "of the right quality".

    1 Given **adequate** data, it is likely that answer will appear as a simple reformulation of the question.

In contrast, *sufficient* and *enough* both refer <u>only</u> to quantity. In the following example, the idea of *sufficient data* is of the right *quantity* of data.

    2 Given sufficient/enough data, it is likely that an answer will appear as a simple reformulation of the question.

Finally, note that *enough* may refer to quality from the viewpoint of having a "sufficient quantity of that quality". In the following example, *enough* refers to a sufficient quantity of the quality of *sophistication*.

    3 As has been shown in recent work, even quite elementary attacks **are sophisticated enough** manipulate the most commonly used recommendation algorithms.

Related: suffice

338 **adjacent** 毗連的, 鄰接的
Related: contiguous, neighbouring

339 **admit: allow to enter/appear** 准許進入, 准許...進入, 容許, 有餘地
In the corpus for this book, *admit* is used almost entirely with the meanings of "permit access/entry" and "allow to occur" (usually allowing errors or flaws to appear or occur).

permit access
1 The call admission algorithm determines whether an incoming call **can be admitted**/*allowed entry/given access* on a principle of efficient allocation of the limited bandwidth.

allow errors
2 On the other hand, Mn values that are too small **may admit**/*introduce/ cause/lead to* noisy PN examples, as can be seen in Figure 8.

Related: access

340 **admit: concede** 承認
admit was not found in the corpus with this meaning,

Related: acknowledge, admittedly, concede, deny

341 **admittedly** 誠然地
1 **Admittedly**, this work is not the first to take advantage of the time correlation effect.

Related: concede

342 **adopt** 採取, 採納
See: use: the use-family verbs and phrases: adopt

343 **advance (n)** 先進
1 The ability to handle dynamic object creation certainly constitutes a significant **advance**/*step forward* but at the same time it does introduce some interesting problems.

Related: achievement, enhancement, enhance vs improve, improvement, innovation, progress, refinement, success

344 **advance: in advance** 預先
1 The other drawback is that the fuzzy partitions of variables are fixed and have to be determined **in advance**/*beforehand/upfront*.

Note that *upfront* is quite an informal (口語的) way to say *in advance*.

345 **advantage (in)** 利益, 好處

Example 1
1   The traditional MA performs slightly better than the AMA, suggesting that, even with the lower overheads of traditional MA, **there is no advantage in**/*benefit from* <u>uneven rebalalances</u>.

Alternative 1: noun form collocates with offer
2   ...suggesting that, even with the lower overheads of traditional MA, <u>uneven rebalalances</u> **offer no advantage**/*benefits*.

Related: disadvantage, drawback, handicap

346 advantage: take advantage of 利用

1   This scenario describes a scenario in which a global company use floating licenses to **take advantage of**/*exploit* different international time zones.

Related: use: the use-family verbs and phrases: exploit

347 advantageous (adj) 有利的, 有助的, 有益的

Example 1
1   Using the Haar filter as the foundation of wavelets is **advantageous**/*beneficial* because its linear computational complexity is ideal for data streams.

Alternative 1: as abstract nouns
2   The **advantage/benefit** of using the Haar filter as the foundation of wavelets **is that** its linear computational complexity is ideal for data streams.

Related: abstract nouns: signalling nouns

348 advent 出現, 到來

We talk of the *advent* of situations and technologies when they are fundamentally important in the context, e.g., *the advent of the internet.*

1   Moreover, the **advent**/*arrival/coming/development* of <u>end-user programming</u> has meant that projects now also consider...

349 advice (n): not countable 勸告, 忠告：

advice is not countable so it does not add *-s* to make a plural ~~advices~~.

2   The definition of Computer Systems Design and Related Services also covers bodies that provide other professional and technical computer-related **advice** <u>and services</u>.

350 advocate 擁護, 提倡, 主張

Related: argue for, hold, maintain

351 affect (vb) 影響, 對...發生作用

*affect—236/mill.—*suggests correlation (rather than "cause") and a *neutral* or *negative* outcome. On spelling, note that the verb is *affect* but the noun—denoting the outcome—is *effect*.

In the following example, the use of *affect* (as opposed to, say *influence*) suggests a negative effect even though there is no specific negative mentioned.

> 1 Therefore, the loss of some invariants may not **affect** system management tasks at all.

In the following example, the use of *affect* would seem to be neutral, i.e., the results could affect performance either positively or negatively.

> 2 Because these results **directly affect** our method's performance, we need an appropriate way of setting fp, which will be described in Section 3.

Related: verbs vs nouns: have an effect on, make a contribution to, etc.

352 **after**

See after and once: given information

353 **after and once: given information**

在...以後, 在...之後, 以後, 之後

The words *after* and *once* are frequently used both in procedures (how it is <u>usually</u> done) and in recounts (how someone <u>did</u> it).

Both words signal *given* information. Thus, in the following example, *After image acquisition* can be assumed to refer either to something that was described earlier in the paper or that is assumed to be part of the reader's background knowledge.

> 1 3. SEMI-SUPERVISED CLASSIFICATION
> Our approach uses an elementary of semi-supervised technique, cluster and label [12]. **After image acquisition,** any uncategorized pixels are labeled using assisted labeling.

In the following example, *After extraction* again refers to given information but in this case it is a step of the procedure that was implied earlier, that occurred in *the URL extraction module*.

The textual function of *After extraction* is thus to signal a return to the description of the procedure, which had been interrupted by an explanation (italics).

> 2 If the result page contained one or more search results, it was passed on to **the URL result extraction module**. *As different search engines have different styles and formats for the result page, the extraction process had to be customized, and this information was also stored in the search engines profiles.* **After extraction**, documents associated with the URLs were fetched and saved as sample documents.

Related: upon

354 **after all,** 終究, 到底

after all + comma is rare in research writing. Typically, it used in conversation and signals a final, presumably obvious reason.

> 1   Well, when you are sick you take medecine. **After all,** that is what it's for!

Related: at first, firstly, after all, at last, lastly, after all, in the end, meantime and meanwhile do not mean in addition

agent vs subject

See active and passive: subject, object, agent

Related: clauses: four basic patterns

355 **aggravate** 加重, 增劇, 使之惡化

> 1   A particular <u>drawback</u> of the hierarchical approach is that it is necessary to traverse a path in the taxonomy tree all the way from the root to the target node, a problem that is <u>further</u> **aggravated**/*exacerbated/made worse* by the fact that it is very hard to choose an item from the kind of long list provided by a deep taxonomy tree.

Related: change for the worse: affect, aggravate, burden, damage, degrade, deteriorate, exacerbate, harm, interfere with, suffer from, undermine, worsen, **change for the better:** alleviate, ameliorate, enhance, improve, mitigate

356 **agree with** 吻合, 一致, 適合

> 1   Table 1 shows the Ev errors for all of the algorithms. The results broadly **agree with**/*are in agreement with/accord with* our initial subjective impression.

Related: accord, conflict

357 **agree: it is agreed that**

> 1   Although there is no well-defined definition of diversity, **it is generally agreed that** the models should be sufficiently different that their <u>errors occur</u> in different parts of the input space.

358 **aid in** 幫助, 救助, 支援

> Example 1
> 1   In this work we use flow contours to **aid in**/*help in/assist in* the design of the treemap layout.

If we have already used *use* in the sentence, these phrases are redundant and, if we wish, can be removed.

> Alternative 1: more concise
> 2   In this work we **use** flow contours **in** the design of/designing the treemap layout.

359 **aid: with the aid/assistance of** 幫助, 救助, 援助

Example 1
1   Note that the results of the subroutine <u>can be visualized</u> **with the aid of/** *using* **a matrix**.

Using *use* will change the order of information. Notice how *matrix* has changed position in the Alternative 1.

Alternative 1: using use change the sentence order
2   Note that **a matrix can be used to** <u>visualize</u> the results of the subroutine.

Related: use: the use-family verbs and phrases

360 **aim is to** 目標, 目的

Example 1
1   In PFCC, our **aim is to**/*goal is to* retain the benefits of all three methods, co-clustering, possibilistic clustering, and...

Alternative 1
2   **The aim/goal of** PFCC **is to** retain the benefits of all three methods, co-clustering, possibilistic clustering, and...

Related: **Part 1:** abstract nouns: signalling nouns, **Part 2:** aim to (vb)

361 **aim to (vb)** 致力, 意欲, 旨在

aim to—31 mill.—signals means-purpose, where *intentions* are emphasized. In the following example, with *aim* as a verb, *full sketch recognition* is the theme of the sentence.

Example 1
1   Full sketch recognition **aims to**/*seeks to* generate regular geometric shapes that accurately correspond to the full input sketch [6].

For organisational reasons (see *Abstract nouns: signalling nouns)* and perhaps to remove the idea of an abstract notion having intentions, we can use *aim* as a signalling noun, as follows.

Alternative 1
2   **The aim**/*goal of* full sketch recognition **[theme] is to** generate regular geometric shapes that accurately match to the full input sketch [6].

Related: aim (n), attempt to, design, desire (n, vb), goal, intend to, intention, plan to, propose to, purpose, strive, target (n, vb), try to, want to, wish to,

362 **aim: with the aim of** 目標, 目的

1   If y is smaller than 1, z is updated by multiplying its old value with n, **with the aim of** <u>adjusting</u>/*in order to* <u>adjust</u> the amount of shedding...

Related: semantic relations: cause-effect: means-purpose, goal, purpose

363 **aimed at** 將...針對, 以...用於

1   In addition, many domain-specific languages are **aimed at**/*intended for/ designed fo*r specific audiences and applications.

364 **akin to** 同類的, 近似的

1   In fact, as remarked earlier, a VEG specification is **akin to**/*like/similar to* a grammar where the syntactic aspects are complemented with semantic functions.

365 **albeit** 儘管, 雖然

366 **alike: both...and...** 一樣地, 相似地

Example 1
1   The sheer size of the Web and its distributed pattern of organisation can easily overwhelm amateur **and** professional information seekers **alike**.

alike is rare. The phrasing *both…and…* is more predictive.

Alternative 1
2   The sheer size of the Web and its distributed pattern of organisation can easily overwhelm **(both)** amateur **and** professional information seekers.

367 **alike: similar** 相同的, 相像的

1   Distortions that occur during digitisation can cause a loss of precision such that the smaller two characters are, **the more alike they appear/** *the more similar they appear/the more they look alike*.

Related: different, identical, like, same, the same, the same as, unlike

368 **all but (one)** 所有都是但只有這個除外

all but means *all except*. Thus *all but one* means *all except one*.

1   If we include the case where the auction closes at the 100 level, then that **all but one bidder**/*all bidders except one* must show values below 100.

Related: except, with the exception of

369 **alleviate** 減輕, 緩和

To *alleviate* a problem is to reduce its bad effects. It does not *solve* 解決 or *resolve* 議決 the problem.

1   If it were possible to reliably identify this kind of search context, the problem of query vagueness would certainly be greatly **alleviated**/*reduced/ relieved* or perhaps even completely removed.

Related: change for the worse: alleviate, ameliorate, benefit, benefit from, enhance, enjoy, improve, mitigate, change for the better: affect, aggravate, burden, damage, degrade, deteriorate, exacerbate, harm, interfere with, suffer from, undermine, worsen,

370 **allocate** 分派, 分配

Related: assign

371 allow and require: important verbs

allow—761 mill, and *require* 1019/*mill.* respectively talk about about central engineering concepts such as ability, possibility, and requirements and constraints (that is, positive and negative motivations).

From a writer's point of view, *allow* and *require* are important because they facilitate the easy use of nominalizations, which are essential in research writing as a way of generalizing and talking in terms of abstract concepts. In particular, *allow, require,* and similar abstract or *stative* verbs are used with nominalizations in managing theme and given-new, for example when discussing cause-effect and causation.

In short, it is hard to write an computer engineering research paper in English without good control of these two very common verbs.

372 allow: causative verb 令(它)成為可能

As a causative verb *allow* is followed by an agent object.

> 1 This strategy **allows/***permits/makes it possible for* **us [agent object] to safely discard** some of the leaf nodes.

373 allow: transitive vs semi-causative 考慮到

As a transitive verb, *allow* is followed by a direct object noun phrase.

> 1 This approach **allows** smoother trade-offs between recall and precision **[direct object]**.

However, sometimes the direct object noun phrase will contain a nominalization that implies an agent object. In the following example, *generation* is just such a nominalization.

> Example 1: semi-causative
> 2 A UML model is often in fact more complex than a semantic Web language and does not **allow effective automatic code generation**. **[direct object]**

We could easily rewrite this example as a causative.

> Alternative 1: causative
> 3 ...and does not **allow/***permit* **us [agent object] to generate automatic code effectively.**

This book refers to this kind of pattern as "semi-causative" because it implies an agent object.

Related: causative verbs, semi-causative verbs

374 **allow for** 考慮到

allow for has the meaning of "provide a margin of error" (誤差幅度): a *tolerance* (公差, 容限) or *allowance.*

1 The initial value of the retransmission timer, which is large enough to accommodate the messages, is twice the round trip time, with an additional 100 ms provided to **allow for**/*leave room for/make allowance for* message processing.

375 **almost** 幾乎, 差不多

almost is an adverb and so it can modify another adverb, e.g., *almost exactly,* an adjective, e.g., *almost identical* or a verb, e.g., *almost matches.*

1 FR performs the worst with a high trajectory, averaging about 3.5. IR and HD are next with **almost**/*close to/nearly* identical trajectories of around 3.0.

Related: approaching, near (vb)

376 **alone (just, only)** 只有, 僅, 單單

Example 1
1 Using temporal features **alone**/*only*, we obtain a relative improvement of 19% over the baseline and 8% using content clarity.

Alternative 1
2 Using *just/only* temporal features, we obtain a relative improvement of 19% over the baseline and 8% using content clarity.

Related: lone, single, sole, solely

377 **alongside** 在旁邊, 靠攏著, 並排地

1 Fig. 6 shows how a graphical depiction of search results can be presented **alongside**/*beside/side by side with* the actual ranked search result.

378 **along with** 與...在一起, 在...以外

In this example, both *along with* or *in conjunction with* strongly signal the idea of <u>coordinated</u> use. In contrast, *and* would be simply a general linking conjunction.

1 If we can extract the factors motivating the selection of the item, we should in principle be able to use these factors, **along with**/*and/in conjunction with* item content descriptors, to generate more accurate recommendations.

379 also: between subject and verb

also is a focusing adverb—that is, its meaning of "addition" is focused on just one part or item of the clause. The focusing adverbs are normally placed either immediately after the subject or in the verb group.

1 Therefore the adaptive algorithm **[subject]** <u>must now also take</u> into account **[verb group]** the effect of the changes on the overall structure of the transformation.

2 A number of translation algorithms <u>have **also** been proposed</u>, for example... .

380 also: at initial position

Sentence connectors—e.g., *in addition* and *however*—comment on an entire sentence or clause and often appear at sentence-initial. But *also* is not typically used as a sentence connector and so seldom appears in at the start of a sentence.

When *also* does appear at the start of sentence, its scope will not be the entire sentence but just some part of it, usually what directly follows it. Thus, in the following example, *also* is an adverb for the following verb, *related*. Note that with *also* in this position, we reverse the order of the subject (underlined) and the verb, *are* (see *inversion*).

1 **Also** <u>related</u> to social-network-based interrelationship analysis are **[verb]** <u>studies on trust evaluation and propagation in a distributed environment</u> **[subject]**.

In the following, *also* is placed to focus on just the adjacent adjective *efficient*.

2 The community accuracy of <u>the proposed method</u> has been shown to be better than that of [4]. **It** is **also** <u>efficient</u>, with...

Related: inversion

381 also vs in addition at sentence-intial 與...相對

Although we do sometimes see *also* + comma (*Also,…*) used instead of *In addition* at the beginning of a sentence, *also* and *in addition* are not usually interchangeable.

The sentence adverb *in addition* typically signals that the entire sentence or clause is an item in a series or a list. Thus, when readers see *In addition* at sentence initial, they may expect to find that other items have been previously listed in parallel with it.

In the following example, *In addition* is signalling the second of a list of three items, each a research activity *(compare, develop, analyse)* of *this study*.

1 To test the robustness of ETA on imbalanced data, **this study compared** ETA with several popular classification techniques. The results show that MTS is the most robust technique for dealing with the classification problem on imbalanced data. **In addition, this study has developed** a "probabilistic method" that identifies the ETA classification threshold, achieving good results. **Finally, ETA was used to analyse** the radio frequency (RF) inspection process in the domain of mobile phone manufacturing.

382 **alternate (vb)** 輪流的

1 Fitting the default manifold involves wrapping it around the data set. Specifically, **we alternate**/*swap/change/take turns* **between** projecting the data points onto the manifold and solving a least squares problem...

Related: change, swap, switch

383 **alternate (adj) vs alternative (adj)** 輪流的 vs 非此即彼的

The use of *alternate* as a synonym for *alternative* can be ambiguous. It is advisable to avoid *alternate* as an adjective or adverb and use it only as a verb.

1 The ~~alternate~~/*alternative* [adjective] execution strategies described in Section 2 differ in the way they retrieve...

384 **alternative (n) (to)** 選擇, 二擇一

1 The **alternative to** a single centralized dispatcher is to have a number of dedicated local dispatchers.

Related: nouns: choice, option, replacement, substitute, **verbs:** exchange, replace, substitute, swap, switch, place: take the place of, **prep:** instead (of), rather (than)

385 **alternatively** 二者擇一地

1 Services could on the one hand be implemented directly as methods in an object-oriented language. **Alternatively**, developers might choose to decompose a service into a number of methods.

Related: alternate (adj) vs alternative (adj), choice, option

386 **although and while vs however and yet**

雖然, 儘管, 然而

although and *while* , *however* and *yet* all signal elements of the concession-contraexpectation relation. *although* and *while* signal the concession element.

1 **Although/While [concession]** the vertex texturing approach is more elegant, **[contraexpectation]** it can cause performance problems.

however and *yet* signal the "surprising" contraexpectation element.

2 **[concession]** The vertex texturing approach is more elegant, **yet/however** **[contraexpectation]** it can cause performance problems.

1 **Position in the sentence**

however and *nonetheless* and *while* are sentence adverbs and regularly appear at the start of a sentence. The conjunction *yet* normally does not.

Related: nevertheless, nonetheless and yet

387 **always** 永遠, 一直

1 Pairwise t-tests with a 0.5 significance level showed that the final re-gression estimates were **always** significantly better than those of ONE1, **almost always** significantly better than those of PLANNED except under the 10 percent label rate.

388 **ambiguous** 不含糊的

Related: obscure, unclear, uncertain

389 **ameliorate** 改善, 改良

to ameliorate a problem is to make it better or to improve it.

1 For both techniques, increasing the update rate caused a correspond-ing deterioration in the resource discovery. This situation was partly **ame-liorated**/*dealt with/handled* by reducing the capacity of the query history, which had the effect of reducing the update rate.

Related: change for the better: alleviate, ameliorate, benefit, benefit from, enhance, enjoy, improve, mitigate, **change for the worse:** affect, aggravate, burden, damage, degrade, dete-riorate, exacerbate, harm, interfere with, suffer from, undermine, worsen

390 **amenable (to)** 肯順從的, 經得起檢驗(或考查)的

The meaning of *amenable* in the following example is that *"it may not be as easy to organize other types of data hierarchically like this"*.

1 We might have organized the data according to space, time or attribute using multiple alternative hierarchies but while this may have been effec-tive in this case, other data may not be so **amenable to** such a hierarchical organisation.

391 **ample** 大量的, 豐富的, 充裕的

1 This subject certainly deserves more **ample**/*complete/comprehensive/ extensive/thorough* treatment and will be one focus of our future work.

Related: abundant, exhaustive, plentiful

392 **amply** 充足地, 廣闊地, 詳細地

1 The effectiveness of this framework has been **amply**/*well/thoroughly/ fully/satisfactorily* demonstrated [11-15].

393 **among and between: do they express number?**

It is sometimes said that *between* is for "two" and *among* is for "more than two" but this is not in fact true. Consider the following examples, where *between* is the correct choice even though in each case more than two items are involved.

1 There are very great differences **between** English, Chinese, and Arabic.

2 In other words, there are dependencies **between** quality, effort, and cycle time.

In the following example, *between* is used, but that does not indicate it that only two *trade-offs* might be investigated. And the use of *among* would not indicate

more than two. This is because *between* and *among* do not necessarily provide this information.

> 3 We performed several empirical studies to evaluate and refine our tech-niques and to identify the impacts of <u>the trade-offs</u> **between** <u>them</u>.

The fact is, while *between* can refer to <u>two or more</u> and *among* can refer to <u>more than two</u> the issue of number is in any case just one aspect of their differences in meaning. Rather, a perhaps more central aspect of their meaning—is so often the case with pairs of words in English that are associated with learner difficul-ties, e.g. *enhance* vs *improve, substitute* vs *replace, random* vs *arbitrary*—is that each signals or invites a different way of looking at things.

In this case, the difference between *between* and *among* is that *between* signals "we are thinking of these as individual items" and *among* signals "we are thinking of these as collective or grouped items". Thus in the following, *among* is used to talk about things that are *not distinct* or are *being considered collectively*.

> 4 Crossfire allows imperfectly matched GPU combinations and supports a mode which generates a grid of tiles which are distributed **among** the GPUs, where each GPU works with multiple tiles.

394 among: selecting individuals from a group

among can indicate that something is <u>part of</u> a group or is selected <u>from within</u> a group.

> 1 There are numerous other approaches to instrumentation, **among**/*one of/ some of* the most widely-used being ATOM [3], EEL [4], ETCH [5], and Mahler [2].

> 2 **Among**/Of the 4329 tRNA samples, 4143 contain AA, 2647 contain AAA, and 2270 contain ATT.

> 3 As illustrated in Fig. 3, node S selects nodes A, B, C from **among** its neigh-bors according to a uniform distribution.

395 among and between: space and direction

When disussing location or direction, *between* suggests a specific position while *among* suggests a non-specific postion or path. Thus in the following example, the use of *among* suggests that the path is not specified.

> 1 NVIDIA's SLI moves pixel traffic **among** the cards using a dedicated path-way, entirely bypassing the PCI-Express bus and...

As to the issue of number, note here that if we had said *between the cards* it would <u>not</u> have meant there were only two cards. There might have been two cards or there might have been fifty cards! We would not know that from these sentences because these words do not necessarily signal number. In the following, the use of *between* tells us that the path is specified.

> 2 If x and x1 are found in the correct subdomains of the implementation Ak and Am, then the actual boundary must pass **between** x and x2.

396 **amount: the amount of** 數量

1 The ranking of the results reflect **the amount of**/*the quantity of/how much* extra effort that is required.

397 **amount to (vb)** 相當於

1 Thus, researchers are forced to either tackle the enormous engineering undertaking of crawling and indexing the Web or face the unpleasant reality of building systems on what essentially **amount to**/*are equivalent to/are, effectively/are, in effect,* black boxes.

398 **anyway** 無論如何, 不管怎樣, 至少, 反正

anyway introduces an additional reason but this word is seldom used in formal writing.

Related: besides + comma

399 **apart: far apart** 相間隔地

1 A second problem arises when access points are placed too **far apart**/*too widely separated/not close enough*.

400 **apart from** 除開, 除...之外

1 **Apart from**/*Aside from/Besides/ Except in/Leaving aside* cases where the cache rate is very low, each peer caches only the topic information from one or two of its neighbors.

2 **Apart from**/*Besides* the extra energy that a node must consume, movement is also attended by the risk of losing connectivity and sensing coverage.

Related: besides, besides + comma

401 **apparent vs obvious** 表面的 (未必真實的) vs 明顯的

apparent carries the meaning of *seeming*, i.e., "it appears to be so but in fact it is not so". It should not be used to mean *obvious*.

1 One possible reason why there was initially little work on this problem is the **apparent**/*seeming* difficulty of incorporating unlabeled data...

Similarly, it can be ambiguous to use *it is apparent that* when the intended is meaning is *it is obvious that*.

2 From Table IV, **it is apparent** (*it is obvious that* or *it seems that?*) that this is where the least value is added.

Related: seem, seeming, seemingly

402 **apparently** 表面上, 似乎

apparently expresses doubt or uncertainty.

1 Even though the term "variable" was used in [2], **apparently**/*it appears that/it seems that* what was meant was literal faults.

Related: arguably, apparently, conceivably, seemingly, supposedly

403 **appear: publish** 出版, 發表

1 An earlier version of this paper **appeared in**/*was published in* the Pro-
ceedings of the IEEE Real-Time Systems Symposium (RTSS '07) [12].

404 **appear: occur** 出現, 顯露

1 We also observed that a smaller index **appeared**/*occurred* more fre-
quently in each cycle.

405 **appear: seem** 似乎, 看來好像

1 **It appears that**/*it seems that* biological phenotypes may be more closely
correlated with gene regulation than gene expression results.

406 **applicable (to)** 適當的, 合適的

1 ZEUS-based protocols assume that the base-station can be reached by
any node in one hop but this limits the size of the network to which such
protocols are **applicable**/*can be applied*.

407 **apply: reasoning/relevance**

apply can be used to talk about whether an idea, claim or assumption is either
relevant or valid 有根據的.

1 The same argument **applies**/*holds* when a composition is either too broad
or too narrow.

2 Starburst [21]) is not always able to control the amount of clutter reduction
and this **also seems to apply for**/*be the case for* pixel-plotting visualisa-
tions.

408 **apply for/to: seek permission or authorization**

apply for + noun and *apply to + verb* have meanings that involve seeking permis-
sion or authorization.

1. *apply for* + noun *(e.g. a job/license/permission)*
2. *apply* to + verb *(e.g. attend a conference)*

409 **apply (to): use** 應用, 實施

apply to/on is one of the *use* family verbs. It is ditransitive (takes both a direct
and an indirect object) and so can be used to talk about using a tool, usually *on
something* or *to something*.

See Part 2 use: the use-family verbs and phrases

410 **appreciate: grateful** 感謝, 感激

1 We also **appreciate**/*are grateful for* the efficient aid of Ms Irene Zhao,
who arranged all of the field interviews.

Related: acknowledge, due to: thanks, grateful, gratefully, like, thank (vb), thanks (n)

411 **appreciate: understand** 體會, 領會, 察知

1 As the reader can **appreciate**/*see/understand*, despite the nontrivial nature of the agent, the code itself is reasonably clean and concise.

Related: aware of, know, understand

412 **approach (n)** 方法, 門徑, 態度

1 Alternatively, we could adopt/copy/emulate/copy/follow/take the **approach** of commercial databases...

Related: mechanism, method, technique, way

413 **approach to + verb + -ing**

approach + *to* + verb + *ing* introduces the *domain* where the approach is applied.

1 [2] proposed an approach to partition**ing** signed networks by using a local search method.

414 **approach for + verb + -ing**

approach + *for* + verb + *ing* introduces the *purpose* of the approach.

1 The proposed method applies an agent-based **approach for** formulat**ing** the community identification problem.

415 **approach (vb)** 接近, 靠近, 即將達到

1 As the number **approaches**/*gets close to/nears* 50, more emails are sent to more users and more conversations are conducted with many more people.

Related: almost, nearly

416 **appropriate (adj)** 適當的, 恰當的, 相稱的

1 Nonetheless, to the best of our knowledge, there has been little attention given to the interactions between layers and **appropriate**/*suitable* protocols for exploiting cooperative communications.

Related: suit, suited to, ill-suited, well-suited

417 **approximate (vb): estimate** 大致估計

1 This approach conservatively **approximates**/*estimates* the executable sequences of events but may also...

418 **approximate (vb): be similar to** 接近

1 EDFSR and NESR both assume that the recent past will **approximate**/*be similar to* the immediate future and so rely on past queries to estimate future information needs.

419 **approximate/ly** 大概, 近乎

1 Those methods are efficient but not accurate enough, since the computation of moments is based on an **approximate** formula.

2 The replicated XML file is **approximately**/*about/around* 102 Mbytes but once loaded it is...

Related: about, around, more or less, roughly

420 **arbitrary vs random** 任意的 vs 隨機的

arbitrary—125/mill and *random—311/mill*—are not synonyms. *arbitrary* suggests that something is done without regard for method. Thus, if for example we say we are choosing thresholds *arbitrarily*, we are saying that it does not matter to us how they are chosen. We could choose them based on family birthdays. There might be bias but that does not matter.

On the other hand, if we choose thresholds *randomly*, we are doing so in order to ensure the choices are <u>free of bias</u>.

> 1 The fact that it can also be tuned to an index space of **arbitrary** size **[it doesn't very much matter what size it might be]** means that this scheme could also be applied in a superpeer-based P2P network.

Related: chance, random

421 **architecture** 結構, 構造, 系統內部結構

Related: framework, model, structure, taxonomy

422 **area, field, domain, discipline**

Realms of knowledge and research are referred to in order of increasing scope: *area, field, domain,* and *discipline.* But beyond that there is a great deal of overlap and mismatch in the uses of these words. The following makes some broad generalizations.

1 **area** 領域, 專業

We often say *area* when talking about where something is applied or implemented.

> 1 Several **areas** <u>of application</u> will benefit from these novel visualizations.

2 **field** 領域

We say *field* when talking about a narrow are of research that is nonetheless larger than the focus of just an individual's area of research. It has its own research agenda and within that we find the researcher's own "area of interest".

> 1 In the **field** of computer vision...

> 2 In the **field** of medical diagnostics, these visualizations can be applied in (the areas of) radio therapy, surgery, and drug research.

3 **domain** 領域

domain and *field* are often used interchangeably but *domain* tends to have larger scope. A *domain* may not be academic and could be something like sport, economics, education, health, security, etc.

> 1 The second phase involved developing **domain**-specific languages.

4 **discipline** 學 科

A *discipline* takes the most inclusive view of the scope of research, e.g. *computer engineering*. It will be made up of many fields with various theories and methods.

1 In most engineering **disciplines**, modularity is a fundamental design practice

423 **arguably** 雄辯地, 可以認為

1 Section 5.3 shows how we did this for the selected software frameworks, where we identified two <u>certainly important</u> and three **arguably**/*perhaps <u>important</u>* options.

424 **argue that** 主張, 認為

1 **In Section 3.1, we argued that**/*expressed the view that* in delay-tolerant networks it is advantageous to...

Related: advocate, hold, maintain

425 **argument** 理由, 論據, 論點

1 Of course, **an argument** *could be made* <u>that</u> ...

2 In this section, we present **arguments** *in support of/in favor of*...

3 These findings *support/agree with* **our argument that**,...

4 **The same argument** *applies/holds* when...

Related: apply, hold, support

426 **arise** 產生, 出現, 形成

arise (arose, arisen) is a low frequncy —<5 *mill.*—n intransitive verb. Its subject is invariably a problem, challenge, or difficulty and *arise* introduces the relevant cause, source, or circumstance.

1 Problems in graph clustering **arise in**/*are found in* a range of pattern recognition applications. In this paper we focus on...

2 Further, we also discuss a problem that frequently **arises**/*occurs* when...

Related: arise from, give rise to, happen, lead to, take place,

427 **arise from** 由...引起

arise from has a neutral or negative association but most typically in troduces the indirect cause, reason or source of a negative result or outcome. This problem or negative thing can be a thing, location, or circumstances.

1 <u>The proposed restrictions on the input UML models</u> **[negative result] arise first from** the use of course-grain semantics **and second from** limitations of the TGV tool **[reasons]**.

Because *arise from* can have a neutral as well as negative prosody, it can also be used in the following example, where there is nothing intrinsically negative about the design of a programming language.

> 2 The design of a programming language **[something inherently neutral]** should **arise from**/*be driven by/be motivated by* a need.

Nonetheless, the two alternatives—*drive* and *motivate*—have no negative associations at all and so may be preferable in this case.

As *arise from* cannot be written in the passive, to reverse the order of cause-effect we have to resort to other words choices and gammar. For example, we might use *lead to* or *a source of*.

> Example 1
> 3 Noise contamination **arises from** biases in the microarray experiment.
>
> Alternative 1: reversed order
> 4 Biases in the microarray experiment **lead to/are a source of** noise con-tamination.

Related: arise from, come about from, derive from, result from, stem from, , cause-effect and reason-result verbs

428 around (approximately) 大約

> 1 The standard deviation of the cluster is such that at any given time **around**/*about/approximately* 10% of the data space should be receiving insertions.

Related: about, accurately, approximately, exactly, more or less, precisely, roughly

429 around (vicinity) 在...附近

> 1 The task of optimizing the size of cells and the transmission range is car-ried out by adjoining cells **around**/*in the area of/in the vicinity of/in the neighborhood of/near* hot spots and hot routes in the network.

Related: close to, nearby

430 as

as is both a preposition and a conjunction . Among other functions, it signals *reason-result*, *temporal overlap,* and *comparison.*

431 as: reason-result

as + subject + verb signals the reason in a reason-result relation. In particular, it can either indicate that a reason is given information or it can tend to de-emphasize the reason (See Part 1, *because*).

> 1 **As** each operation contains several parameters **[reason]**, there is no guar-antee that all of the concepts in each parameter will be from the same cluster **[result]**.

Related: Part 1: cause-effect organisation: as, since, because, so

432 as: temporal overlap

as + subject + verb can signal either 1) simultaneous occurrence or 2) overlapping events, where actions/events in the *as* clause and in the main clause occur simultaneously.

> *1* Since path conditions can change over time, the optimal path information must be updated constantly **[one event] as the data travels towards the destination**. **[another simultaneous event]**

Related: as...as...

433 as: introducing graphics in support of claims

as may be used with a phrase introducing a figure or graphic in support of a claim.

> *1* Since a typical path system too large to be main-memory resident, it must first be partitioned into subgraphs or fragments **as shown in** Fig. 2.

> *2* **As we can see**/*As can be seen* in Fig. 6, of all the clients two hops from the destination, Client A has the best downlink channel rate **[claim]**.

Related: Results-discussion: As Fig 2 shows...etc

434 as: a complementizer for verbs

Many verbs use *as* as a complementizer, in particular the stative (relational) verbs, e.g., *treat as, regard as.* The broad meaning is to suggest there is some degree or aspect of "identity".

> *1* Suppose we have a path system **represented as** a graph as shown in Fig. 1a. For simplicity, we assume the weight of each neighborhood block is 1, which might be **interpreted as** the time required to....Fig. 2 shows such a shortest path **indicated as** a dotted line.

Related: complementation

435 as in (prep): similarity

as in + noun phrase can indicate similarity.

> *1* We assume, **as in** previous modeling approaches [16, 17, 18, 19], that schemas from different data models are presented in.

436 as (prep): "in the role of" 作為, 以...的身分, 當作

as + noun phrase can indicate meanings such as *in the role of, to do the job of, to serve as, to act as, to function as.* In these uses, *as* + noun phrase is a complement but is often fronted, as follows.

> *1* **As a proof-of-concept,** we have built TIGER, a Web service search engine.

This phrasing should be followed by an active voice main clause, as a passive main clause can create a pointlessly long theme.

> Negative example 1: long theme and trivial rheme

2 As the framework, the Steady-State Genetic Algorithm (SSGA) is used.

> Rewrite 1

3 As the framework, we use the Steady-State Genetic Algorithm (SSGA).

437 as...as...: comparison 跟...一樣地, 同樣地 (對比性)

1 The Mozilla open source Web browser is **as large as** many industrial-sized programs.

Related: part 1: comparison: compare-phrases: problems within the sentence

438 as...as...: extent and degree 跟...一樣地, 同樣地 (延伸性)

as...as… is used with the meaning "to the least/most/such an extent/degree" in phrases like *as fast as necessary* (adj) and *as many as they could* (clause).

1 We generated **as** many subsets **as** necessary to cover all possible sub-paths.

2 The memorization task required participants to view and memorize **as** many causal relations **as** they could within a time period.

Related: more: the more...more...

439 as long as: condition 只要

as long as signals the relation condition-consequence.

1 When there are more than two bidders, the bid increment decreases **[consequence] as long as**/*so long as* the bid price increases **[condition]**.

Related: given, semantic relations

440 as many as: up to 和...一樣多

as many as can be used as to suggest 'up to a certain number', where the number is meant to be understood to be a high number.

1 However, to get reliable conclusions from shallow judgments of this kind requires a large number of queries, **as many as**/*up to* 750 in our environment.

Related: reach + number/amount/range/limit, up to

441 as many...(as) 和...一樣多

1 FindMesh searches for relationships between measurements in the same clusters and so discovers **as many**/*the same number of* invariants **as**/*as* AllMesh.

442 as: not as many...(as) vs fewer...(than) 比較少

many/fewer refers to countable quantities, while *much/less* refers to uncountable quantities.

1 There are **not as many**/*fewer* techniques for accurate skin region segmentation **as**/*than* for fast skin pixel detection.

443 as much...(as) 同樣多的

1 The pattern for the segment attacks was interesting in that when the size of attacks was small, there was nearly **as much**/*the same amount of* bias **as** without detection.

444 as: not as much...(as) vs less...(than) 不太多 vs 較少

The pattern *less...than* is equivalent to *not...as much...as*

1 FindMesh searches for relationships between measurements in different clusters and so may **not** discover **as much** variation **as** AllMesh/...and so may discover **less** variation **than** AllMesh.

445 as many/much as possible 盡量

We use *many* for countable items and *much* for uncountable. *information* is uncountable and *links* are countable.

1 Once in this position, an adversary can engage in eavesdropping, collecting **as much** information **as possible** from intercepted traffic.

2 More generally, it is our goal to acquire a set of hub pages containing **as many** unique,high-quality links **as possible**.

446 as soon as 一經..., 立即..., 一...就...

1 Genuinely proactive socially location-aware information retrieval evaluates its environment **as soon as**/*immediately (that)/straight away (that)* a user triggers the positioning function.

447 as such 像這樣

In the phrase *as such*, *as* signals reason-result and *such* is a pronoun referring to a preceding noun phrase. *as such* does not means *because of this* or *for this reason*.

Example 1
1 However, currently available NLP systems are textual content systems, not structured data systems. **As such**, NLP systems cannot handle...

The pronoun role is of *such* is clearly seen in the following alternative version, where *such* is replaced with the relevant noun phrase *textual content systems*.

Alternative 1
2 However, currently available NLP systems are textual content systems, not structured data systems. **As** textual content systems/**Because** they are textual content systems, NLP systems cannot handle...

448 as: (twice) as many...(as) (兩)倍

(twice) as many, etc may be used in direct or indirect comparisons. If one half of the comparisons can be easily inferred by readers, it may be omitted.

1 In controlled experiments, users exploring unfamiliar data made up to twice **as many** discoveries using widgets provided with social navigation data/(**as** when standard widgets were used.)

Related: comparison: direct and indirect

449 as well as, both...and..., not only...but also...

1 **as well as** 和...一樣, 和, 也

We use *as well as* before the final item in a list of two or more items as follows circumstances.

1. When a list that has already used *and*.

2. As an alternative to *and* to clearly signal a final item (even in a two-item list)

3. When the names of individual items in a list are long or *and* has occurred earlier in the sentence

The following list has *three* items (underlined).

> *1* In the Birdseye project [5], the stochastic grammar was used to model the request's normal control flow across multiple machines **and** to detect component failures **as well as** to localize performance bottlenecks.

This next list has only *two* items (underlined), but each item is long and complex, so *as well as* is used to space out the words and clearly signal the final item.

> *1* Unfortunately, this advantage of the NL formulation is undermined by its reliance on a priori knowledge of the class-conditional likelihoods **as well as** by its sensitivity to their inaccurate definition.

2 **both..and...** 不但...而且

both...and makes a two-item list. The use of *both* lets the reader know in advance that the list has only two items.

> *1* Unfortunately, this advantage of the NL formulation is undermined **both** by its reliance on a priori knowledge of the class-conditional likelihoods **and** by its sensitivity to their inaccurate definition.

3 **not only...but also***...* 兩個...和...

not only...but also... also makes a two-item list but *not only* signals "given" information.

> *1* Unfortunately, this advantage of the NL formulation is undermined **not only [given information]** by its reliance on a priori knowledge of the class-conditional likelihoods **but also** by its sensitivity to their inaccurate definition.

Related: given-new, readability is predictability

450 **ascertain** 查明, 確定, 弄清

> *1* Thus, by examining the snapshot we are able to **ascertain**/*determine/ find out* whether the process is consistent with the first urn model or with the second.

451 **aside from** 除此之外

See apart from

452 **assertion (about)** 斷言, 言明

An *assertion* is a statement that has not been tested.

1 Few of these very common **assertions about**/*claims about* the advantages of information landscapes have in fact not been empirically tested.

Related: claim, contention

453 **assess** 對...進行估價, 評價

1 Our work considers a large, randomly-collected set of features and **assesses/estimate/evaluate/makes an assessment of** their usefulness in predicting program behaviors.

Related: guess, judge

454 **assign...(to)** 分配, 分派 派定, 指定, 選派

1 From 562 sessions we randomly selected 585 navigation trails. A team of 20 computer scientists then **assigned** relevance judgments **to** them according to a 5-point scale (values 0−4).

2 In the next phase, orthogonal rays are used to **assign**/*place* each variable **to**/*in* one column.

Related: allocate

455 **assist** 幫助, 協助

1 These interaction techniques should be seen as **assisting**/*aiding/supporting* rather than constraining free navigation.

456 **assist in** 幫助, 協助

1 *They* also illustrated how their approach can **assist in**/*be of assistance in/help in* the incremental generation of tests.

457 **assist: with the assistance of** 在的幫助下

Related: help, with the help of, with the aid of

458 **assume** 假設

Related: suppose

459 **assumption** 假定, 設想

1 Our interpretation is more intuitive than previous approaches because our algorithm does not ma*ke strong* **assumptions** *as to/about* how users read the search results.

2 We employ a fully-automatic approach that operates on the **assumption that** clusters are groups of tuples that exhibit a high degree of overlap.

460 **assured** 確定的,

1 That same time also saw the establishment of software parks with **assured**/*guaranteed* power supplies.

Related: ensure

461 **attempt to** 試圖, 企圖, 試圖做
1 Clever natural language understanding systems **attempt to**/*seek to/try to* interpret these terms using reasoning.

462 **attempt: in an attempt to** 企圖, 嘗試
in an attempt to signals the semantic relation means-purpose.

1 Publicly accessible systems are open to manipulation by attackers who can introduce biased profiles **in an attempt to**/*so as to/in order to* force a system to adapt in a certain way.

Related: aim, goal, purpose, try, strive, seek

463 **attend** 出席, 參加
1 An ad hoc DTN could be created by students at school, employees in their offices, or people **attending** conferences.

464 **attended by** 伴隨, 帶有, 陪同, 護送
1 Apart from the extra energy that a node must consume, movement **is also attended by**/*is accompanied by* the risk of losing connectivity.

Related: in conjunction with

465 **attend to** 照料, 處理
1 This type of prioritization is siimilar to earlier approaches except that it initially **attends only to**/*focuses only on/pays attention only to* functions that have been modified.

466 **attention (n)** 注意, 注意力, 專心
The noun *attention* collocates with the following adjectives and verbs

Adjs: close, considerable, equal, far less, further, increasing, less, limited, little, most, much, much more, particular, a significant amount of, special

Verbs: attract, calls for, deserve, direct, draw, focus, give, pay, receive, require, restrict (our), turn (our attention to) warrant

467 **attributable to** 可歸因於...的, 可歸屬的, 以...為緣故的
1 The superior performance of our approach in acquiring all of the relevant functions of the opposing system is **attributable to**/*can be attributed to* two factors. First,....

Related: due to and because of, result of, result from

468 **attribute (n)** 特性, 特徵, 特色
1 There are various implementations of this but most traditional classfications *display/exhibit/have/possess/share* the following **attributes**/*characteristics.*

469 **attribute to** 把...歸因於, 把...歸咎於

attribute—< 10 mill.—signals a reason-result relation.

1 Some explanations **attribute** the deterioration **[result] to [reason]** an in-
valid model assumption [13], [28], [35] or inconsistent data distribution [39],
but at present, there is no solid theory that...

attribute to can be hedged even further by being used in the passive or with *could*
or *may*.

Example 1
2 Slight artifacts in the resulting image **[result]** *can/could/may be* **attributed
to** some imprecision in aligning...

Alternative 1 (approximate)
3 *We believe that* slight artifacts in the resulting image **[result]** *are caused by*
some imprecision in aligning...

Related: account for, attribute to, drive, explain, inspire, motivate

470 **augment** 擴大, 增加, 加強, 提高
1 Table II **augments**/*adds to* the information in Figure 3 by...

Related: add, add to, complement, supplement

471 **augment with** 增添與
1 Typically, the transformations can be **augmented with** XQuery [12] frag-
ments and these will provide...

Related: enhance vs improve, supplement with

472 **authority** 權威人士, 專家, 泰斗

473 **authoritative** 權威性的, 可信賴的
1 One approach used the Web as a secondary source to validate answers
extracted from a more **authoritative** primary corpus.

474 **available** 可用的, 在手邊的, 可利用的
1 The amount of space that is required to display large trees often exceeds
the amount of space **available** on the screen.

Related: freely

475 **availability (n)** 有效, 有益, 可利用性
1 Obviously, nonblind detection is made much easier by the **availability** of
the original host signal.

476 **available (to)** 可用的, 在手邊的, 可利用的
1 Once deployed, the services are made **available to** travel agents and
hotels through the Web.

477 **average (adj)** 平均的

1 In the following experiments, we crawled only HTML text pages. The **average page size/average size of a page** was about 18,000–19,000 bytes.

478 **average (vb)** 算出...的平均數, 將...平均分配, 平均達到, 平均做到

1 We **averaged** the percentage of test cases in each category...

2 The page sizes **averaged**/*were on average* about 18,000–19,000 bytes.

479 **avoid** 避免, 避開, 躲開

1 The use of a small feature set variation to sample densities above a critical level **avoids the need to use**/ *obviates the need to use/avoids having to use/avoids the necessity of using* higher sampling densities.

Related: avoid, obviate, protect, prevent, stop from

480 **aware of** 知道的, 察覺的 **: well aware of**

1 In another context, the alternative design style is more appropriate for users who **are well aware of**/*know well/ are very familiar with* their role in the workflow.

  Example 1
2 We are not **aware of**/*We do not know of* any system with similar functionalties.

  Alternative 1
3 *As far as we are aware, there are no* systems with similar functionalties.

Related: appreciate, to our knowledge, understand

481 **aware that** 知道

1 This was a deliberate choice by the designer as a way to *make users* **aware that**/*let users know that* these elements cannot be added or removed.

482 **balance (n)** 平衡

1 We put a square in the first item and divide the extracted variance to *achieve/get/obtain a* **balance** between the two parts.

483 **balance (vb)** 平衡

1 On this set of questions, the optimal point that **balances** these competing factors appears to be around 150.

Related: compromise (n), compromise (vb), trade-off

484 **barely, hardly, scarcely, only just** 僅僅, 勉強, 幾乎沒有 幾乎不可能, 簡直不可能

The words phrases *barely, hardly, scarcely,* and *only just* typically mean "something happened or was achieved but by a very narrow margin". The phrase *only just* can also mean "a very short time ago".

> 1 In other words, even if the modifications are visible when the shape is viewed separately, these changes are **barely/ hardly/only just/scarcely** noticeable when the image is viewed in its entirety.

Note that *hardly* does not mean 'hard to' or 'difficult to'.

> 2 Spatial information derived from this region can hardly help/**cannot help** in differentiating between lip and background.

As the following demonstrates, it is not always possible to conclusively interpret this error.

> 3 We use true-color composites because accurate true-color fusion is hardly achievable it is **not possible to achieve(?)/difficult to achieve(?)** accurate true-color fusion.

485 **barrier to** 障礙, 阻礙

> 1 Although **barriers to** entry into the software industry were relatively low, countries seeking to develop software businesses were constrained by small domestic markets,...

Related: bottleneck, hindrance, hurdle, pitfall, roadblock, stumbling block, trap

486 **based on: indirect use**

based on is not a synonym for the verb *use*. While both the *use* family of verbs phrases and *based on* may talk about *using* things, the *use* words and phrases talk about the *direct use of tools and methods* **whereas** *based on* talks about the *indirect use of resources,* (which may include tools and methods).

Essentially, the phrase *based on* suggests using something as a foundation, template, framework, or guide when doing something else. This *indirect* use may involve *some part or aspect of* a tool or method. It may suggest that an activity is *inspired by* something or is applied or constructed *with reference to* something. In the following examples, the material in parentheses glosses the particular use of *based on*. It always involves *indirect* use.

> 1 The design is **based on [is guided by]** principles of semantic routing as used in peer-to-peer networks.

> 2 Not only can we refine a search and eliminate potential non-solutions by deleting a constraint, we can also do it by adding a constraint **based on [with reference to/guided by]** knowledge that becomes available during a search.

3   Distance-vector protocols are **based on [developed or extended from]** a distributed version of the shortest path (SP) algorithm [3], which requires storage of only a modest amount of information at each node.

4   England et al. [16] subdivided a surface into small triangular pieces. A thin force field was constructed for each triangle to create a cell **based on [where an essential input was/with reference to/according to]** the normals at the vertices of the triangle.

5   They have chosen not to **base** their approach **on [use any part of the theory or design of]** a tree-based organisation such as an R-Tree or a generalized search tree.

Note that there is no present tense form ~~bases on~~.

487 **based on: grounds-conclusion**

The phrase *based on* can signal the "grounds" 基礎 element in the semantic relation grounds-conclusion.

1   **Based on** evidence to date **[grounds]**, we can confidently say that..**[conclusion]**

488 **basically** 在根本上

basically asserts that something is true in principle.

1   **Basically**/*Essentially*, neural networks are computing systems that can learn from examples rather than having to be programmed in a conventional way [7].

Related: fundamentally

489 **basis: on the basis of** 根據

1   This approach permits us to modularize our figure-recognizer into modules **on the basis of**/*based on/according to* how many strokes the figure contains.

490 **bear (vb)** 支持, 承受, 承擔

The verb *bear* collocates with the following nouns: *burden, cost, pressure, responsibility.*

1   As the organisation further increases in size, the membership can no longer **bear** the increased <u>costs</u> of coordination and are forced to adopt a hierarchical topology.

2   This correlation reflects the average <u>pressure</u> that the component should be able to **bear**/*cope with/deal with/handle/put up with/tolerate/withstand*.

Related: resist

491 **bear a...resemblance (to)** 具有相似

The noun *resemblance* collocates with the following adjectives: *considerable, some, a superficial, no, a striking.*

1   While the architecture of our system does **bear** some **resemblance to**/*does appear to be somewhat similar to* syntax-based approaches, our approach differs in that...

Related: alike, differ, differ from, like, identical, look like, resemble, similar

492 **bear in mind** 記住

1   **Bearing in mind that**/*Recalling that/Considering that/Allowing for the fact that* this protocol has no future knowledge and the mobility in this scenario is random, this is respectable.

Related: allow for, consider, take account of, take into account, take into consideration,

493 **bear out**

bear out is a claim of *proof*, not just *evidence* or *support.*

1   In Section 6, we provide empirical evidence that **bears out**/*confirms/proves* our contention that...

494 **bearing: have a bearing on** 與有關

have a bearing on is a claim of weak correlation. It is neutral in tone.

1   We can see that these two propositions are intuitively plausible because the location of the node in the rectangular region square **has no bearing on**/*does not affect/does not influence/is not a factor in/is not relevant to* the choice of coloring algorithms.

Related: affect, bearing, contribute to, impact, influence, cause-effect and reason-result verbs

495 because: as, since, because

as, since, and *because,*[1] all introduce reasons but are used for different purposes and in different positions in a sentence.

1 as/since

We use *as* and *since* to introduce reasons when

  • the reason is given information (already known to the reader) or
  • the reason is not the most important part of the sentence.

We usually place *as* and *since* in given position, at the beginning of a sentence. In the following example, readers no doubt already know from earlier discussion that *a mobile agent has the autonomy to move from host to host*.

> 1 <u>**As/Since** a mobile agent has the autonomy to move from host to host</u>, it would be unreasonable to require agents to always know their communication peers' current locations.

> 2 Ref. [7] studied alternative content-based measures and found that **[reason] as/since** <u>statistics from the corpus can predict results as well</u> as statistics from a fetched set. **[result]** fetching is not essential

But we also have the option of highlighting or emphasizing given information by placing it in the "new" or focus position later in the sentence, and we can use *as/since* to do that. In the following example, the use of *as/since* signals that the underlined material is "given" <u>but nonetheless</u> is the main point or focus of the sentence.

> 3 It can be used with different microarray and biomedical data **as/since** <u>the proposed method can handle both continuous- and discrete-valued data</u>.

Both *as* and *since* offer information that it is assumed readers already know or is available in the context.

As to the issue of when to use *as* and when to use *since*, this matter is subtle, but it may be that *as* more strongly acknowledges that the information being offered is likely to be known to the reader, as if to say "Not only *should* you the reader know this, I am confident, colleague, that you *do* know it". In any case, *as* is infrequently used in this way in research papers and *since* is always acceptable.

2 because

We use *because* to introduce reasons

  • when we want to emphasize the reason
  • when the reason offers new information

---

1 *because* (and *because of*)— 821/*mill.* and *since*—489/*mill.* are both frequent in the corpus. 85% of uses of *because* and *because of* (*This is because* 70/*mill)* are found in "new" position in the sentence while only 25% of uses of *since* are in new position. *as* is not frequently used to introduce reasons in either position but of its uses very few are at sentence-initial.

As *because* offers new information, we normally place it at the end of a sentence, especially when the reason is the most important part of the sentence. However, as with *as* and *since,* we have options and can put a *because* clause (or a *because of* phrase) either before or after the result.

In the following example, the use of *because* signals that the information in the reason clause is new in the discussion, i.e, we have not previously been told that *ridges are oscillating patterns*. Nonetheless, placing it in given position leaves the focus position at the end of the sentence open for other information.

> 1 **Because** ridges are oscillating patterns, the distributions of their wavelet energy are different at each scale of wavelet decomposition.

496 because: it is because vs It is because

The pronoun *it* in the phrases *it is because* and *It is because* both refer to *results…* but they point in opposite directions!

it is because refers <u>backwards</u> to a result mentioned earlier in the sentence

> Example 1: it refers backwards to preceding clause
>
> 1 *If most of the pre-release faults are found in on a small number of modules* **[result]**, **it is simply because** these modules provide most of the code.

In contrast, *It is because* points <u>forward</u> to a result to be mentioned later in the sentence. In the following example *It* refers forward to the object *that*-clause (underlined).

> Example 2: it refers forward: usually to a that-clause or to-clause
>
> 2 **It is because** there is a high degree of request locality when the access frequencies are very skewed **[reason]** *that the average waiting times increase with a decrease in the values of the Zipf parameters*.**[result]**

Related: preparatory subject it, that-*clause,* to-*clause*

497 because of

See *due to, because of, owing to, thanks to*

498 because: this is because

The pronoun *this* in *This is because...* refers to the *last* proposition of the preceding sentence.

> 1 However, as shown in Fig. 3, <u>the false-positive rate of PCCA starts to increase if y is smaller than 0.92</u>. **This is because** at that size some dependency relationships are lost.

499 because + verb: replaced with a present participle

Adverb clauses that begin with *as/since/because* + subject + verb can be replaced with a present participle (*ing* form) phrase providing a reason for the action

of the main clause. This is quite formal. In the following example, the present participle is *Being* and suggests reason-result.

1 *As/Since/Because it is/***Being** economical, PCC can automatically categorize large document collections relatively quickly.

2 *As we have/Now that we have/***Having** identified an appropriate class of logics, we (now) proceed to develop our theory of...

3 *Because we wanted/***Wanting** the response time curve in Figs. 8, 9, 10, and 11 to be detachable, we selected.....

500 become: change 變成,, 成為, 變得, 開始變得

become can express the idea of *change*.

1 Parallel computing is fast **becoming** mainstream.

2 Other similar approaches to factoid questioning have recently **become** a focus of research.

Other verbs that can also talk about changing and not changing include *get, grow, keep, remain, stay, turn,* and *turn into.*

501 before and prior to

before and *prior to* are both time-step words.

1 The input data is written to memory **prior to** execution.

2 The input data is written to memory **before** execution.

These words can also be used to reverse a time-order description, putting future before past.

3 **Prior to** execution **[future event],** the input data is written to memory.

4 **Before** execution **[future event]**, the input data is written to memory.

We should take care with *before* and *prior to* when describing procedures, and instead consider using one-directional time words such as *first, (and) then, next,* and *until.*

5 The input data is written to memory **and then** executed.

However, we may use *before/prior to* to emphasize the background to or reasons for a step.

6 Note that because the vertex and face coordinate systems are almost always different, **before** computing the contributions of the two types of derivatives, it is necessary to apply the coordinate system transformation [18].

Related: text-types: procedures: order of activities: time-step words

502 **beforehand** 預先, 事先

1 One limitation of this algorithm is that is sensitive to the initial partition and needs to know the number of groups **beforehand**/*in advance*.

Related: in advance

503 **behalf: on behalf of** 代表, 利益

1 The particular benefit of agents is their ability to independently carry out tasks **on behalf of**/*for* a user.

504 **behave like** 起某種作用

1 If the algorithm is applied to a locally confluent set of rules, it **behaves like**/*behaves in a similar way to* the RGG algorithm.

Related: act like

505 **being: as, because, since**

See: because + verb: replaced with a present participle

506 **belong**

belong to is used in research papers to cover a range of more specific meanings. Here are paraphrases of some of the more common.

1 **belong: part of**

1 For instance, if two containers **belong to**/*are members of/are part of* the same group, they will share the same source model.

2 **belong: class**

1 Pairs sharing certain letter combinations **belong to**/*are classed/classified/ categorized into/fall into/are found in* the "Homogeneous Groups" column.

3 **belong: association**

1 The projects investigated in the replication study **belong to**/*are associated with/are drawn from/are derived from/come from* the same domains as those in the original study.

4 **belong: possess attributes**

1 An association class not only connects a set of classifiers but also defines a set of features that **belong to**/*define/establish/are attributes of/are inherent to/are attributes of* the relationship itself [8].

507 **below** 在...以下

1 When searching with a probability **below**/*less than/lower than/under* 50%, the number of hops is inversely proportional to the popularity of the topic, whereas when it is *above/more than/higher than/over* 50%, the number of hops is proportional to popularity.

Related: almost, nearly, close to, about, around, approximately

508 **beneficial (adj)** 有益的, 有利的, 有幫助的

1 Randomizing the order each time can be **beneficial**/*advantageous* as many algorithms exhibit....

2 The increase here mainly comes from the shorter paths, which are especially **beneficial for** UDP applications such as....

3 When response times are slow, it is **beneficial to**/*advantageous to* allocate lower resources at the connection level.

Related: advantage

509 **benefit (n)** 利益, 好處, 優勢

1 The obvious **benefit of**/*advantage of* locking the disk in this way **is that** reads are carried out in an orderly way with...

Related: advantage, reap benefits, collocation

510 **benefit (from)(vb)** 得益, 受惠

1 It is well beyond the scope of this article to include all development practices and technologies that have **benefited** from open Internet standards, however....

2 These results allow us to observe only that some companies would be suffer if they applied a cross-company model whereas others would **benefit**.

3 In the current market, a company may not **benefit from**/*receive any benefit from/obtain any benefit from/be benefitted by* offering a global software license.

Related: change for the better: alleviate, ameliorate, benefit, benefit from, enhance, enjoy, improve, mitigate, **change for the worse:** affect, aggravate, burden, damage, degrade, deteriorate, exacerbate, harm, interfere with, suffer from, undermine, worsen

511 **beside** 在...近旁, 在旁邊

Related: adjacent, next to

512 **besides + comma** 此外, 而且, 加之

besides + comma signals an additional and over-riding reason. It does not mean *in addition.*

1 A sophisticated agent communication language was not required. **Besides**,/*Anyway,/In any case,* it would have greatly interfered with the efficiency of the system.

513 **besides + noun** 在...之外, 除...之外

1 **Besides**/*Apart from* specifying a boolean formula, it permits the scope of an assertion to be specified.

   Alternative
2 **It not only** specifies a boolean formula, it **also** permits the scope of an assertion to be specified.

514 **better than...at...** 更 在...上比較優勝

1 Overall, CLEVES was **better than**/*outperformed* the authorities **at**/*at* identifying hubs.

Related: superior to

515 **between**

1 Within the samples, there is a total of 1205 nucleotides, so the graph file contains 1205 vertices and 2304 edges (relationships **between** vertices).

See: among and between: do they reflect "number"?

516 **beyond** 此外

1 A complete proof of this is **beyond**/*outside* the scope of this paper.

2 Effective data mining often requires an expertise in statistics which is typically **beyond**/*not part of* the skill set of most of these analysts.

517 **beyond: go beyond**

1 These examples illustrate the need for tools that **go beyond**/*do more than* merely statically recommend workload configurations.

Related: exceed, surpass

518 **bias towards (vb)** 傾向, 趨勢, 偏愛

1 We further assume uniform recall, that is, that the classifier does not **bias towards** one set of tokens over another.

Related: liable, prone, tend

519 **biased towards (n)** 偏向於

1 We further assume uniform recall, that is, that the classifier does not show **bias towards** one set of tokens over another.

520 **block ...from** 阻擋, 妨礙, 阻止

1 Because every searchable term is handled by only a single node, any failure at that node would **block**/*obstruct*/*bar* all queries from using that term.

Related: causatives, semi-causatives, hamper, hinder, impede, interfere, prevent

521 **both** 兩者(都), 兩個(都), 雙方(都)

1 The particular advantage of these two representations is that **both** provide a way to visualize location uncertainty.

522 **both...and...**

1 **Both** the NVP **and** the graphical algorithms use information obtained from...

Related: not only...but also

523 **both do not vs neither does** 兩者不是 vs 兩者都不是

We do not usually say *both...do not*. Instead we say *neither.*

> 1 ~~Both algorithms do not use LP~~, **Neither** algorithm uses LP, which, as our experiments will show, provides a great improvement on...

524 **both...and...fail to vs neither ...nor does**

> 1 Finally, **both** the legacy DBMS **and** the new program **fail to offer** an acceptable approach to data integrity management.

> 2 Finally, **neither** the legacy DBMS **nor** the new program **offer** an acceptable approach to data integrity management.

Related: all of them vs none of them vs not any of them, fail to

525 **bottleneck** 障礙物, 隘路

> 1 *On* such a system, we would normally expect the pixel fill rate to be **a bottleneck.**

526 **breadth** 寬度, 幅度

> 1 Our interaction techniques make it possible to navigate the tree structure in depth as well as **(in) breadth**.

527 **bring/brought: bring** 的過去式與過去分詞)

> 1 Subjects were minded each via sms to record their location in a notebook which they then **brought** to us at the end of the data collection phase.

528 **bring about** 引起

> 1 Finally, traditional laboratory-style evaluations may not be able to identify the kinds of long-term benefits that casual systems are designed to **bring about**/*produce/yield*.

Related: bring about, give rise to, lead to, result in, **Part 1:** cause-effect and reason-result verbs

529 **bring advantages/improvements/benefits**

> 1 Being able to set diverse distance metrics and/or k values **brings**/*has/ offers/provides* **the further advantage of** simplifying the choice of regressors.

530 **brings us to**

brings us to links to or introduces a new topic. In the following example, the idea of *interactions* is being linked to *sociality.*

> 1 Global behavior in such multiagent systems is the product of **interactions** between the constituent agents, which **brings us to** the next key concept of agent-based computing, **sociality**.

531 **bring: give/provide an ability**

1 Our ability to independently optimize either the spatial index or the protocol **brings**/*gives (us)/offers/provides* the flexibility to change the protocol without changing the spatial index.

532 **bring together: combine**

1 The literature also describes a number of hybrid approaches [Thurst 2002]. Most frequently these attempt to **bring together**/*combine* social and content-based approaches to...

533 **bring together: introduce**

In the following, the idea of *bring together* is "mutually introduce".

1 In this way, a remote computer also serves as a broker, **bringing together** agents with similar interests and compatible goals.

534 **broad** 廣泛的, 非限制的, 各式各樣的

Related: narrow, wide

535 **budget (n)** 預算, 預算費, 生活費, 經費

1 Finally, another common requirement is for finer-grained access control, which cannot be easily accommodated within the processing **budget** of standard firewalls.

536 **burden (n)** 負擔

The noun *burden* collocates with the verbs *add (to), become, decrease, ease, impose, increase, minimize, place, shift, reduce, relieve.*

1 Fig. 8 shows that the computational **burden** increases as the number of sources grows.

537 **burden: ease the burden (on)**, 緩和負擔

1 For finite-state verification, analysts typically write small specifications that capture focused system properties. This **eases**/*relieves/reduces* **the burden on** the specifier and allows the analysis to be tailored to each property.

538 **burden: shift the burden (of...from...to...)** 轉移負擔

1 The goal is to get the user to rephrase the query into more basic terms, **shifting** some of **the burden of** semantic disambiguation **from** the system **to** the user, for whom the task is relatively trivial.

539 **burden (vb)** 負擔

1 This approach is very general, because it does not **burden** the CPU **with** tile sorting.

Related: aggravate, burden, damage, harm, interfere with, suffer from, worsen, alleviate, ameliorate, enhance, improve, mitigate

540 by: complementizer for a verb: means-result, extent

by can join a verb to its complement, commonly to indicate the relation means-result or extent/how much.

1 Means-result

> *1* The VA-File is constructed **by uniformly representing each dimension by 5 bits**.

It is a fairly common mistake in pre-publication writing to wrongly front the *by* element. Consider the long theme and trivial rheme of the following example.

×   **By uniformly representing each dimension by 5 bits,** the VA-File is **constructed**.

See: by + verb + ing at sentence initial: three rules of thumb

2 Extent

In the following example, *by* is joining the verb *improves* to the complement *nearly an order of magnitude*. The idea is extent or "how much".

> *1* A dimensionality of 0–20 is a good range for this dataset since it takes precision above 85% and **improves** the I/O cost **by nearly an order of magnitude**.

541 by: passive voice

In the passive voice, *by* introduces the "agent", that is, who or what does the action.

> *1* All high-dimensional indexes **are affected by** the amount of data and the number of its dimensions **[agent]**.

542 by + verb + ing: means-result

The pattern *by + verb + ing* expresses the relation means-result (how we did it). Importantly, intentions or "why" are not relevant (See *in order to*. Rather, the focus is on *how*.

> *1* It was necessary to decide which of the two pretests should be used in the model, which we did **by flipping** a coin **[how we decided]**.

> *2* The processing time was reduced **by splitting** the word-identification process into two steps.

Usually, the means element follows the result element.

> *3* Next we removed the watermark from the container and then reconstructed the original 10241024 image **[result] by applying** the scale-up procedure and inverse DCT **[means]**.

However, the means element may be fronted either for emphasis or if it refers to given information. Thus, in the following example we might assume that *coin-flipping* is, say, being emphasized.

Table 31.   Using by: three simple rules of thumb

1. Do not use *by* at the beginning of a sentence, except in set phrases such as *by definition*

2. Do not use *by* as a substitute for the words *if, when,* or *because*

3. Do not use *by* at the beginning of a sentence to introduce agents, tools, steps, or methods

---

4   **By flipping a coin [means]**, we decided which of the two pretests should be used in the model **[result]**.

Related: in order to, semantic relations: means-purpose, means-result

543 by + verb + ing at sentence initial: three simple rules of thumb

Weaker writers use workarounds to compensate for difficulties they have with vocabulary or sentence organisation. One involves beginning sentences with *by + verb + ing* in a first clause, followed by a main clause that talks about *ability*. Often, what are needed are causative and semi-causative verbs such as *allow* and *require*. These problems[2] can be avoided by applying the rules-of-thumb in Table 31, repeated from a similar discussion in Part 1.

Negative example 1
×   **By averaging the two pre-tests**, we were **able to** reduce the intrapair variance while maintaining the same average post-test value.

Rewrite 1
1   Averaging the two pre-tests **allowed us to reduce** the intrapair variance while maintaining the same average post-test value.

Negative example 2
×   **By using agents**, complex and repetitive business supply chain processes **can be automated**.

Rewrite 2
2   **The use of agents allows the automation of** complex and repetitive business supply chain processes.

---

2 What makes these workarounds problemsatic is that, first, they are often ambiguous in terms of semantic relations and, second, since they are not acting (by design) within the system of theme-rheme and given-new, they interfere with cohesion and information order. In particular, along with the *compare*-phrases and false starts using *based on, for, in,* and *with,* they push every other vocabulary or organisational option out of sentence-initial, including abstract signalling nouns, sentence adverbs, connectives and conjunctions. Then, if writers are also verb-poor (for example, if they have few cause-effect, causative, contain, or *use*-family verbs), we essentially have every language item in English all competing to occupy the same part of the sentence, sentence-intial, but at the same time being blocked by the above-mentioned misuses. Of course, this is a recipe for incoherence.

544 call

1 Groups can be created and modified by means of a set of predefined semantic actions and predicates, **called**/*known as/referred to as/termed* group selection mechanisms.

Related: so-called, termed, well-known

545 call for 需要

1 More extensive experimentation **is called for**/*required/needed* to see whether virtual memory affects the cache and all data structures in the algorithm.

Related: demand for (n), demand: semi-causative verb

546 can vs able to

See able to vs can

547 can be + verb at the end of a main clause

It is usually a sign of poor given-new and theme-rheme organisation if a sentence ends with a main clause which ending with *can be* + verb, i.e., *can* + passive. There are usually multiple ways to rewrite such a sentence.

> Negative example 1
✗ To balance energy efficiency and robustness to failed communications, acknowledgement and multipath routing **[theme] can also be used [rheme].**

> Rewrite: active voice 1a
1 To balance energy efficiency and robustness to failed communications, **we can also use** acknowledgement and multipath routing.

> Rewrite: passive voice 1b
2 Acknowledgement and multipath routing **[theme] can also be used** to balance energy efficiency and robustness against failed communications. **[rheme]**

> Rewrite: causative 1c
3 **The use of** acknowledgement and multipath routing **[theme] makes it possible** to balance energy efficiency and robustness against failed communications. **[rheme]**

Note that while placing *can* + passive as the verb group of a main clause at the end of the clause is problematic, this is not true of *can be* + verb at the end of a noun phrase. In the following, *can be cross-checked* is simply part of the direct object noun phrase.

4 This analysis should be regarded as a benchmark against which simulation-based approaches **can be cross-checked**. **[direct object]**

548 **candidate**

Related: participant, respondent, subject

549 **cannot, not able to, unable to, fails to**

cannot is by far the most common way to negate *can* but other options include *not able to, unable to,* and *fail to.* The value of these options is that *able/unable* permit the use of tense and modal verbs while *fail to* functions to make it clear that <u>to not do something</u> should be seen as a negative.

> 1 As we can see in Fig. 6, of all the clients two hops from the destination, Client A has the best downlink channel rate. The greedy proxy discovery **cannot**/*is not able to/is unable to/fails to* find it *owing to* the local minimum at Client B.

550 **capability** 1 能力, 才能 性能, 功能, 耐受力

A *capability* is "what something can do".

> 1 For example, a 64 kbps codec for human voice can be used on a WLAN, but it is beyond the current **capabilities** of a UMTS network where the maximum bit rate in up-link is just 64 kbps.

Related: ability, able to, can, capacity

551 **capability of vs ability to**

capability of is followed by a noun phrase.

> 1 The unique **capability of** <u>this index</u> **[noun phrase]** is that it provides a global measure of the radiometric distortions produced by the fused images.

> 2 One of the most powerful attributes of HNs is their capability of forming ability to form smooth approximations of randomly shaped densities [10].

Related: ability: ability to

552 **capable of** 能...的, 可...的 有...能力的, 有...本領的

> 1 There is no doubt that these kinds of evaluations are **capable of yielding**/*can yield* conclusions that are reproducible across query samples.

Related: ability, able to, can, capacity

553 **capacity** 容量, 容積

capacity refers to volume.

> 1 The authors also guaranteed delivery of the message within some finite average time (given nodes with <u>infinite storage</u> **capacity**), although this time might be very long.

Related: capability

554 **care: take care** 小心, 注意

> 1 We **took great care**/*we were very careful* to ensure a random selection from the true distribution of queries so that...

555 **carry out** 完成, 實行

1   We **carried out**/*conducted/performed* <u>this experiment on</u> a dual-proces-
    sor 2.8-GHz Xeon with 8 GB RAM and gigabit Ethernet running Red Hat
    Linux 8.

Related: implement, run

556 **carry out, conduct, perform, happen, occur, take place** 發生, 舉行:

These verbs can sometimes be choices as alternatives phrasings. The difference
is that

- *carry out, conduct,* and *perform* require an agent
- *happen, occur* and *take place* do not require an agent

Thus, in the following example, we might choose between *take place* and *car-
ried out* depending on whether we wish to suggest the involvement of agents in
directing the events.

1   However, when this module retrieves locally, all operations **take place**/*are
    carried out* in a single process on a single CPU.

perform and *conduct* would not be used here unless the intention was to suggest
the involvement of a human agent (they suggest that more strongly than *carry
out)*

Both *carry out* and *take place* are neutral and do not evaluate the events.
conduct and *perform* are also neutral. *occur* is neutral-negative and in particular
is negative when it has the meaning of take place. *happen* may suggest that the
occurrence is perhaps surprising or irregular, and may even be negative.

Related: arise, conduct, happen, occur

557 case: case-by-case 在逐 項 的基 基礎 上

case-by-case (or on a case by case basis) means that each situation is assessed individually.

1 The paradigm of the 24-hour knowledge factory does not apply to scenarios where needs are largely unforeseen and must be dealt with **on a case-by-case basis.**

558 case: in case (of): problem + precaution 預防措施 , 免得

in case has two patterns: *in case* + clause and *in case of* + a noun phrase. They both introduce precautions, i.e., doing something to prepare for some possible negative event.

1 We have also develop low-cost mechanisms for acquiring inter-stream time correlations **[precaution] in case** they are not known or change and adaptation is required **[hypothetical problem]**.

2 In case of overlap **[hypothetical problem]**, the region is searched either by filtering data objects or by...**[precaution]**.

559 case: in the case of, in cases of: situations and circumstances 至於

in the case of, in cases of, and other uses in the following examples, all introduce situations and circumstances.

1 **In the case of/In cases of**/*With reference to/With r*egard to/As for more complex structures it is possible to iterate the process by combining...

2 **In cases where**/*In cases in which/In situations where/In circumstances where* a designer is aware of the existence of a particular component but does not know where to obtain it....

3 In cases (4), (5), and (6), the credentials must issue statements as to their validity.

560 case: in any case 無論如何

in any case, anyway, and *besides* all introduce an additional and over-riding reason.

1 A sophisticated agent communication language was not required and in **any case**/*anyway/besides* would have interfered with the efficiency of the system.

561 case: not the case: "not so" 可是實際情況並非如此

not the case contradicts an earlier statement.

1 There are some differences between our approach and theirs. For a start, the number of slices we use is independent of the number of volume objects **[original statement]** but this is **not the case**/*this is not so* **[contradiction]** for the other slicing methods [22], [27].

562 **catch up** 趕上

Related: fall behind

563 **cause (n)** 原因, 起因

The noun *cause—<5mill.*—refers to things or actions that are the sources of change.

> *1* We thus define a wrapper schema, similar to those discussed in Section 3, that uses mutants to identify **the cause of**/*what causes* a transition failure.

Related: impact, effect, reason, result, source

564 **cause (vb): cause-effect and causative**

The verb *cause—273/mill.*—can act as both a cause-effect verb and a causative verb.

1 **cause: as a cause-effect verb: negative change**

cause as a cause-effect verb it makes a strong claim of a causal relation and is often associated with *negative* change. In contrast with many other abstract cause-effect verbs, *cause* is easily passivized.

> *1* This call fault [5] **causes** all methods in the affected component to return a zero value without executing the code. It **is usually caused by** errors in...

2 **cause: as a causative verb: all kinds of outcomes**

cause as a causative verb is not restricted to negative outcome but in fact is associated with all types of outcomes, positive, negative, and neutral. In the following causative use, the outcome is a fall in costs, always a good thing.

> *1* The consequent steep drop in the number of false alarms in turn **causes the total cost to fall** just as dramatically at sample sizes above 500.

In contrast, in the following causative use, the outcome is simply a *neutral* step in a procedure.

> *2* Once a player reconnects, a complementary reaction **causes** the icon **to**/*makes* the icon revert to normal and no further action is needed to retrieve the user's current location.

Related: bring about, cause, decide, determine, result in, cause-effect and reason-result verbs

565 **cause-effect verbs**

See Part 1, cause-efffect

566 **caution** 小心, 謹慎

> *1* However, comparisons with the original development must be made with some **caution**/*cautiously* as the quality of the original data is uncertain.

567 **cease** 停止, 結束

1 A Uniform Resource Name (URN) is a subset of URIs that is required to remain globally unique and persistent even when the resource **ceases to exist***/no longer exists*.

568 **certain (particular)** 某些

1 The reconstructed image becomes more and more similar to the original image as the maximum moment order approaches a **certain**/*given/particula*r value.

2 This makes FAM suitable for co-clustering **certain** types of data such as high-dimensional data sets.

569 **certain: to a certain extent** 在一定程度上

1 **To a certain extent***/Within limits,* all of the above-mentioned methods produce satisfactory results for facial images with and without occlusions.

570 **certain that (without any doubt)** 確信的, 有把握的, 一定會的

1 The execution of a specified scenario creates a deterministic relation between the trace and the scenario yet we cannot be **certain that**/*we cannot be sure that* a method call and/or a field access is relevant to the feature.

Related: confident that, sure that, no doubt, doubtless, without a doubt, with complete confidence

571 **chance: possibility, probability, likelihood** 可能性

chance carries a connotation of luck. The words *likelihood*, *possibility*, and *probability* are more precise alternatives.

1 Hazards are only a problem if they have **a chance** of happening. Mathematicians call the **chance** of a particular event happening its probability.

2 Reducing the search space clearly reduces the **chance**/*possibility/probability/likelihood of* finding an unreachable state, yet at the same time it does guarantee that...

3 This explains why 70% of the p-values are below 5%, as a low p-value indicates a very high **chance that**/*probability that* the frequencies have changed.

Related: likelihood, possibility, probability, opportunity

572 **chance: by chance** 偶然地, 意外地

1 So as to preclude getting better results **by chance**, in this case study we have used bugs that do not include methods and classes involved in the earlier case study.

Related: arbitrary, random

573 **chance: due to, owing to** 由於機會

due to chance or *owing to chance* means that something can be attributed to chance. In this use, *due to* has no negative associations.

> 1　We then computed statistical confidence intervals, which estimate the probability that the results are **due to chance**/*the result of chance*.

Related: due to: reasons, causes, and blame

574 **characteristic (n)** 特性, 特徵, 特色

Related: attribute, quality

575 **characteristic (adj)** 特有的, 獨特的, 典型的, 表示特性的

> 1　Modeling of the most effective types of attacks allows us to derive their **characteristic** features which can, in turn, be used in detection and neutralization.

576 **characterize...as...** 具有...的特徵, 以...為特徵

> 1　All of these methods consider system internal behaviors and apply models to **characterize** those behaviors **as** fault-prone or otherwise.

Related: regard as, view as, treat as.

577 **characterized by**

> 1　In general, applications hosted in application servers **are characterized by**/*exhibit/display* high load variance.

578 **check (vb)** 檢查, 檢驗, 核對

579 **choice**

Related: nouns: alternative, option, replacement, substitute, **verbs:** exchange, replace, substitute, swap, switch, place: take the place of, **prep:** instead (of), rather (than)

580 **circumvent** 以智取勝, 規避, 防止...發生

> 1　This framework enables us to **circumvent**/*get around* the time-consuming and non-intuitive design and manipulation process.

Related: avoid, obviate

581 **cite as** 引用, 引...為證, 舉出

> 1　On the other hand, the loss of informal communication was **cited as** a significant hurdle.

582 **claim (n)**

Related: assertion, contention

583 **class (n)** 種類

Related: class, kind, sort, type

584 **class, classify (vb)** 把...分類, 把...分等級, 把...歸入某類(或某等級)

Related: assign, categorize, group

585 **close to** 在附近, 接近於

1   Irrespective of how sparse the network is The paths of TR, LV IQ, and DD are always very **close to**/*near to* 1.0 (their curves overlap in Fig. 10).

2   In Figure 6, the negation applied to the fuzzy set curvature is **close to**/*nearly/almost* zero.

Related: about, approach (vb), approximately, around, more or less, near (vb), roughly

586 **closeness**

1   In the geographic approach, the number of hops is used to measure the geographic distance rather than **closeness**/*proximity* to the sink.

Related: approach (vb) near (adj), near (vb) nearby, vicinity

587 **come about: happen/occur** 發生

1   All this promises a feature-rich future for Xen 4.1 which may or may not **come about**/*happen,* but we do know that for some features code is already being written.

588 **come about from**

1   Insight can come from focusing on a particular task, or it can be deliberately sought out, or it may **come about from**/*be the result of* simply going about one's daily activities.

Related: arise from, come about from, derive from, result from, stem from

589 **come at the cost of**

1   Thus, although the on-demand approach provides significant gains in throughput over the greedy approach, these **come at the cost of** much higher overheads on the HDR uplink.

590 **come (too) close (to)** 靠(太)近

1   To avoid cluttering lines, any particle that **comes too close to**/*comes too near to* another particle is removed after each step.

591 **come from: source of** 來自

1   Section 7 explains exactly where RRT's performance gains **come from**.

2   Overall, these results suggest that many of the benefits of high levels of process maturity **come from** reductions in variation caused by factors other than software size.

See: cause-effect and reason-result verbs

592 come to a conclusion/agreement/decision 得出結論

1 Insight may come from a sustained awareness of a data stream and its fluctuations and patterns but this does not require that the user **come to/** *draw* any kind of conscious conclusion.

2 As to the use of cross-company models, we strongly recommend that researchers **come to/***reach* some agreement as to the best experimental procedures.

593 come to: change

come to suggests change over time. These changes are often changes in views or feelings or knowledge or expectations.

1 Over time, a user will **come to** discount the recommendations of an unreliable recommender system.

2 It is expected that offshore business process outsourcing (BPO) will ultimately **come to** include not just accounting services but many other basic business skills.

594 come to mind: think of

Example 1
1 For such purposes, two traditional interface designs typically **come to mind**: the database and file system interfaces.

Alternative 1
2 For such purposes, **we might typically think of** two traditional interface designs: the database and file system interfaces.

Related: recall

595 come together: meet

1 The arthrodial or gliding joints are those where bones **come together/** *meet* and move against each other without damage.

596 comment and make comments

A *comment* is a brief *remark* or that is potentially critical or negative. We do not *comment* or *make comments* on the work of others unless we are invited to.

Reviewers and supervisors and sometimes colleagues will *make comments* on our work which will be, say, *helpful* or *useful, encouraging* or *insightful* and we will *acknowledge, appreciate,* and be *grateful* for them. When we volunteer our own views, we *note, observe,* and *make observations* and *remarks.*

Related: acknowledge, comment, describe, discuss, gratitude: grateful, mention, note, observation, observe, refer to, remark, thank, thanks

597 **common** 普通的, 常見的

1 The most **common** way to avoid overload is admission control.

2 The system should also be able to efficiently handle **common**/*everyday/familiar* operations such as adding or removing users.

Related: conventional, customary, normal, traditional, typical, usual

598 **common: have in common (with)** 共同的, 共有的

have in common with refers to a characteristic that a class of things *all have*.

1 Although our algorithm is simple and efficient, it does **have** some problems **in common with**/that it does share with other such algorithms.

Related: common to, share with

599 **common: it is common for/to** 普通的, 常見的

it is common for introduces what people or things usually do.

it is common for + person/thing + activity

1 Notice that **it is common for** the sender application to detect silence as a way to avoid sending empty packets.

it is common to introduces a frequent or usual activity.

it is common to + activity

2 In both analysis and presentation, **it is common to** view related data graphics that are based on a shared data set.

Related: conventional, customary, normal, traditional, typical, usual

600 **common to: shared characteristic**

common to refers to a characteristic that a class of things all have. In the following example, it is *common to* all such *techniques* that they must satisfy this *one requirement*.

1 One requirement **[characteristic]** that is **common to**/*shared by* many such remote analysis techniques is that they must be able to identify the source of execution out-comes.

Related: common for, in common with, share (with)

601 **compact (adj)** 緊湊的, 小巧的, 小型的

1 Previous work has proposed other mechanisms for the **compact** description of infiinite sets of views. These include...

Related: compress

602 **comparable: may be validly compared** 可比較的

1 Using the same set of search terms to query another general search engine may produce results that **are not comparable**/*cannot be (validly) compared*.

603 comparable with: similar to

1 The classification rates of Sheet031 and She*ets038 are comparable with/are similar to/equivalent to those of Sheet02*6 but their performance drops off quickly when the illumination changes.

604 compare (vb) 比較

1 A discussion **comparing***/that compares* all of the relevant algorithms can be found in [1].

605 compare...with...

1 We evaluated the performance of the model **by comparing** its results **with/against** the results recorded in three months of data from a clothing factory in China.

606 compatible (adj) 兼容

1 In this way, a remote computer also serves as a broker, bringing together agents with similar interests and **compatible** goals.

607 compensate for 補償

1 Using supervised machine learning does improve coverage but it cannot **compensate for***/make up for* inadequate coverage of vocabulary in the training data.

608 complement (vb) vs supplement (vb)

To *complement* 補充, 補足, 與...相配 something is to *complete* it.

1 Frequently, social approaches are **complemented with** content-based approaches as a way to reduce the impacts of individual drawbacks.

To *supplement* 增補, 補充 something is is to *add to* it.

2 In addition, our system **supplements** these corpus statistics **with** external definitions of the search targets.

It is a common mistake to misspell *complement* as *compliment* 恭維

Related: add, add to, augment, augment with, enhance, improve

609 competitive/ly 競爭/地

competitive/ly (like *encouraging/ly*) is not a strong claim. It suggests a performance that is just average or a little better than average. Note how the following example seeks to provide a context—*despite the time constraints*—that puts the performance in a better light:

1 We also compared our results to those from these same conferences since 2004 and found that we performed **competitively** despite the time constraints.

610 **complete (adj)** 完整的, 全部的

1 This subject certainly deserves a more **complete**/*comprehensive/exhaustive/extensive/thorough* treatment and will provide one for our future work.

Related: adequate

611 **completeness** 完整, 完全, 徹底

1 The other phases labelled in the diagram are outside the scope of this article, but we nonetheless cite them **for the sake of completeness**.

Related: adequate, adequacy, complete, comprehensive, exhaustive, extensive, thorough

612 **complicate (vb)** 複雜化

1 There is no doubt that this **complicates matters**/*makes matters more complicated/makes matters more difficult* because it requires us to allow for both (or maybe even more) elements.

613 **complicated (adj)** 複雜的, 難懂的, 結構複雜的

1 While at first glance this may appear unnecessarily **complicated**, it is in fact quite a convenient way to define the metrics.

Related: complex, complicated, sophisticated

614 **comply (with)** (對要求、命令等)依從, 順從, 遵從

1 Each space was a 250*250 units square, which corresponds to the nominal transmission range of a wireless card that has a SISO link that **complies with**/*conforms to* the IEEE 802.11 standards.

Related: enforce

615 **component** 機器、設備、構成要素, 零件, 成分

Related: part

616 **composed of** 由...組成

composed of introduces a list that is complete. The relationship is whole-part.

1 The United States **[whole] is composed of** fifty states.**[parts]**

2 The system **is composed of**/*comprises/consists of/is made up of* spatially distributed autonomous agents which cooperate in a decentralized management scheme (see Fig. 1).

composed of has no active voice form, i.e., *The system ~~composes.~~* To reverse the relations in the clause we use *constitute,* or *make up*.

Related: composed of, comprise, consist of, consist in, constitute, contain, encompass, entail, include, incorporate, involve, made up of, make up

617 **comprehensive** 廣泛的, 無所不包的, 綜合的

1 A **comprehensive**/*complete/thorough* review of the literature relevant to context in Web search can be found in...

Related: adequate, exhaustive, extensive, thorough

618 **compress** 壓, 壓緊, 壓縮 / 使緊密

1 Thus, what is required is an efficient algorithm that can **compress** <u>multi-dimensional data streams inside a small working buffer</u> without...

2 In contrast, reducing the number of agent classes and instances will both *compress* the design and <u>minimize</u> its complexity.

619 **comprise** 包含, 包括

comprise—43/mill.—introduces a list that is complete. The relationship is whole-part.

1 The United States **[whole] comprises** fifty states. **[parts]**

2 The Loan Request relationship **comprises**/*is composed of/is made up of* the two roles LoanToRequest and RequestToLoan.

comprise has no passive voice use, i.e. *The system ~~is comprised~~ of.* To reverse the relations in the clause we use *constitute,* or *make up.*

Related: composed of, comprise, consist of, consist in, constitute, contain, encompass, entail, include, incorporate, involve, made up of, make up

620 **compromise (n)** 妥協, 和解

1 Ultimately, we *achieved/arrived at/found/made/sought/struck a* **compromise between**/*balance between* low resolution with little noise and high resolution with more detail.

Related: abstract nouns: signalling nouns, trade-off

621 **compromise (vb)** 妥協

This use of *compromise* as a verb was not found in the corpus.

622 **compromise (vb)** 連累, 危及

1 There are three mechanism that thwart any packet flow tracing attacks that attempt to **compromise**/*damage* the relationship of anonymity between sender and recipient venues.

623 **conceal** 隱蔽, 隱藏, 隱瞞

Related: discover, expose, hide, reveal

624 **concede** (勉強)承認

1 While we must **concede**/*acknowledge/admit* that our approach is imprecise, it does reduce the costs of designing and executing so many test cases.

2 **Admittedly** our approach is imprecise yet it does reduce the costs of designing and executing so many test cases.

625 **concern (n)** 使擔心, 使不安, 關於.

The the noun *concern* collocates with the following verbs and adjectives:

Verbs: *address, raise* ***Adjs:*** *central, considerable, increasing, main, major, primary, prime concern*

1. The running times of these simple heuristic methods is clearly superior, which is always a prime **concern/central issue** in an interactive environment.

2. We were pleased to find that the participants were enthusiastic about the process and raised no **concerns about** the deformation of their data.

3. One **concern**/*issue/worry* **with** any new visualization design **is** how applicable it might be in practice and how usable in different areas of information science.

626 **concern (vb)** 關於 涉及, 關係到, 影響到

1. A final issue **concerns**/*involves/is related to* the effect of zoom level changes on the layout of data.

2. Detailed hypertext design **is concerned with**/*involves* the refinement of hypertext modules that were not specified during high-level design.

3. One of the main issues **concerning**/*relevant to* this configuration is the placement of the base stations so as to ensure optimal coverage.

627 **concern: as far as...is concerned**

1. **As far** as the human resources department is concerned/involved, once a boat has been scheduled and a crew assigned, it is available:

628 **concerning: at given position**

If used at given position, an adverb beginning *concerning, considering, regarding, with reference to, with regard to,* or *with respect to* must introduce given information, <u>not</u> a new topic.

Negative example 1

× 3. ~~Formal Specification Derivation~~

~~Regarding the formal specification derivation~~, <u>the greatest potential</u> <u>for improvement</u> is in the atomicity of the UCE transitions.

Rewrite 1

1. 3. Derivation of formal specifications
<u>The greatest potential for improving</u> **the formal derivation of specifications** is in the atomicity of the UCE transitions.

Related: given and new, relational verbs

629 **concise** 簡明的, 簡潔的, 簡要的

630 **conclude** 結束

1. Section 6 **concludes** the paper.

631 **conclude (that)** 推斷出, 斷定

The meaning of *conclude* here is "form or come to a final opinion".

> 1 These results lead us to **conclude** that, in practice, the most influential contributor to efficient heterogeneous mobility is...

Related: indicate that, mean (that), prove (that), show (that), suggest (that), tell us (that)

632 **conclusions: draw/come to/arrive at/reach... (about)** 結論, 推論, 決定 從這些事實中引出了不同的結論。

> 1 The drawback of this approach is that the presence of test cases of varying sizes would make it impossible to *draw/come to/arrive at/reach* **any conclusions about** the effects of granularity.

633 **conclusion(s) vs the Conclusion** 結尾 vs 結論, 決定

The final section of a paper is almost always a *Conclusion,* not *Conclusions* (with an "s"). *conclusions* are opinions, usually based on observations and evidence. The *Conclusion* of a paper rarely offers *conclusions.*

> ✘ In Section 9 we draw present our conclusions **Conclusion** and suggest some future work.

Note also that *conclusions* is not a synonym for *results.*

> 1 However, these do not address the problem of obtaining reliable ~~conclusions~~ **results**.

634 **conclusive** 決定性的, 確實的, 最終的

Results or findings that are *conclusive* or *inconclusive* allow us to draw reliable or valid conclusions.

> 1 The results of this review are **conclusive**.

> 2 **Conclusive** results of course provide the same assurance as any other formal verification method but **inconclusive** results can also provide valuable information about...

Related: definitive, tentative

635 **conduct (vb)**

> 1 To test our hypothesis that IEEE 802.11 relays can be used to increase the throughput of 3G networks, we **conducted**/*carried out/performed* a simple experiment.

Related: carry out, perform

636 **confer** 授予

637 confidence: degree, level

1   The specific labels used and the degree of **confidence** in the labeling would depend on the particular oracles installed in...

2   Fig. 3 shows that the number of packets in the system increases with pn at the top three levels of **confidence**-in-delivery.

638 confident 確信的, 有信心的, 自信的

1   Given a sufficiently fine segmentation, we can be *fairly/quite/reasonably* **confident that/of**...

Related: certain that, sure that

639 confine...to 把...限制在

1   However, rather than searching out the entire network, KISS-W effectively **confines**/*limits/restricts* the search area **to** some subspace within the index hypercube.

640 confirm 堅定, 加強

1   We confirm a hypothesis, intuition, or already-held belief.

2   These results **confirm** our intuition.

Related: contradict, deny, disprove, establish, refute, reject

641 confirm that 堅定, 加強

This is a claim of certainty, like *show that*, or *prove that*.

1   Our experiments **confirm that** the proposed dmodel provides a more balanced load and that a superset search can still be efficient even if the index loads are evenly distributed across nodes.

均勻地分佈 : evenly distributed

642 conflict (with) 相衝突 互相相衝突

1   The pilot tones must not **conflict with** each other and so should be orthogonal in either time or code.

Related: conform to, match

643 conform (to) 符合

1   Since the web is by its nature distributed, databases do not always **conform to**/*agree with/match* widely-agreed schemas.

Related: comply

644 conjunction: in conjunction with 同一道, 同一路

in conjunction with suggests use together or in coordination.

1   We can significantly improve signal quality and increase the capacity of ad hoc networks by using antenna arrays **in conjunction with**/*alongside/ in coordination with* space-time codes.

645 **consequence (n)** 結果, 後果

1 The Internet has greatly reduced the cost of remote collaboration be-tween management teams **[reason]**. **One consequence**/*outcome/result* of this is that industry leadership is becoming increasingly transnational. **[result]**

Related: abstract nouns: signalling nouns

646 **consequence: as a consequence** 結果

as a consequence (of) typically introduces something negative.

1 The algorithm should simultaneously minimize both the buffering delay and the number of packets dropped **[result] as a consequence of** late ar-rival. **[reason]**.

647 **consequently** 結果, 因此, 必然地

1 Intuitively, the less entropy that this set has, the higher the compression rate that can be achieved with DWT **[reason]**. **Consequently**/*As a result,* DWT prefers coefficients with very similar absolute values. **[result]**

648 **conservative** 穩當的, 謹慎的, 保守的

1 Large Vv values make SpyB too **conservative** so that it misses real PN examples.

Related: common, conventional, familiar, normal, popular, traditional, typical, usual, well-known, widespread

649 **consider: to be a topic or focus** 集中於

1 Both in this case and in the case of correlational predicates (to be **con-sidered**/*discussed* in Sect. 3), it is necessary to evaluate the complex predicate as we go.

2 This experiment **considers**/*focuses on/looks at/deals with/is concerned with* only the wireless LAN scenario because the bus scenario is very simi-lar.

650 **consider: include in thinking or planning** 考慮, 細想

1 Direct adoption is not a satisfactory approach to signed networks be-cause it **considers**/*takes into account/ takes into consideration/pays at-tention to* only link density and *does not/fails to* **consider**/*ignores* the signs of links.

2 Their regression analysis **does not consider**/*fails to consider/does not take into account/ignores* spatial correlations between system metrics.

3 There is no doubt that this complicates matters because it requires us to **consider**/*allow for/make allowance for* both (or more) elements.

651 consider: viewpoint 認為, 把...視為

1 The samples located outside the minimal sphere were **considered**/*regarded as/deemed to be/believed to be* good measures of failure [15].

2 In-network data aggregation is **considered**/*regarded as* an effective technique for optimizing the communication cost.

Related: treat as

652 consider: directive: take for example

1 Consider/*Take (for example/the case of)* a node with k neighbors. It will become an aggregation point only after all these neighbors have sent their packets.

653 considerable 相當大的, 相當多的

considerable is similar to *significant* and *substantial.* It makes a strong claim, although not as strong as *large* or *great.*

1 Because it uses the latest streaming technologies, the e-Bot framework displays/exhibits/offers/provides **considerable**/*a great deal of* flexibility and scalability.

Related: significant, substantial

654 consideration 需要考慮的事, 動機

1 The diagram in Fig 12 illustrates the variety of **considerations**/*issues/matters* that must be taken into account in setting up the organisational structure.

2 Sometimes during a search certain information becomes available that refines the search and *eliminates/removes* potential non-solutions **from consideration**.

Related: abstract nouns: signalling nouns

655 consideration: take into consideration 考慮

1 On the other hand, the method proposed here **takes into consideration**/*takes into account* the entire shape of any given probability distributions.

Related: take into account

656 consideration: under consideration 考慮

1 At the next stage, we applied the segmentation methods **under consideration**/*that we are considering* to the contaminated outlier (rightmost subplot of Fig. 8)

657 considering: taking into consideration

1 **Considering that**/*Because/Since/As* the k-NN regressor mostly makes use of local information, this approach employs an approximation.

658 **consist in** 在於

consist in introduces a list of activities. The list is complete. The relationship is whole-part.

  1 Low cost development **[whole activity] consists in** addressing problems through local knowledge. **[sub-activities]**

  2 This semantic interpretation **consists in**/*involves* exporting and interpreting the logical schema.

consist in has no passive voice use, i.e., *The system* ~~is consisted in~~

Related: composed of, comprise, consist of, consist in, constitute, contain, encompass, entail, include, involve, made up of, make up

659 **consist of** 由…構成

consist of introduces a list of things or activities that is complete. The relationship is whole-part.

  1 The United States **[whole] comprises** fifty states. **[parts]**

  2 A data warehouse system **consists of**/*is made up of* a server, network hardware and client hardware.

consist of has no passive voice use, i.e., *The system* ~~is consisted of~~. To reverse the relations in the clause we can use *constitute* or *make up.*

Related: composed of, comprise, consist of, consist in, constitute, contain, encompass, entail, include, incorporate, involve, made up of, make up

660 **consistent across** 始終如一的, 前後一致的
  1 These results are **consistent across**/*consistent for all* programs and test input groupings.

661 **consistent with** 與…一致的, 符合的
  1 These observations **are consistent with**/*agree with* the earlier analysis of the re-sampling effects of these algorithms.

662 **consistently** 一貫地, 固守地
  1 Arachnid has **consistently** performed well in the annual evaluations of the National Institute of Standards and Technologies (NIST).

663 **constant (adj): unchanging** 固定的, 不變的

In this use, *constant* means *steady, unchanging.*

  1 Different agents are assigned to control different stages of the pipeline. For example, on agent supervises the oven to ensure it maintains a **constant** temperature.

Table 32. Containing and including verbs			
composed of	由...組成	entail	必需; 使承擔
comprise	包含, 包括	include	包括, 包含
consist of	由...構成	incorporate	包含; 加上; 吸收
consist in	– 在於	involve	需要, 包含, 意味著
constitute	由...構成/構成, 組成	made up of	由...組成
contain	包含; 容納	make up	構成
encompass	包含		

664 **constantly: without cease** 不停的, 接連不斷的, 持續的

In this use, *constantly* means "without cease" or *ceaselessly*. 不停地, 持續地.

1 The drawback of many redundancy-based systems is that they rely on external "black box" components whose behaviors are **constantly** changing.

665 **constitute** 由...構成/構成, 組成

constitute introduces a list that is complete. The relationship is part-whole.

1 Fifty states **[parts] constitute** the United States. **[whole]**

2 Once all the elementary demands that **constitute**/*make up* a resource request have been satisfied...

constitute has no passive voice use, i.e., *The system is constituted of*. To reverse the relations in the clause we can use *comprise* and *composed of*.

Related: containing and including verbs, composed of, comprise, consist of, consist in, constitute, contain, encompass, entail, include, involve, made up of, make up

666 **constitute: disclaimer** 放棄, 拒絕, 不承諾,

In legal disclaimers 放棄, 拒絕, 不承諾, *constitute* is used as in the following example.

1 Reference herein to any specific commercial product does not **constitute** or imply/*is not equivalent to and does not imply* its endorsement by any of the sponsoring bodies.

667 **constrain** 限制, 束縛, 拘禁

1 It should be noted that what was **constrained**/*limited/restricted* was the number of applications of transformations, not the types of transformations.

> **Table 33.** Classification of "containing and including" verbs

1. They introduce lists (or just single items) of activities, attitudes, behaviours, features, items, attributes, etc.

2. They suggest whether the list is either a) complete or b) may or may not be complete.

3. They signal a relation between elements
   - that is whole-part or part-whole
   - where one element contains or surrounds (or absorbs) the other element

4. Grammatically, they can be used in different ways and have different potentials to be passivized, show tense, and form present participles

668 constraint: verb collocation 限制

The noun *constraint* collocates with following verbs.

accommodate	適應,使之相符	ease/relax	舒適
enforce	強制執行	impose/place on	安置
introduce	介紹	maintain	維護
relax, ease	放鬆	remove	去除
satisfy	滿足	specify	指定
violate	違犯		

669 consume 消耗, 花費, 耗盡

We *consume* all kinds of resources, e.g., food, power, space, and time.

1 Thus, sending larger messages, our approach **consumes**/*uses* more bandwidth than geographic routing.

Related: deplete, exhaust, expend, spend, use up, waste

670 consumption 用盡

1 Generally speaking, embedded systems are required to model timing and power **consumption** in detail, while distributed systems must model fault tolerance and bandwidth usage.

671 containing and including verbs

It is quite common in research writing to specify taxonomies and classification. This can involve the concepts of "containing and including". The top four in frequency are *contain*—915/mill., *involve*—386/mill., *include*— 367/mill., and *consist of—265/mill.* Table 32 lists the most important. Detailed discussion of meaning and use can be found under their individual entries. Obviously, the meaning of these verbs is wider than just *containing and including* and also cov-

ers ideas such as scope *(encompass)*, composition *(made up of)* and absorption *(incorporate)*. These verbs are distinguished from each other according to the criteria in Table 33.

672 **contain** 包含, 容納

contain introduces a list that is complete. The relationship is container-contained, i.e., the container is not made up of what it contains.

> 1   The United States **[contains] contains** many states. **[contained]**

> 2   This approach seeks to obtain a selection of optimally reduced suites **containing** the most fault-revealing tests.

contain can be written in the passive voice.

> 3   Many states **are contained by** these borders.

Related: containing, composing, and including: verbs, composed of, comprise, consist of, consist in, constitute, contain, encompass, entail, include, incorporate, involve, made up of, and make up

673 **contend**

> 1   **We contend that**/*It is our view that/We maintain that* improved dependability can only come from a better understanding of the model and its implementation.

674 **contention**

Related: assertion, claim, refute

675 **contiguous** 接觸的, 鄰近的

Related: adjacent, neighbouring

676 **contradict** 與...矛盾, 與...抵觸

> 1   A final check is made to ensure that the proposed rule does not **contradict**/*conflict with* an existing rule.

Related: deny, disprove, refute, reject

677 **contradictory** 矛盾的, 對立的

> 1   It is clear from these **contradictory**/*conflicting* results that there are factors involved which are not accounted for in these case studies.

Related: ambiguous, unclear

678 **contrary: on the contrary** 正正相反

on the contrary is not a synonym for *in contrast.* While *in contrast* signals "contrast", *on the contrary* signals a denial-correction relation where the writer presents a "false" belief in the negative and then corrects it.

1 The information contained in this layer <u>does not refer</u> to time order or unique events in time **[denial/false belief]**, **on the contrary**, <u>it refers to</u> causal relationships.**[correction]**

2 A database wrapper <u>is not</u> a simple component. **On the contrary,** it makes use of two potentially very different data models and must efficiently translate queries, updates, and data between them.

Related: instead of vs rather, **Part 1:** semantic relations: truth and validity

679 **contrary: the contrary of, the opposite of** 對立面

1 It should be stressed that even this formulation takes into account every entry in the history without regard to when they arrived. This is **the contrary of**/*the opposite of* what occurs in an exponential decay function-based decision.

680 **contrary to vs unlike: different meanings**

contrary to introduces a denial-correction relation, where the writer presents a "false" belief in the negative and then corrects it.

1 **Contrary to** <u>what is popularly reported in the literature</u>, when continuous auctions use discrete bid levels, the reserve price of the auction does not fall with the number of bidders **[denial/false belief]** but **in fact** <u>increases</u>. **[correction]**

unlike is used differently. It introduces a simple contrast 對比, 對照, i.e. 'these things differ in this way.'

Example 1
2 Thus, ~~contrary to~~ **unlike**/*different from* <u>regression test selection</u>, test suite reduction analyses are carried out independent of T.

Alternative 1
3 Thus, ~~contrary to~~ <u>regression test selection</u> **is not like** test suite reduction analyses, which are carried out independent of T.

Related: conversely, **Part 1:** semantic relations: truth and validity

681 **contrast: by contrast, in contrast** 相比之下

by (way of) contrast and *in contrast* are synonyms. They signal simple contrast.

1 Engine A <u>significantly outperforms</u> every other engine when the MRT evaluation metric is applied <u>because</u> **there exists a path** from A to A2 to A3. **By contrast, the absence of such a path** <u>adversely affects the performance</u> of A7 and A9y.

2 Invariant bytes have a fixed value and are present in every sample. **In contrast,** wildcard bytes change their values for each sample.

Both can be placed at the beginning of a sentence or between the subject and verb. In the following example, placing *in contrast* after the subject emphasizes the parallelism between *A closed system* and *An open system.*

> 3 **A closed system precludes** overload since a new request will be made only once a earlier request has been processed (see Figure 5). **An open system, in contrast, allows** any amount of overload because it allows the generate of a volume of requests that exceeds the server uplink bandwidth.

682 contrast: in contrast with

in contrast with signals simple contrast.

> 1 In this article, <u>we use the term</u> server proxy to refer to a network entity that supports a set of servers in the task of improving their services to the Internet. This is **in contrast with** <u>the common definition</u> wherein a proxy is a network entity that supports a set of clients in accessing the Internet.

683 contribute (to) 促成

contribute is a cause-effect verb. It claims that a certain factor or factors *(contributing factors),* along with a number of other factors, led to the particular result or outcome.

> 1 It is certainly the case that the use of FITE-TRT **contributed to** the superior quality of the translations when using MT.

Related: affect, bearing, contribute to, impact, influence, cause-effect and reason-result verbs attributed to, deciding factor, determining factor

684 contribution 貢獻

The meaning of *contributions* in the following example is "part or role played", or "effect on results".

> 1 The main purpose of this work has been to identify the factors that affect performance. In future work we hope to clarify the relative **contributions** of the various modules, external components, and parameter settings.

Related: Part 1: introductions: what are novelty, importance, and originality?, introductions: what are contributions?

685 controversy 爭論, 辯論, 爭議

686 convention: by convention 慣例, 習俗, 常規

> Example 1
> 1 **By convention,** safety expressions are provided in a bulleted list.

> Alternative 1
> 2 **It is standard practice for** safety expressions **to be** provided in a bulleted list.

687 **conventional** 習慣的, 慣例的

1   Both experimental studies and the complexity analysis clearly show the superiority of this over the more **conventional**/*traditional*/*usual* methods.

Related: common, conservative, familiar, normal, popular, traditional, typical, usual, well-known, widespread

688 **conversely vs in contrast** 相反地 vs 相比之下

The word *conversely* is rare. It signals a simple contrast where the terms of a relation are reversed, e.g. *all mothers are women but (conversely) not all women are mothers.* It is not a synonym for *in contrast.*

1   The first "random jump" with probability y made a PageRank iteration more stable in that ranks did not change dramatically as edges were deleted. ~~Conversely~~, **In contrast,** ZIN and related schemes were less stable.

Related: contrary to vs unlike

689 **convey** 傳達, 傳遞, 表達

1   The second issue is the implementation of interfaces that are easy to use and effective in **conveying**/*communicating*/*expressing* the desired information.

690 **cope (with)** 競爭, 對付, 妥善處理

What must be *coped with* is always a problem and the connotation is of "(merely) adequate success". Both *deal with* and *handle* suggest greater success in responding to a problem.

1   The great benefit of this new functionality is that in its role as an automated physical design tool it provides DBAs with more flexibility to **cope with**/*deal with*/*handle* evolving data distributions and workloads.

Related: address, deal with, handle, problem-solution verbs

691 **corresponding (adj)** 符合的, 一致的, 相同的#對應的, 相當的

The adjective corresponding—544/*mill.*—is a very general word but essentially means *parallel* or *matching.*

1   Applying the method, we begin by using **the inner boundary** in the original slice to detect **the corresponding boundary** in the current slice.

2   Another drawback is that larger packets are more subject to transmission errors and **corresponding**/*associated* delays.

3   Each packet payload contains an audio frame of n audio samples and a timestamp **corresponding to**/*matching*/*recording* the position of the samples in the audio stream.

692 **cost (vb)** 花費

1   Since only one index is required per object, the former **costs** only one insert operation in the overlay and the latter **costs** only one lookup per refreshment.

693 **cost (n)** 費用, 成本

1 Because the framework is structured, agents can provide this adaptation at relatively small/low **cost** (i.e. very few lines of code).

Related: at the expense of vs at the cost of

694 **cost: the cost of**

the cost of and *the expense of* are interchangeable. However, <u>at the cost of</u> and <u>at the expense of</u> are not (See the following article).

1 Peers with similar information needs become neighbors and subsequently forward relevant queries, thereby avoiding **the cost of**/*the expense of* broadcasting.

Related: at the cost of

695 **cost: tradeoffs: at the cost of vs at the expense of**

Both *at the cost of* and *at the expense of* refer to a trade-off, but in each case something different is traded. *at the cost of* tells us what the <u>additional cost</u> will be.

1 Unfortunately, some of the enhancements that have been made in UML have increased the expressiveness of the language **at the cost of** <u>introducing new ambiguities</u>.

at the expense of talks about "trade-offs" and tells us what will be <u>lost</u> or will have to be <u>given up</u>. Thus, in the following example, *zooming* gives us a bigger picture but *detail* is lost.

2 Zooming out allows us to see the big picture **at the expense of** <u>detail</u>.

Related: at the expense of

696 **costly** 昂貴的, 代價高的

Related: expensive

697 **could:**

See able to, can, could

698 **count as**

1 Students were asked to participate in the experiment and were informed that it would **count as**/*be treated as* a class assignment.

Related: consider, see as, treat as. view as

699 **count on** 依靠, 指望

1 One of the few features we can **count on**/*rely on* in distinguishing between symbols is that they always write each symbol using the same number of strokes.

700 **counter (n) and (vb)** 反方向地, 相反地

A *counter* is more specific than a *response*. A *counter* is a defensive 防禦的, 保護的, 保衛的 response to something negative, like an attack.

> Example 1
> 1 A common problem when running standard batch kernel k-means is that the algorithm get trapped into qualitatively poor local minima. An effective **counter**/*response* to this **is to** carry out a local search...

We can write this with *counter* as a verb.

> Alternative 1
> 2 We can effectively **counter**/*respond to* this by carrying out a local search...

Related: abstract nouns: signalling nouns

701 **couple (vb)** 結合

> 1 Collaborators may frequently switch between loosely and closely **coupled** work styles when working over...

702 **cover** 包含, 適用於

> 1 We performed multiple experiments to **cover**/*deal with*/*address* different cases. In the first experiment...

703 **criterion, criteria** 標準

criterion is the singular form and *criteria* is the plural.

> 1 The use of the OR value OR broadens the search by matching the results that satisfy any of the **criteria**.

Related: metric

704 **critical** 緊要的, 關鍵性的, 危急的

Related: crucial, essential, fundamental, important, necessary, vital

705 **critique** 批評,評論,評論文章

706 **crucial** 關鍵

Related: critical, essential, fundamental, important, necessary, required, vital

707 **current** 現時的, 當前的, 現行的

> 1 Section 7 describes the limitations of our **current**/*present* experimental process.

Related: existing, in progress, ongoing, present, under way

708 **currently** 現在 一般 流暢地

> 1 To avoid this situation, we **currently** impose a restriction wherein external actors can communicate only with SUT active objects.

Related: at the present time, now, presently

709 custom (adj)

Related: customize, custom-made, off-the-shelf, one size fits all tailored

710 customary 習慣上的, 慣常的, 合乎習俗的

1 These nodes were located in different partition so, as is **customary/** *usual*, we performed only an approximate calculation.

Related: common, conventional, familiar, normal, popular, traditional, typical, usual, well-known, widespread

711 customize 度身訂做

1 Later in this section, we describe how this basic model might be **customized/** *tailored* for a variety of different resources and uses.

Related: custom-made, one-size-fits-all

712 custom-made 訂製的, 非現成的

1 We implemented the methodology on a PowerPC processor with a **custom-made** debugger.

Related: tailor, one size fits all

713 damage (vb) 損害, 毀壞

Related: worse: affect, aggravate, burden, damage, degrade, deteriorate, exacerbate, harm, interfere with, suffer from, undermine, worsen, **better:** alleviate, ameliorate, enhance, improve, mitigate

714 data: singular or plural?

We talk about *data* as both countable and uncountable, depending on whether we are thinking of it as a collection of individual items or as groups of items.

1 The main problem we faced in the beginning was that there was simply **too much/too many** data.

The singular of *data* is *datum* or *an item of data.*

Related: adequate vs enough/sufficient, an excess of, insufficient, not enough

715 date (n) 日期, 日子

1 The crawler ignores any future calendar **dates** as well as **dates** prior to 2001.

716 date back to (vb) 回到去(某些)日子

1 While the term "P2P computing" is new, the basic P2P technology itself **dates back to/** *dates from* at least 1979 and the original implementation of USENET.

717 dated: out of date 過時 舊式的, 不流行的

1 It is difficult to update constantly changing information such as traffic data frequently enough to stop it becoming **dated**/*out of date* almost immediately that it is collected.

It is hyphenated before a noun, e.g., *out-of-date methods*

2 In their system, this support takes the form of a toggle between automatic and manual highlighting of **out-of-date** elements.

Related: up to date, update

718 date: to date (prep) 迄今

1 Although a full formal validation of the impact of MINEs on software development productivity has not yet been performed, our experience **to date**/*so far/up until now* does appear to suggest its potential for speeding the development of mobile applications.

Related: up to date, out of date

719 deal: a good/great deal of 數量, 大量

1 Over the years, there has been **a good deal/great deal of**/*considerable/ extensive/much* research on routing in delay-tolerant networks.

720 deal with 應付, 處理

1 Note, however, how much less computationally efficient KMSE is when **dealing with**/*applied to* large-scale datasets.

2 The proposed process **does not deal only with**/*does not only address/*is not only *concerned with* implementation issues.

Related: handle emphasize, focus on

721 decide 決定, 是...的決定因素, 形成, 影響

decide has three main meanings in the corpus.

1 decide: resolve/make a decision 決定

1 Finally, we decided to use of the Microsoft handwriting recognizer.

2 decide: determine/find out 解決, 裁決, 判決. 考慮後決定

1 The cost setup for any given data set is usually unknown but for th cost values for binary applications can be **decided**/*determined/identified* empirically.

3 determine: cause-effect 是...的決定因素, 形成, 影響

1 The resampling strategy of each algorithm **[means]** is another factor that **decides**/*determines* the weight distributions.**[result]**

Related: bring about, cause, decide, determine, result in

722 **decline (n)** 下降, 下跌, 減少

    1 The dominance of the Wintel standard in the mid-1980s contributed to both a sharp **decline** in hardware prices and a rising demand for applications.

723 **decline (vb)** 下降, 下跌, 減少

    1 While the average revenue per company actually **declined** between 1999 and 2003, there was a 50% increase in the number of companies and an increase in the volume of...

See also: trends: verbs for talking about trends, lower, raise, reduce—decline, drop, fall, rise—decrease (as), increase (as), diminish (as)

724 **decrease as vs decrease along with**

decrease as introduces a clause and *decrease along with* introduces a noun phrase. Hence, for the same content, they produce different information orders.

1 **decrease as + subject + verb**

    1 While the RSs of MTS remained at all times close to 1, those of the other methods **decreased as** the class imbalance of the training sets <u>increased</u>.

2 **decrease along with + noun**

    1 While the RSs of MTS remained at all times close to 1, those of the other methods **decreased (along) with** *any increase in* the class imbalance of the training sets.

See also: *verbs for talking about change and trends: decline, drop, fall, increase, lower, raise, reduce, rise*

Related: as: temporal overlap,

725 **deem (to be)** 認為, 以為, 視作 持某種看法, 作某種評價

    1 'Resident' pages are **deemed**/*classified as/regarded as/treated as/ viewed as* always memory resident although on rare occasions they will be non-memory resident.

726 **deem it** 認為, 以為, 視作

    1 In the next section we explain more fully why we **deem it**/*consider it/ regard it as* appropriate to maintain...

Related: it: preparatory object it

727 **default**

    1 The **default** assumption for failure and success allows the computation of the probability for each non-root causal event.

728 **default: by default**

    1 **By default** we use random landmark selection but if the network is a sensor net, we use peripheral landmark selection.

729 **define** 確定...的界線

1 C++ *offered* creators of a new type (or class) the ability to **define** implicit type conversions.

730 **define as...** 解釋, 給...下定義

Example 1 (passive voice)

1 The dependent variable *duration* is **defined as** the time in minutes required to complete tasks t4-t6.

Alternative 1 (active voice)

2 We **defined** the dependent variable *duration* **as** the time in minutes required to complete tasks t4-t6.

731 **definition** 定義, 釋義

1 In Section 2.1 we provide a **narrow definition** of semantic Web services that suits our own present purposes. For **broader definitions** of this concept, the interested reader is referred to [1].

732 **definition: by definition**

1 **By definition,** the ROC curve must pass through the points r and q.

733 **definitive**

1 Clearly, on the basis of these findings it is not possible to offer **definitive** advice as to whether organisations should or should not use such models.

Related: conclusive, inconclusive, tentative

734 **degrade** 降低, 降級 使剝削, 剝蝕

1 Randomizing the order each time can be beneficial as many algorithms exhibit order effects, where different orderings dramatically improve or **degrade** performance [38].

Related: worse: affect, aggravate, burden, damage, degrade, deteriorate, exacerbate, harm, interfere with, suffer from, undermine, worsen, **better:** alleviate, ameliorate, enhance, improve, mitigate

735 **delegate...to (vb)** 派定, 指定, 選派

1 In principle, it is possible to **delegate**/*assign* the management of the process **to** any subset of peers.

736 **delete** 刪除

1 There are two approaches that can be used. The first is to allow a rule to be inserted or **deleted** at random. The second is to...

Related: discard, eliminate, get rid of, omit, remove

737 **deliberate (adj)** 故意的, 蓄意的

1 This is the result of a **deliberate** decision by the specifier to make the user aware that the element cannot be added/removed.

738 **deliberately** 故意地, 蓄意地

1 As in [10], the images have been artificially generated and made small **deliberately**/*intentionally/purposely/on purpose* so that the theoretical values can be obtained by manual calculation.

Related: accidentally, unintentionally

739 **demand (n)** 需要, 需求

1 Our analysis of resource supply and **demand** in the DDLS has produced a number of criteria that can used to guide...

Related: supply

740 **demand for (n)**

1 As the level of replication increases, *so do* **demands for**/*does the demand for* network bandwidth, I/O, and processing and most access-control mechanisms become a bottleneck.

741 **demand (vb)**

1 We showed earlier, (Section 3.2), that the evaluation of search engines in dynamic environments **demands**/*calls for/needs/requires* a very large query sample, even simply to to estimate...

2 However, an optimization of this kind **demands** time and thus MAP3 and MAP4 are slower than all the other schemes except BMAP.

Related: call for, need, require

742 **demanding** 高需求的

1 Dependable development requires precise semantics, especially in the **demanding** area of mobility.

Related: competitive, difficult

743 **demonstrate** 示範操作(產品), 展示

In the following, *demonstrated* is simply reporting past events.

1 The proposed method **demonstrated**/*showed* a significant reduction in terms of computational complexity.

But in the following examples, *demonstrate* is a synonym for *prove.*

2 The effectiveness of this framework has been amply **demonstrated**/*proven* [31-36].

3 Since the aim of this work is to **demonstrate**/*prove* the feasibility of an approach rather than develop an industrial application, for simplicity we assume that...

4 The experimental results **demonstrate that**/*prove that*...

Related: demonstrate, display, express, feature, illustrate, prove, show

744 **denote...as...** 指稱

1   We **denote as** C the cut containing all the events up to the local time at which each process replies to most recent request.

745 **deny (vb)** 拒絕給予

The verb *deny* collocates with the following nouns: *access, permission, request, service*

1   If the system is overloaded, it may **deny**/*refuse* the request and ask the user to provide the missing information in a subsequent request.

746 **deny that** 否定, 否認

1   Google has **denied that** it is in negotiations to sell faster downloads from YouTube to the customers of certain providers.

Related: admit, admittedly, concede

747 **depend on** 依靠, 信賴

1   Because adaptive systems **depend on**/*rely on* such profiles, an attacker can manipulate the system to produce certain target behavior.

Related: dependable, reliable

748 **dependable** 可靠的

Related: reliable

749 **dependent on** 取決於..., 依靠, 信賴

1   Crucially, whether users trust a recommender system **is heavily dependent on**/*very much depends on* their perception that it really does what it claims to do.

750 **depending on** 依靠

depending on signals the relation condition-consequence.

1   **Depending on** the type of crawl **[condition]**, the number of links can be reduced by between 20 and 40%. **[consequence]**

Related: if, otherwise, unless

751 **depict**

depict simply means "show as a picture". In the following example, *shows* is more general and inclusive than *depict*. That is, we can replace *depicts* with *shows*, but not *shows* with *depicts*.

1   Figure 2 **depicts**/*shows* a fragment of the mapping between the result schema and a locally defined schema.

Related: illustrate

752 **deplete**

Related: consume, exhaust, expend, spend, use up, waste

753 **deploy** 使展開, 使疏開

754 **derive** 衍生出, 導出

1 The first 90% of emails sent from each account were deemed "profile" emails and were used to **derive**/*obtain* profiles of the users associated with that account.

Related: cause-effect and reason-result verbs

755 **derive from** 衍生出, 導出

1 The objective of the first phase is to define a fully elaborated model **derived from**/*obtained from* the system specification, along with an accurate and precise description of the relevant protocols.

Related: arise from, come about from, derive from, result from, stem from

756 **describe** 描述

1 The interaction techniques **described** here provide users with the ability to both directly and indirectly change and..

757 **describe how + subject**

1 Section 3 **describes how** we generate the re-established images.

758 **describe how to**

1 Section 3 **describes how** to generate the re-established images.

759 **design for**

1 However, the watermarks can be easily removed by applying attacks **designed** specifically **for** each method.

760 **designed to**

designed to is often used as a synonym for *intended to*

Example 1

1 We conducted a user study which <u>sought to</u> evaluate the reliability of implicit feedback signals. In particular, the study was **designed to** analyse how users interact with ranked results and...

Alternative 1a

2 In particular, *the goal/purpose* of this study *was to* analyse how users interact with ranked results and...

Alternative 1b

3 In particular, this study *sought to/aimed to* analyse how users interact with ranked results and...

761 **desirable** 值得嚮往的, 值得擁有的, 令人滿意的 富有魅力的, 引起慾望的

1 Of course, given the familiar resource constraints of sensor nodes, such a small memory cost is highly **desirable**.

Related: undesirable

762 **desire (n)** 慾望

Example 1

1 Ultimately, wireless sensor and mobile ad hoc networks are most concerned with point data and the design of algorithms is primarily driven by **a desire** to utilize the physical network connectivity within certain resource constraints.

Alternative 1

2 ...and *the primary goal* in designing algorithms is to utilize the physical network connectivity within certain resource constraints.

Related: objective, goal, purpose

763 **desire: that is desired/the desired**

1 The second issue is the implementation of interfaces that are easy to use and effective in conveying the information **that is desired/the desired** information.

764 **despite** 不管, 儘管, 任憑

despite is a preposition. It is followed by a noun phrase.

Example 1: as a preposition, followed by a noun phrase

1 The mapping is good in general, **despite**/*In spite of/Notwithstanding* **[noun phrase]** some small yet noticeable artifacts, for example in the fifth column of the second row in Fig. 5.

It can be rewritten as a clause using the conjunction *even though*.

2 The mapping is good in general, *even though* **[clause]** there are some small yet noticeable artifacts, for example in the fifth column of the second row in Fig. 5.

765 **detail (n)** 細節

1 To avoid overwhelming users with *too much/many/an excess of/excessive* **detail,** the browser initially displays only a subset of the information for a given object.

766 **detailed (adj)** 詳細的

1 **Detailed information** is sent from storage to the Web browser on the client side but...

767 **detail (vb)**

1 The following **details** this procedure/*describes* this procedure **in detail** in terms of the user-performed tasks and...

768 **detail: in detail (adv)**

1 Issues of user management and access privileges are discussed **in more/greater detail** in Section 3.3.

769 **detect** 查出

1 The hypothesis is that a test set which detects all simple faults will be able to detect a greater number of complex faults.

Related: ascertain, determine, discover, find, identify

770 **deteriorate** 惡化

1 The overall system performance **deteriorates** *quickly/quickly gets worse* with any increase in the number of users and the system workload.

Related: worse: affect, aggravate, burden, damage, degrade, deteriorate, exacerbate, harm, interfere with, suffer from, undermine, worsen, **better:** alleviate, ameliorate, enhance, improve, mitigate

771 **deterioration in** 惡化

1 For both techniques we found that the greater the update rate, the greater the **deterioration in** resource discovery. This can be partly ameliorated/mitigated by reducing the capacity of the query history.

772 **determine: cause-effect**

As a cause-effect verb, *determine* talks about factors that are direct causes of outcomes.

1 The number and selection of landmarks **determines**/*decides* the Hop ID coordinates.

2 Which part of the environment agents can sense and affect is **determined**/*decided* by the agent's specified role and its current status.

Related: bring about, cause, decide, determine, result in, determining/deciding factor

773 **determine: decide upon or choose**

Sometimes *determine* is used as a synonym for *decide upon* where the suggestion is that the decision is based on empirical data.

1 The sub-features were all normalized to an interval estimate of 1 to 5, the thresholds of which were **determined**/*chosen/decided upon/established/identified* empirically.

774 **determine: find out**

Sometimes *determine* is used as a synonym for *find out*.

1 Thus, by examining the snapshot we are able to **ascertain**/*determine/find out* whether the process is consistent with the first urn model or with the second.

775 **determining factor** 決定因素

1 However, as discussed in Section 3, the **determining factor**/*deciding factor* in the amount of information actually lost is probably the relative position of...

776 **developed (adj)**

Related: participles: as adjectives: advanced, developed, increased, **Related**

777 **devise** 設計, 發明, 策劃, 想出

1 A similar idea was used in [22] to **devise**/*develop* a topic-sensitive version of PageRank.

778 **devoid of**

1 Although empirical software engineering rarely involves theory-driven investigations and theory building, that is not to say it is **devoid of**/*free of/lacks/makes no use of* theory.

779 **devote to** 將...奉獻(給)

1 Notwithstanding the amount of effort that has been **devoted to**/*put into/ invested in/dedicated to/expended in/given over to* this area, most efficient solutions to date can be applied only to...

Related: expend (on), give (over) to, devote to,

780 **diagram (vb)**

1 Fig. 2 **diagrams** the proposed routing strategy.

781 **dictate** 命令

1 Any improvement in seasonal usage is very significant since winter temperatures **dictate** the resources needed to achieve a given outage target.

Related: decide, determine

782 **differ (in)** 不同

1 These methods **differ in** how they organize the training set and select the runtime hypothesis: some construct data structures for fast (NN) retrieval whereas others learn regression models.

2 Fig. 4 charts the degree to which component classifiers **differ in** the category assignments they get correct.

783 **differ from...in...** 不同

1 Their example-based system also **differs from** ours **in** its reliance on blank backgrounds and example sets produced by human artists.

784 **differ from...in that...** 不同

1 Weighted variance (WV) **differs from** UV only **in that** it reduced the weightings for the most often-rated items.

Related: vary

785 **differentiate** 區分

1   Each of these categories of software can be **differentiated by** their degree of customization.

2   As illustrated in Figure 12, in every model, the larger the filter, the easier it is to **differentiate**/*distinguish* genuine profiles **from** attack profiles.

Related: differ, distinguish

786 **different vs various** 各種的 vs 各項

Some writers might distinguish between *various* and *different*, identifying *various* and *a variety of* as indicating "a range of types" and *different* as meaning "not the same". But there is seldom any related ambiguity.

1   Since this system is able to carefully balance **different(?)**/*various* aspects of compression performance, it can be regarded as a complete compressed XML database rather than merely a...

Related: a variety of, various

787 **different from** 不同的

1   Their approach is completely **different from**/*unlike* our proposed approach.

2   **Different from**/*Unlike* traditional ad hoc network routing protocols [5], [6], [11], an always-available HDR uplink and downlink permits...

Related: differ, different kinds of, dissimilar, unlike, vary, various, a variety of

788 **different kinds of** 各種的

1   We also offer a number of insights as to the roles of **different**/*various* **kinds of** tools in a modular ADL-based infrastructure.

789 **difficult: it is difficult to** 困難的

1   In practice, it is **difficult**/*hard/not easy/not a simple matter* to obtain the large quantities of user rating data that such systems require.

790 **difficulty** 難事, 難處, 難題

The noun *difficulty* collocates with the verbs *experience, face, have*

1   All firms experienced/had **difficulties** recruiting qualified staff.

791 **dilemma** 困境, 進退兩難

A *dilemma* is a problematic choice between two alternatives.

1   One familiar **dilemma** in these and other application typologies is in choosing between a style that offers an inconsistent but flexible view of the system **[one choice]** and one that offers a consistent but rigid view. **[another choice]**

Related: difficulty, problem

792 **diminish vs decrease**

diminish is not a synonym for *decrease.* (See *trends: verbs for talking about change and trends.)*

793 **discard** 拋棄, 摒棄, 丟棄

   1 One feasible but tedious approach, which we quickly **discarded**/aban-doned, was to create specific propagation techniques for each pair of data models...

   2 All of the queries are collected into this query history, stored as an FIFO queue, with the oldest entry being **discarded**/*deleted/removed* when the queue is full.

Related: eliminate, get rid of, omit, remove, throw away

794 **discipline** 學科

   1 **See** area, field, domain, discipline

795 **disclose** 露出, 顯露, 揭發, 透露, 公開

We may *disclose* secrets or private or personal information.

   1 Many of these algorithmic components have hitherto appeared in a number of articles and reports in complete form but others have never been **disclosed**.

Related: reveal

796 **discover** 發現

We may *discover* errors and problems.

   1 This application [Zenning et al. 2002] analyses the control flow and builds a model for **discovering**/*finding/identifying* bugs such as memory leaks

797 **discover that**

This a confident claim, like *demonstrate, show,* or *prove.*

   1 They **discovered that** even if a test case can detect a missing condition fault, it may not be able to detect other corresponding faults.

Related: conclude that, indicate that, mean that), prove that, suggest that, tell us that

798 **display** 顯示, 表現, 顯露

Things *display* attributes and behaviors.

   1 To test the effects of the various parameters on the performance of the algorithm, we chose three features that **display**/*demonstrate/exhibit/feature/show* quite different <u>characteristic behaviors</u>.

799 **disprove** 證明...是虛假的, 反駁

   1 As to hypotheses 3), the relation between the number of faults and the number of lines of code could be neither confirmed nor **disproved**.

800 **disregard** 不理會, 不顧

disregard should not be confused with *discard* 拋棄, 摒棄, 丟棄.

1 To keep the example simple, we **disregard**/*do not take into account/ignore* the decompression costs and consider only the storage costs.

801 **dissimilar** 不同的

Related: different, unlike

802 **distant from** 遠的, 久遠的, 遠離的

1 However, this is less of a problem if we control the growth of the hierarchical tree, for example by permitting the growth of nodes close to the marginal area while preventing the growth of **distant nodes**/*nodes far from the marginal area/nodes a long way from the marginal area.*

803 **distinct** 與其他不同的, 有區別的

1 There would thus appear to be two **distinct**/*different* ways that data redundancy can exploited: by simple pattern matching and by statistically correlating question and answer terms.

Related: stand out

804 **distinction between** 差別, 對比

1 Over time, the **distinction between** the fields view of objects and agents has become blurred.

805 **distinctive** 有特色的, 特殊的

1 We retained the most **distinctive** features of this approach and combined them with more basic features from other approaches.

806 **distinguish (between)** 區別

1 The most desirable boosting strategy would be able to **distinguish between** different types of samples and...

Related: differentiate

807 **distribution: follow, conform to, obey**

The noun *distribution* colllocates with the verbs *follow* (most frequent, *conform to,* and *obey* (least frequent) .

1 If a random sequence follows/conforms to/obeys a statistical **distribution**, ..

808 **domain** 領土, 領地, 領土權 地區, 區域 領域, 範圍

See area, field, domain, discipline

809 **doubt: undoubtedly**

undoubtedly (doubt, 懷疑, 不相信*)* expresses a conviction that the statement is true.

> *1* Although this technology **undoubtedly** plays an important role in question answering technology,...

Related: admittedly, certainly, clearly, definitely, indeed, no doubt, obviously, surely, undeniably,

810 **doubt: no doubt** 無疑地, 的確, 可能

no doubt expresses a conviction that the statement is true.

> *1* Users would **no doubt** prefer to be guided by a recommender system that recommended books they were in fact interested in.

811 **doubt: it is doubtful that**
> *1* **It is doubtful that**/*We doubt that* an attempt to ascertain an interprocedural SGL decomposition would result in...

812 **doubt: cast doubt**
> *1* Both of these results values **cast doubt on**/*make us doubt* the usefulness of these frames as semantic units.

813 **dramatic/ally** 戲劇般的, 戲劇性的

814 *dramatic* **is a very strong claim.**

> *1* Our experimental data shows that our algorithms produce a **dramatic**/*very considerable* speedup in runtime.

> *2* Larger buffers allow the buffering of more inserts, **dramatically**/*greatly* reducing the required number of seeks.

Related: drastic, steep

815 **draw (from)** 獲取, 得到
> *1* The items used in our experiments were all **drawn** at random **from**/*chosen at random/randomly selected from* this pool, taking care that all ten time series contributed equally.

Related: random

816 **draw conclusion/s** 推斷出結論, 作出結論, 形成結論

See conclusions

817 **draw on** 利用
> *1* Our work **draws on**/*is based on/is derived from* a long tradition of user interface design and makes use of three models in particular:

> *2* Our work **draws** heavily **on**/*makes considerable use of* methods and techniques for...

818 **drawback** 缺點, 短處, 不利條件

1   Another **drawback of**/*disadvantage of* hierarchical approaches is that...

2   All of these approaches *have/display/suffer from* some of the **drawbacks** described earlier (Section 2.4), including the inability to...

819 **drive** 迫使, 逼迫

1   Ultimately, the design of algorithms is primarily **driven by**/*motivated by* a desire to utilize the physical network connectivity...

Related: account for, attribute to, drive, explain, inspire, motivate

820 **drop (n)** 落下, 下降

1   Figure 12 show the costs of the manual and semiautomatic methods with larger sample sizes. In both cases, there is a steep **drop**/*decline/decrease/fall/reduction* in false alarms and a corresponding **drop**/*decline/decrease/fall/reduction* in the total cost, especially with samples larger than 400.

Related: growth, increase, rise

821 **drop (vb)** 下降

1   When n is a little smaller, the false-negative rate (gradually) **drops**/*declines/falls (dramatically/noticeably/scarcely at all/sharply/significantly/very little)* because increased variance...

Related: trends: verbs for talking about trends, lower, raise, reduce—decline, drop, fall, rise—decrease (as), increase (as), diminish (as)

822 **due (to): thanks** 應支付的, 欠款的, 欠的

due can be used to express indebtedness, i.e. the idea that something is owed, e.g., a "debt of gratitude".

1   Thanks are also **due** *(owed)* **to** Sam Knight for his help in the production of this manual.

823 **due: time and schedules** 到期的 預定應到的, 預期的, 約定的

due occurs in discussions where the topic is time, schedules, and imminent 即將 發生的 occurrences.

1   MC collects all the REPLY messages and calculates the number of messages still in transmission and when they are **due**.

824 **due to, because of, owing to, thanks to** 因為, 由於 ,幸虧

due to, because of, owing to, and thanks to are all prepositions that signal reason-result. The central difference between them is whether they present the "reason" element as the positive, negative, or neutral. *owing to* and *because of* present reasons as either neutral or negative. *thanks to* presents reasons as positive. And

due to is presents reasons not just as negative but as being to blame for a problem.

1 **Thanks to** reduced inspection times, production costs fell and productivity improved.

2 **Owing to**/*Due to/Because of* potential "ceiling effects" **[reason]**, the final change task in the experiment calls for special attention. **[result]**

Related: as a result of, on account of, owing to,

825 due to: signalling "to blame for a problem"

We can use *due to* to indicate that something is a problem and to point to the thing that is "to blame" for that problem. In the following example, *lack of space* is "to blame" for the problem that "we cannot present our results in detail".

1 **Due to** <u>lack of space</u>, we cannot present our detailed image segmentation results and instead provide an example to demonstrate that Imula can be used in this domain.

While it is obvious that *lack of space* can be a problem, *due to* often functions to point out something as being a problem or to blame when readers normally might not perceive it as negative. For example, it certainly is not inherently negative to have *many ways to measure* something, yet in the following example *due to* tells us its is to blame for a problem.

2 Cluster analysis is a problem not least **due to** <u>the fact that there are many ways to measure similarity and dissimilarity.</u>

Again, in the following example, *due to* is used to signal that *their implicit assumption* is blameworthy and at the same time to suggest that there is something problematic about the superior performance of another method.

3 Clearly, the gains achieved in [2] are much greater than in our approach. However, this is **due to** <u>their implicit assumption that </u>the nearby client with the highest downlink channel rate will always be chosen as the proxy, which, given imperfect routing protocols, does not hold in simulations.

But there is a limit to what *due to* can characterize as blameworthy. In the following example, the use of *due to* suggests that *high data rates* and *open platforms* (surely good things) are 'to blame' for a "problem" of *choosing two technologies*. It would have been better to use a neutral word such as *because*.

Negative example 1

✗   We choose these two technologies **due to their support for** <u>high data rates and their use of open platforms.</u>

Rewrite 1

4 We choose these two technologies **because they support** <u>high data rates and use open platforms.</u>

The following is also odd and for the same reason.

Negative example 2

✗ Level treemaps are most appropriate the IP level, **due to their maintaining** the input order of nodes.

Rewrite 2

5 Level treemaps are most appropriate the IP level **because they maintain** the input order of nodes.

Finally, in the following example it is hard to see how there could be anything negative about *innovations* or *the faster uptake of best practices*.

6 Due to **Owing to/Thanks to** innovations such as object-oriented languages and novel tools and the ever-faster uptake of software development best practices...

826 due to chance

See: chance

827 ease (burden) 減輕, 緩和

1 The choice of Schema-Free XQuery greatly **eased**/*alleviated/lessened/lightened/relieved/reduced* **the burden of** translating natural language queries because it was no longer necessary to...

828 ease: for ease of

1 **For ease of presentation**/*To simplify the presentation*, we assume that data are identified by...

829 ease: make easier 減輕, 緩和

1 **To ease reading**/*to make reading easier*, we have rendered Figure 7 in separate plots.

830 ease of use

1 Our model therefore satisfies the basic requirement of **relative ease of use**/*that it be relatively easy to use*.

831 easy to

1 PCA is widely used in segmentation because it is **easy to** implement.

832 easy: make it easy to...

1 These changes have **made it easy/easier/hard/harder to** detect errors and recover from failures.

Related: make it hard/harder to **Part I: causatives**

833 easy: make it easy for...

1 We animated these transitions so as to **make it easy/easier for** users to understand what has happened.

834 effect (n): collocation

The noun *effect* collocates with the following adjectives and verbs.

Adjs: *desired, dramatic, expected, large, limited, little, major, negative, negligible, net, positive, possible, potential, profound, significant*

Verbs: *achieve, aware of, take into account, compare, consider, demonstrate, describe, discuss, evaluate, exploit, get, have an effect, highlight, ignore, limit, measure, minimize, mitigate, reduce, remove, see, show, smooth, study, take into account, take effect, test*

Related: impact (n): common collocants

835 effect (n) vs affect (vb)

effect is the noun form of the verb *affect*.

Example 1
1 Because these results **directly affect** our method's performance, we need an appropriate way of...

Alternative1
2 Because these results **have a direct effect on** our method's performance, we need an appropriate way of...

836 effect (vb) 造成, 產生, 招致 實現, 達到 (目的)

effect is almost always used as a noun. However, it can also be used as a verb with a meaning similar to *carry out + achieve*. But note that this use was not found in the corpus for this book.

Related: affect (n), (vb), influence (n), (vb), impact (n), (vb) side-effect

837 effect: the effect of...on...
1 Fig. 4 provides data for **the effect of** insertions **on** physical partition organisation.

838 effect: in effect: practical result 實際上

See *effectively: sentence adverb*

839 effect: in effect: operative 有效, 生效, 在實行中
1 Note that weighted pairwise Fisher criterion is no longer **in effect**/*applies for/holds for/is operative* in the space N(Sw)...

840 effect: side-effect 副作用
1 This paper present a novel adaptive propagation algorithm that adapts the transformation to structural changes that occur as a **side effect** of the update propagation process.

841 effect: take effect 見效, 生效
1 Under all of these distribution schemes, the new policy will **take effect** as soon as it is required.

842 **effective (at)** 有效的

1 The slightly larger reduced suites computed using the RSR technique are more **effective at** exposing faults because...

843 **effectively: focussing adverb** 有功效地

As a focussing adverb, the impact of *effectively* is on an immediately adjacent word or phrase. In the following example, it impacts the verb *manage.*

1 The ever-increasing size and complexity of networks makes it difficult for administrators to **effectively** manage their systems.

844 **effectively: sentence adverb** 實際上

As a sentence adverb, the impact of *effectively* is on the entire following clause or sentence. Thus, in the following example, *effectively* refers to *they answer a different yet better question.*

1 Thus the concept of "explanation" includes answers that improve on the original question because, **effectively/in effect/***the practical result is the same as if* they answer a different yet better question.

845 **efficient** 效率高的, 有能力的, 能勝任的

846 **effort: require, spend, etc**. 努力, 盡力

1 The total **effort** in person-minutes *required* to complete tasks t4-t6 was equal to the time taken by the pair multiplied by two.

2 For instance, it has been argued [60] that less **effort** should be *spent on/expended on/given (over) to/devoted to* the validation of theories and more effort be devoted to....

Related: expend (on), give (over) to, devote to, spend (on)

847 **effort: with little effort**

1 We do not include the cost of tuple insertion and removal in the following derivations, although they can be added **with little effort/***quite easily.*

848 **elaborate (adj)** 複雜的

1 Another, more **elaborate**, way to carry out composition is to use a blending technique as in [35].

849 **elaborate (up)on (vb)** 詳細說明

1 In the following, we will **elaborate (up)on/***further explain* our reasons for these specific choices.

850 **elapse (from...until...): time** (時間)過去, 消逝

1 Cycle time is measured as the number of *days that* **elapse/***pass* **from** the date of the delivery of the baseline requirements **until** the date that the software passes customer-acceptance testing.

Related: pass (time)

851 **eliminate (from consideration)** 排除, 消除, 消滅

To *eliminate (an issue) from consideration* (考慮). A certain issue will not be considered.

> 1 Sometimes during a search certain information becomes available that refines the search and **eliminates**/*excludes*/*removes* potential non-solutions **from consideration**.

Related: discard, delete, get rid of, omit

852 **emerge** 顯露, 暴露

> 1 None of these hypotheses offers an explanation for the patterns already seen and at the same time **entirely different patterns may yet emerge/may still emerge**/*may still be found* in the data.

853 **emerging** 新興的

The idea of *emerging technologies* is of new technologies that are full of potential but not yet fully evolved.

> 1 **Emerging** location-aware applications are now allowing users to pose queries and obtain information about...

854 **emphasis...on...** 強調, 重視, 重點

> 1 The **emphasis** of the present work is **on** designing a practical and easy-to-use formalism for query processing.

855 **emphasis: with an emphasis on**

> 1 The proposed models have primarily focused on authentication, **with a particular emphasis on**/*emphasizing in particular* designing messaging protocols for...

856 **emphasize that** 強調, 著重

> 1 Again, it is important to **emphasize that** these improvements in seasonal usage improvement are possible only with...

857 **empirical** 以經驗(或觀察)為依據的, 經驗主義的

858 **employ** 使用, 利用

See use: the use-family verbs and phrases

859 **enable: causative** 使...能夠, 賦予...能力

enable refers to adding/providing an ability. It is often used causatively.

Example 1

1 One of the major benefits of this approach is that **it enables** slack nodes **[agent object] to** select a duty cycle in a decentralized manner.

Alternative wording 1

2 One of the major benefits of this approach is that **it gives** slack nodes **the ability to** select a duty cycle in a decentralized manner.

We can emphasize the means-purpose aspect of *enable* by writing it in two clauses with a suitable conjunction and an ability clause (using *can, able*, etc).

Example 2: causative

3 Additional rules have been developed **that enable** the code generator to produce the code needed to invoke the new components.

Alternative 2: in two clauses

4 Additional rules have been developed **[means] so that** the code generator **can** produce the code needed to invoke the new components. **[purpose]**

Related: Part 1: causative, semi-causative, nominalization **Part 2:** enable: semi-causative

860 **enable: semi-causative** 使...成為可能

When we say that *enable* can be used as a semi-causative we mean it can be followed by a direct object which is a nominalization which implies an agent object.

Example 1: semi-causative

1 The use of a rendering cluster **enables** the rendering of [nominalization] more geometry per frame.

Alternative 1: causative

2 The use of a rendering cluster **enables** us/them/someone/etc to render more geometry per frame.

This can be rewrittten with a similar meaning in two clauses as follows.

Alternative 2: in two clauses

3 **Because** it uses a rendering cluster, our system **can** render more geometry per frame.

Related: causative, semi-causative, nominalization

861 **enclose** 圍著, 圈起, 關閉著

1 Numbers **enclosed in**/by/within/with square brackets represent...

862 **encompass** 包含

encompass refers to scope. If it introduces a list, the list may or may not be complete.

1 The most general theory **[scope] encompasses** all domains.

2 Our goal is to build a representation that can **encompass** the wide variations found in natural language definitions.

encompass can be written in the passive voice.

> *3* All domains **are encompassed by** the general theory.

Related: containing and including: verbs, composed of, comprise, consist of, consist in, constitute, contain, encompass, entail, include, incorporate,

863 **encounter (vb)** 遭遇(敵人), 遇到(困難, 危險等)

We may *encounter* something problematic or we may *encounter* some neutral thing or situation. The *encounter* may be unexpected.

> *1* The inferior performance of FINv can be mainly attributed to the SSS **encountered** at the internal nodes closest to the leaves.

Related: face, meet, run into, problem (n): verb collocations

864 **encourage** 促進, 助長, 激發

> *1* Tabletop displays have been found to **encourage**/*foster*/*promote* more cohesive work practices whereas wall displays...

865 **encourage: causative** 鼓勵, 慫恿

As a causative, *encourage* usually focuses on the *people* involved.

> *1* Our experience has shown that the availability of syntax-based and reflective tools **has encouraged users to extend** the notation in a rational, principled way instead of hacking it.

This could also be written as a semi-causative (without the agent object.)

> *2* ...**has encouraged the extension of** the notation in a rational, principled way instead of hacking i

Related: causative, semi-causative

866 **end: in the end** 最後, 終於

This phrase may introduce a final step but more commonly introduces the author's summarizing opinion.

> *1* Beyond offering general guidelines, it is difficult to strictly define the best way to integrate any particular feature. **In the end**/*ultimately*, only experience can tell us how well a particular feature was integrated.**[summarizing opinion]**

867 **end: to this end** 目的, 目標

to this end signals the relation means-purpose.

> *1* Another way to capture the dynamics of the time series is to determine how much of the probability distribution is represented in the peaks and how much in the troughs.**[purpose] To this end**/*In order to do this*, we measure the kurtosis of the time series. **[means]**

Related: aim, goal, object, purpose

868 **end up** 結束

end up introduces a perhaps slightly surprising (or unintended) result or outcome.

> 1 Each organisation is permitted to use as much memory as needed for short-lived operations (many **end up** using it to sort large sets of in-memory records)...

Related: turn out, it turns out, as it happens

869 **endeavor (n)** 努力, 盡力

An *endeavor* is an activity in which one tries to achieve something, usually something positive.

> 1 Our work differs from these **endeavors** in that we focus on...

870 **endeavor to** 努力, 力圖

> 1 We therefore **endeavored**/*attempted/sought/tried* to make our existing tools maximally tolerant of new schemas by...

Related: seek (sought)

871 **enforce**

We *enforce constraints, policies, rules, regulations,* etc. We may also *enforce* behaviors in general.

> 1 In the 802.11 type of interference model, <u>two-hop avoidance</u> **[behavior] is enforced** <u>by</u> communicating RTS/CTS messages within the network.

Related : impose, maintain

872 **engaged in** 從事於, 忙於, 埋頭致力於

> 1 Software publishers such as Microsoft are covered by NAICS under "establishments primarily **engaged in**/*involved in* computer software publishing or publishing and reproduction.

Related: involved in, occupy (with): busy with

873 **enhance vs improve** 改進, 改善, 增進

improve encompasses both the meaning *improve* and the meaning *enhance*. Both words suggest a change for the better (an improvement) but specifically, *improve* denotes a change for the better that, even if only small, is <u>fundamental</u>.

In contrast, *enhance* denotes change for the better that is <u>not fundamental</u>, but which merely adds something in some specific area. The use of *enhance* makes readers ask "*enhance* in what <u>specific</u> way?"

In the following, *improve* is used because the *regression estimates* are not improved by addition. They are improved fundamentally.

> 1 These experiments show that INAT can efficiently exploit unlabeled data so as to ~~enhance~~ **improve** regression estimates.

In this next example, however, *enhance* is used because there is a specific addition, *human-like domain knowledge.*

> 2 It may be possible to find a compromise between ease of use and flexibility by **enhancing** autonomous approaches with human-like domain knowledge that would permit more varied interpretations of the data.

Related: add, augment, supplement, **good change:** alleviate, ameliorate, benefit, benefit from, enhance, enjoy, improve, mitigate, **bad change:** affect, aggravate, burden, damage, degrade, deteriorate, exacerbate, harm, interfere with, suffer from, undermine, worsen

874 enjoy 享有(利益, 權利, 聲譽等)

> 1 Going back decades, software engineering research and programming language design **have enjoyed**/*have had* a mutually dependent relationship.

875 enough (adj/adv) 足夠的, 充足的

enough can be used as both an adjective and an adverb.

> enough: adjective
> 1 This compressed structure preserves **enough** information to directly support....

> enough: adverb
> 2 Under most conditions, detection worked **well enough**/*sufficiently* well to exclude many the attack profiles.

Related: adequate, sufficient, suffice

876 ensure (that) 保證, 擔保

> 1 A front-end monitors the load and capacity of the server and, if necessary, rejects incoming requests, in order to **ensure**/*guarantee* satisfactory service to...

> 2 We also establish two simple guidelines that **ensure that**/*guarantee that* deforming a flow does not lead to...

Related: make certain, make sure,

877 entail 必需, 使承擔

entail introduces activities that are not just <u>involved</u> but that they are <u>required/essential/defining</u>. If *entail* introduces a list of activities, it may or may not be complete. The relationship expressed is whole-part.

> 1 Low cost development **[whole activity] entails**/*involves/requires* addressing problems through local knowledge. **[sub-activities]**

> 2 Profile categorization **entails** identifying intruding profiles and discounting their contribution to any estimated outcomes.

Related: concern, concerned with, composed of, comprise, consist of, consist in, constitute, contain, encompass, entail, include, incorporate, involve, made up of, make up **Part 1:** containing and including verbs

878 **entire, the** 全部的, 整個的

   1 If the query must read **the entire**/*all of the/the whole* partition, all subsequent disk operations may be blocked for several....

Related: part of

879 **entirely** 全部的, 整個的 全然的, 完全的

   1 All points in that region can be eliminated because it is **entirely**/*wholly/completely* contained within the larger pruning region.

Related: partially, in part

880 **entirety: the entirety of** 全部, 全體, 完全

   1 The vocabulary that we use to describe these problems should be applicable across **the entirety of**/*the whole of/all of* information visualization.

Related: as a whole, on the whole

881 **entirety: in its/their entirety** 全面地, 從總體上看

   1 Reprogramming relies on a data dissemination service that is reliable since programs must be delivered **in their entirety**.

882 **entitled to** 給...權力(或資格)

entitled to suggests rights. 權利

   1 The first basic properties of the flow control is *fairness*, where at each link, any passing flow is **entitled to**/*should receive* the same share of the link capacity as any other flow.

Related: deserve

883 **equal** 比得上, 敵得過

   1 The 24-hour knowledge factory model is designed to establish, over time, an integration that allows each location to be an **equal** contributor/*contribute equally*.

884 **equal to** 相等的事物, 相等的數量 等於

   1 Figure 9 compares the three situations in terms of the gains won or losses incurred with a continuous auction which closes at a bid price **equal to**/*at the same bid price as* the second-highest bid.

885 **equally** 相同地, 同樣地

   1 Most previous such studies seem to have implicitly assumed that if a method is effective in one domain, it will be **equally**/*just as/no less* effective in another.

886 equipped with vs equipped to 裝備, 配備

equipped with refers to what something has, its equipment 設備, 器械, 用具 or abilities 才能, 知識, 素養. *equipped to* refers to activities that this equipment or these abilities facilitate.

> 1 One prerequisite of the proposed model is that each mobile device be **equipped with**/*provided with/supplied with* two wireless interfaces.

> 2 Nodes that are fitted with solar cells will thus be **better equipped to**/*better able to* perform functions such as packet forwarding.

887 equivalent (to) (adj) 相等的, 相同的

equivalent suggests "essentially the same".

> 1 Choosing a ball preferentially is **equivalent to**/*(essentially) the same as* choosing a ball by selecting a pin uniformly at random.

Related: identical (to/with)

888 err (on the side of) (vb) 犯錯誤, (書刊, 儀器等)出差錯

The verb *err* means to "make a mistake", but *err* is seldom used except in the idiom 成語 *err on the side of caution* (be careful, cautious).

> 1 The volunteers were asked to **err on the side of caution**/*be cautious*, and give a perfect match rating only if they were sure the query was absolutely unambiguous.

889 erroneous/ly 錯誤的, 不正確的
> 1 Applications that cannot handle IDNs adequately can come up with several types of errors. For instance, a browser may **erroneously**/*wrongly* parse an IDN within a URL.

890 especially 特地, 專門地
> 1 The performance was much better in color weaving, **especially**/*particularly/in particular* when more than two colors were used.

891 especially: an especially 特別, 尤其, 格外, 主要
> 1 It is **an especially**/*a particularly* difficult task to resolve the spatial arrangement of complex three-dimensional structures...

892 **essential for/that** 必要的, 不可缺的

essential for + noun phrase. *essential that* + clause

1 Most of all, it preserves a global parent-child orientation, which is **essential for**/*necessary for* navigating and interpreting...

essential + clause and a clause with *must* are useful alternatives to each other, depending on our desired choice of theme.

Example 1

2 **It is essential that we**/*necessary that we* be able to change some computations from "possible" into "impossible".

Alternative 1

3 **We must** be able to change some computations from "possible" into "impossible".

Related: critical, crucial fundamental, important, must, necessary, vital

893 **essentially** 本質的, 實質的, 基本的

essentially introduces a description as being "in principle" true. May introduce a discussion of basic features, functions, activities, operations, etc.

1 Association is a central structural concepts in UML. **Essentially** it is a structural relationship between classes...

2 Moreover, because many different predictor subsets are **essentially**/*basically* interchangeable, we are more likely to see the application of lightweight instrumentation techniques.

Related: basically, fundamentally, in principle,

894 **establish: set up** 建立, 設立, 創辦

1 Hence, it is expected that peers will randomly choose neighbors when the peer network is first **established**/*set up*.

2 On-demand routing does not require any pre-processing because it **establishes**/*sets up* routes on-demand.

895 **establish: prove** 確定, 證實, 表明

1 Finally, we have experimented with the compression and querying capabilities of our system, **establishing**/*demonstrating/proving/showing* the utility of cost-based configurations.

Related: confirm, disprove

896 **estimate (n) and (vb)** 估計, 估量

Related: approximate, guess, overestimate, underestimate

897 **estimated (adj)** 大約的. 大致估計

As an adjective in front of a noun (an attributive adjective), *estimated* does not usually mean "that was estimated". For example, the *estimated* time of arrival is the *approximate* time of arrival.

> *1* This was computed using the **estimated**/*approximated* probability based on a guess as to the value of the data at each round.

898 **evaluate** 估...的價 對...評價, 為...鑑定

> *1* One proposal [15] was to test strategies for Boolean expressions and then **evaluate** them empirically for their ability to detect five different classes of faults.

Related: assess, estimate, test, validate

899 **even (emphasis)** 甚至, 連

> *1* This is one way to uniformly distribute the watermark so that **even** after the removal of some lines, it remains detectable.

900 **even if** 甚至若果

> *1* This blocking of the normal fluctuations causes the flow field to be more sheet-like, **even if** the flow is fully turbulent.

901 **even so: nonetheless** 即使如此

> *1* Some of the respondents thought that the solutions were too time-con-suming but that **even so**/*nonetheless*, further work would be worthwhile.

902 **even though** 即使, 雖然

> *1* We achieved similar improvements in performance **even though**/*despite the fact that* our storage format differed greatly from...

903 **evidence (n)** 證明

Related: indications, proof, signs, support

904 **evidence (vb)** 證明 顯示, 表明

> *1* The costs are not very different, but filtering may improve reliability, as **evidenced by**/*can be see in* the raw counts in Table V.

Related: evident. indicate, proof, prove, support

905 **evident** 明顯的, 明白的

> *1* Each release corrected faults but also provided new functionality, as **is evident from**/*evidenced by/is clear from/can be seen in* the increasing code size.

Related: apparent, obvious

906 **exacerbate** 使之惡化, 使....加重, 使...發怒

1 Concurrency is commonly used in software systems yet it often **exac-erbates**/*aggravates/worsens* the familiar problem of validating software behavior.

Related: make worse: affect, aggravate, burden, damage, degrade, deteriorate, exacerbate, harm, interfere with, suffer from, undermine, worsen, **make better**: alleviate, ameliorate, enhance, improve, mitigate

907 **exactly** 確切地, 精確地, 完全地

Related: accurately, precisely

908 **exactly like: sentence initial**

1 **Exactly like**/*Just as in* Phase I, candidates in the normal position receive Google's original ranking.

Related: identical, same

909 **examine** 檢查, 細查

910 **exceed** 超過, 勝過 超出

1 Consequently, the amount of space needed to display large trees **often exceeds**/*is often greater than* the space available on-screen.

Related: excessive, surpass, beyond: go beyond

911 **except** 除...之外

1 As the speed of nodes increases, we get a steep rise in the delivery ratios of every approaches **except** simple flooding.

912 **exception: with the exception (of/that)** 除...之外

exception of + noun phrase. *exception that* + clause

1 To the best of our ability, we maintained the animated syntax equivalent to the static syntax, **with the exception of**/*apart from/aside from* applying Michotte's rule when ..

2 The formulations of the functions C and O are similar to previous work [19], [9], **with the exception that**/*except that* we integrate time correlations among the streams...

Related: apart from, aside from

913 **exception: without exception** 沒有例外 :

914 **excess (adj)**

1 Even if a random deployment causes the sensor density to <u>exceed</u> the threshold, **the excess**/*surplus* sensors will go to sleep and only wake up as other active sensors die.

Related: additional, exceed, extra, a lack of, remaining, superfluous, surplus

915 **excess: an excess of** 過量, 過剩
1 The main problem we initially faced was **an excess of**/*excess*/*too much* documentation.

916 **excess: in excess of** 超越, 超過
1 Each organisation is permitted to use as much memory as they need for short-time operations but any memory **in excess of**/*beyond*/*greater than*/*over*/*past* 100 MB may be used only temporarily.

917 **excessive** 過度的, 過分的, 極度的
1 If the network conditions keep changing, we can avoid **excessive**/*unacceptable*/*unreasonable* computational overheads by applying distributed heuristic algorithms.

918 **exchange** 交換, 調換, 兌換
1 AML defines an XML framework that secures Web services by **exchanging** authentication and authorization information.

Related: nouns: alternative, choice, option, replacement, substitute, **verbs:** exchange, replace, substitute, swap. switch, place: take the place of, **prep:** instead (of), rather (than)

919 **exclude** 排除在外, 不包括
1 We included any study that compared predictions of cross-company models with within-company models but **excluded**/*did not include* studies where models were derived solely from…

Related: delete, except, excepting, exclude, omit. remove, rule out

920 **excluding** 除...之外
1 For simplicity, we use only the title field and treat each word in the field (**excluding**/*except for*/*with the exception of* stopwords) as a keyword.

Related: including

921 **exert force/influence/pressure on** 運用, 行使, 發揮, 施加
1 However, while the former algorithm takes into account only nodes connected by edges, when calculating the force/influence/pressure **exerted on** a node, the proposed algorithm…

922 **exhaust** 用完, 耗盡
1 Once all nodes have **exhausted**/*used up*/*used all of* their attempts at finding a free link, a maximal number of links is scheduled.

Related: consume, deplete, expend, spend, use up, waste

923 **exhaustive/ly** 徹底的, 詳盡無疑的

exhaustive suggests great completeness and thoroughness.

1 An **exhaustive** discussion of the features and transitions in this system is beyond the scope of this paper, so for present purposes we focus on…

Related: adequate, complete, comprehensive, extensive, thorough

924 **exhibit** 表示, 顯出, 展出

Things *exhibit*—100/*mill*—or *display*—436/*mill.*—behaviours, characteristics, and attributes, e.g., *conflicts, differences, effectiveness, mobility, patterns, perform-ance, semantics, sequence of events, symmetry, trends, variations,…*

1   It is common for algorithms to **exhibit***/demonstrate/display/show* order ef-fects, where certain orderings improve or degrade performance.

Related: demonstrate

925 **exist** 存在

Related: there is/there are, in existence, occur, happen, presence, present

926 **existence**

Example 1
1   Most conventional wired and wireless routing protocols **assume the ex-istence of** connected paths between message sources and destinations...

Alternative 1
2   Most conventional wired and wireless routing protocols **assume that con-nected paths exist** between message sources and destinations....

Related: absence, presence

927 **existing** 現存的, 現行的[B]
1   Ideally, the system should even improve performance by addressing in-efficiencies in the **existing** management systems.

Related: current, present

928 **expect** 預期

expect—386/*mill.* is very common, especially as an adjective, i.e., *an/the expected.* It has no synonyms or easy paraphrases.

929 **expect that**
1   This is particularly interesting since **one would expect that** the higher w, the higher the error.

930 **expectation: in the expectation that**
1   The study removed the redundant inspection attributes **in the expec-tation that** the original inspection accuracy would be maintained, <u>and indeed</u>, the number of attributes was reduced from 60 to 12 without any loss of accuracy.

931 **expected: the expected (adj)**
1   Figure 12(b) shows **the expected cost** of the current best configuration following each new configuration.

932 expected: as expected

1 **As expected**, there was a steep increase in utilization but even a 200 percent load did not overwhelm the system, <u>except</u> at the very end of the day.

933 expected: to be expected

1 All the curves fall more or less steadily as mobility increases. This is **to be expected**/*not unexpected/not surprising* as increasing mobility will cause more packet loss.

934 expend 消費, 花費(時間, 精力等)

Related: consume, deplete, exhaust, resources, spend, use, use up, waste

935 expenditure 消費, 支出, 支出額, 經費

1 This approach means that messages travel only two hops, reducing both bandwidth utilization, system contention, and <u>energy</u> **expenditure** at the nodes.

Related: cost, expense

936 expense: at the expense 以...為代價

Related: cost: at the cost of vs at the expense of

937 expense: come at the expense of

1 While DPCM can limit memory usage by limiting partition size, this **comes at the expense of**/*this affects/this interferes with* the ability to store long sequences of references.

938 experience (n) 經歷, 閱歷

experiences are our personal observations and encounters. This word should not be confused with *experiments* 實驗, 試驗

1 In the following we *describe/recount/relate/share* our **experiences** of...

2 In this section, we report the results of our ~~experiences~~ **experiments**.

Related: experiments and results

939 experience has shown 經驗, 體驗

1 The path conditions defined in Eq. (2) are not necessarily the strongest path conditions but **experience has shown** *that they are/them to be* quite strong.

940 **experience (vb)** 經歷, 體驗

The verb *experience* is associated with neutral or negative things.

1 At more than double the excess loading, the system designed for minimal outage **experience** <u>an outage rate of more than 10%</u> whereas the systems all **experience** <u>zero outage</u>.

2 When moving to a network that offers a lower bit rate, a VoIP application may **experience** <u>congestion and resultant packet loss and service degradation</u>.

941 **experiment (n)** 實驗, 試驗

1 We *carried out/conducted/performed/executed* our **experiments on** six data sets. The first was PWD1, which contains 1000 documents...

942 **experiment vs experiment on/with**

We do not usually use the verb *experiment* in the passive voice.

1 Three different sizes of the hash table ~~were experimented~~ **were tested** and...

2 The approach **has been** ~~experimented~~ **tested on** both phantom and genuine brain scans.

Or, where it might be used in the passive, it is strongly dispreferred.

Doubtful example 1
× Three widely-used similarity measures **were experimented with**: Simard's condition, Dice's coefficient, and LCSR.

Alternative 1
3 **We experimented** with three widely-used similarity measures: Simard's condition, Dice's coefficient, and LCSR.

943 **experiment on vs experiment with**

There is some overlap between *experiment on* and *experiment with* but *with* often has an instrumental meaning, i.e., *with* often introduces a tool or method.

1 We **experimented with** three widely-used similarity measures: Simard's condition, Dice's coefficient, and LCSR.**[tools/methods]**

In contrast, *experiment on* suggests what the tool or method was applied *on/to*.

2 As the kernelization algorithm greatly increases the complexity, we did not **experiment on** a larger data set with more iterations. **[object of application]**

944 **expire** 滿期, 屆期

1 Revoked credentials can be removed as soon as their validity period **expires**/*runs out*.

945 **expiry, expiration** 終結, 滿期

1 If it does not receives the ACK for a packet **before the expiry of its retransmission timer**/*before the expiration of its retransmission time/ before its retransmission time expires*, TCP retransmits the packet.

946 **exploit**

See use: the use-family verbs and phrases

947 **explore whether** 探究, 探索

1 In our future work, we will **explore**/*investigate* **whether** it is possible to derive...

Related: research, study

948 **expose** 揭露, 揭發

expose carries a strong connotation of something being revealed that was is problematic and was previously hidden being revealed (see *reveal*).

1 Regression test selection and test suite reduction can come at the cost of missing faults that would have been **exposed**/*found/identified/revealed* by unreduced test suites.

949 **express** #表達, 陳述, 表示

1 We would like to **express our sincere thanks to** the editor and reviewers for their very insightful and encouraging comments.

2 Web Ontology Language (OWL) extends RDF(S), making it easier to **express** semantics.

950 **extend** 延長, 延伸, 擴大, 擴展

1 A wrapper is often used to **extend**/*increase/lengthen* **the life of components** of existing data systems by making it possible to>>>

2 A preliminary version of this paper appeared in [4]. There we focused on the algorithm but **in this paper we extend the work in several ways**. First, we provide a much more detailed...

3 In that work, the basic PageRank algorithm was **extended by modifying** the random jump step to favor user-selected pages.

4 This work **extends**/*also applies* **this approach to**/*on* both a probabilistic scenario and XML documents.

951 **extensive** 廣大的, 廣闊的, 廣泛的, 大規模的

extensive suggests great size or wide coverage

1 We used mobility data from City University's **extensive** wireless LAN traces [29].

2 This subject certainly deserves more **extensive**/*complete/comprehensive/thorough* treatment and will be one focus of our future work.

Related: adequate, adequacy, complete, exhaustive

952 extent 程度, 限度, 範圍

953 extent: to a certain extent 在一定程度上
  1   But the Hop ID distance metric also deviates from the hop distance **to a certain extent**/*to some extent* so there are still dead ends.

954 extra 額外的, 外加的
  1   The amount of **extra**/*additional* effort needed is reflected in the ranking of the results.

955 extremely 極端地, 極其, 非常
The adverb *extremely* collocates with the following adjectives.

Adjs: *common, complex, complicated, dense, difficult, fast, hard, high, long, low, important, poor, rare, small, tedious, time-consuming, useful, well,*

956 face (n) 臉, 面孔

957 face: on the face of it 從表面看
on the face of it introduces an initial impression 最初的印象.

  1   **On the face of it**, the occurrence of an inclusion seems to be an artifact that arises because...

Related: It would seem/appear that

958 face (vb): difficulties, problems, facts
       面臨, 勇敢地對付, 正視
Typically, we *face* negatives or negative-like things, e.g., *problems, facts, the future, reality.* In both of the following examples there is a lot of very negative language, including the use of.*face.*

  1   The fact that the scoring algorithm of a Web search engine is either a closely-guarded proprietary secret or changes unpredictably means that researchers are forced either to tackle the enormous task of crawling and indexing the entire Web or **face** the blunt reality of building what are essentially black box systems.

  2   Another drawback of hierarchical approaches is that there is no relationship between the depth of an item in the taxonomy tree and access patterns [12]. As a result, we may be **faced with** an inefficient arrangement such that...

Related: address, cope with, deal with, encounter, handle, meet, run into,

959 **facilitate: semi-causative verb** 使容易 促進, 幫助

facilitate is a semi-causative verb but it is not used in any causative patterns e.g., ~~facilitates agents to~~. It suggests the idea of making something more possible or perhaps easier to do

1 First, we describe different ways in which a classification can **facilitate** data-flow testing.

2 A systematic use of type-bars **facilitates the grouping of**/*makes it easier to group* the UML sequence diagram events.

960 **fact: in fact** 事實上

in fact emphasizes the truth value of a clause or the part of clause. It often supports the various truth-and-validity relations, as follows.

Denial-correction
1 They are not independent entities **[denial]** but **in fact** rely on previously existing information resources.**[statement]**

Concession-contraexpectation
2 While at first glance this may appear unnecessarily complicated **[concession]**, it is **in fact** quite a convenient way to define the metrics. **[contraexpectation]**.

Related: actually, certainly, clearly, indeed, as a matter of fact, obviously, of course, really, undoubtedly

961 **fact: the fact that**

the fact that—160/*mill.*—provides a way to turn a clause into a noun phrase. This noun phrase can then be used as a subject or object. *the fact that* also pushes the following clause later into the sentence, into a position of stronger focus.

In the following example, *the fact that* is used to turn the clause *the optic disc appears as a large circular shape in the retina* into a noun phrase, the subject of the verb group *makes it possible*.

1 **The fact that** the optic disc appears as a large circular shape in the retina **[subject]** makes it possible to detect it using the Hough transform [57].

In the following example, *the fact that* heads an object noun phrase.

2 The second approach to incremental view maintenance makes use of **the fact tha**t queries are translated into algebra expressions to facilitate their execution. **[object]**

Related: abstract nouns: signalling nouns

962 factor (n) 因素

The noun *factor* collocates with the following adjectives.

Adjs: *competing, confounding, contributing, deciding, dominant, important, major, powerful, relevant,* sole, *first, second, etc*

1   On this set of questions, the optimal point that <u>balances these competing</u> **factors** appears to be around 150.

Related: bearing: have a bearing on, influence

963 fail to 失敗, 不能, 忘記

We use *fail to* to say that some action *should have* been taken, or some goal or result *should have* been achieved but—disappointingly or unfortunately—it was not.

1   Common faults associated with memory allocation include <u>not freeing</u> allocated memory and **failing to** <u>initialize</u> memory.

Related: account for, ignore, miss, neglect, overlook, pay attention

964 failing: noun vs participle

a failing is a *flaw fault, drawback,* or *weakness.* This particular use of *failing* does not appear in the corpus.

In fact, all occurrences of *failing* in the corpus are participles, used either in the pattern *failing to* + verb (see previous article), or as adjectives, either after a verb or before a noun.

1   We classified remote executions as **passing or failing**.

2   The nearest neighbor search strategy allows a process to target **failing QA task subspaces**.

Related: participles: participles as adjectives

965 failure 失敗的嘗試 (或經驗

1   Their results suggest that the **failure** of the implementation was partly due to..

Related: failing

966 fall (n) 下降, 減少

Related: decrease, drop, growth, reduction, rise

967 fall (vb) 下降, 減退, 減弱

1   Once we began to consume all of the CPU, <u>the number</u> of Web sites crawled per process did **begin to fall/decrease**. However, the crawler's <u>throughput</u> nonetheless <u>continued to grow/increase</u> almost linearly.

See also: trends: verbs for talking about trends, lower, raise, reduce—decline, drop, fall, rise—decrease (as), increase (as), diminish (as)

968 **fall behind** 落在後面

1 The rendering quality of asynchronous adaptation suffers when the adaptation process **falls behind** and has to catch up.

969 **falls below**

1 We are interested in detecting when the query value qv **rises above or falls below** the predetermined threshold value.

2 Figures 6(b) and 6(c) illustrate the effect of removing nodes when traffic **falls below** a given threshold.

970 **fall into a class, category, pattern**

1 When image pairs either cannot be precisely aligned or require significant changes, transformations tend to **fall into** the "saved" category.

971 **fall off**

1 We found that the ability of participants to accurately interpret components typically **falls off**/*deteriorates* as the number of components increases from 3 to 6.

972 **fall on, near, in the vicinity of**

1 Fig. 9 shows the footprint of the histogram. Note that a small but significant number of pixels **do not fall on or even near** the peak frequency curve and that...

2 If the two data sets have the same distribution, the points should **fall**/*be found/lie* approximately **on/in the vicinity of** the x-y line.

973 **fall outside**

1 This shows that the correlations 3 and 5 in both cases, **fall outside**/*are not within* their thresholds.

974 **fall within**

1 A conservative filtering approach typically gets acceptable results but quality deteriorates when nonface pixels in the space **fall within**/*are found within* the range of skin colors.

975 **familiar (adj)** 熟悉 常見的, 普通的

1 In particular, the improvement in recall suggests that the proposed approach may be a solution to a **familiar**/*well known* problem that has long been an obstacle to query classification.

Related: common, conventional, customary, familiar, normal, popular, traditional, typical, usual, widespread

976 **familiar with** 懂得, 熟絡, 熟悉

1 In this article, we consider service providers, specifically domain name and Web services, who must deliver services to users who are not **familiar with**/*competent in* English. 懂得

2 At the beginning of the project, all the members of the distributed team met in person to become more **familiar with** each other/*get to know each other better*. 熟絡

3 Thus, administrators can pick an interface they are either already **familiar with**/*know well* or that is not very different from the one they are already using. 熟悉

977 **far from**

1 The curve BC in Fig. 24b is a parabola including points that are equally **far from**/*distant from* CD and p.

Related: close to near, proximity, vicinity

978 **farther vs further**

farther refers literally 照字面的 to distance 距離 while *further* refers to metaphorical 隱喻 distance e.g., *further extend an argument*.

979 **farther (away) from** 遠從

1 In case A, the receiver is closer to the sink than the sender. In case B, the receiver is **farther (away) from** the sink than the sender.

980 **far: by far** 顯然, 到很大程度, 很, 極

by far is acceptable either before or after the noun phrase.

1 The most influential paper **by far** was the report on Elgat 60.

2 **By far** the most influential paper was the report on Elgat 60.

981 **fashion** 方式

1 The obvious benefit of this approach to locking the disk is that reads are performed in an orderly **fashion**/*manner/way* with little thrashing

982 **fashion (vb)** 製作,形成, 把...塑造成

1 The next step is to **fashion**/*shape* these organisational abstractions into a design process.

983 **fault (n)** 缺點

1 One cost of regression test selection and test suite reduction is that of missing **faults**/*flaws* that test suites would have been *exposed/found/revealed* prior to selection or reduction.

Related: drawback, weakness

984 **favor: in favor of** 贊成…, 支持…, 有利於…

1 It is open to both heuristics to reject pages that are individually highly rated **in favor of**/*and instead choose* pages that contribute to the overall quality of the set.

985 **favorable**

1 This kind of analysis can be used in a resource planning scenario, such as the search for a **favorable**/*advantageous/suitable* location for placing a shared database server.

986 **feasible** 可行的, 可實行的

Related: practicable

987 **feature (n)** 特徵, 特色

1 To maximize reusability, we first build domain-generic schemas as their **features** are useful across many domains.

988 **feature (vb)** 特載, 以…作為號召

feature is not used as a verb in the corpus but is used as a verb in this book. It introduces "what something has that is special in this context". The following example was found online.

1 PBDelta v5.2.4 has just been released. This minor release **features** a number of enhancements and fixes.

Related: have, demonstrate, display, exhibit, show

989 **feel** 有感覺, 覺得

1 For these reasons, **we feel that** a more promising approach would be to extend some of more established and recognized abstractions and techniques.

990 **few** 很少數, 幾乎沒有

1 A major barrier to the wider adoption of visual data analysis is that **few/**
not many people have the knowledge required to...

991 **few, fewer vs less, many vs much: countable and uncountable**

few and *fewer* refer to things that in English are countable e.g., *fewer nodes.* In contrast, *less* refers to uncountable things e.g., *less energy.*

Many people do not make a distinction between *few* and *less*, so one may see them used interchangeably. In contrast, *many* and *much* are never used interchangeably.

1 The reconstruction (Fig. 1b) using the unconstrained primal-dual method produced **many/***numerous* spurious oscillations. In contrast, the constrained solution (Fig. 1c) produced very **few**.

Negative example 1

✘ In our experiments, <u>**the number of** nodes used is much less than</u> that of the training sample so the proposed method is much more computationally efficient.

Rewrite 1

2 Our experiments use **many fewer** nodes than training samples so the proposed method is much more computationally efficient.

992 **fewer: the fewer...the more...**

1 Because the new scheme retrieves only data explicitly needed for a query, **the fewer** the number of attributes involved in a query, **the more** memory is available for other data.

993 **field** 領域, 專業

See area, field, domain, discipline

994 **find** 找到

1 Every node is identified by its coordinates and can **find/***locate* other logical neighbors by their coordinates.

2 A practical anonymous ad hoc routing scheme must **find/***identify* the optimal balance between...

Related: ascertain, decide, detect, determine, discover, learn,

995 **find that + opinion** 發現, 碰上

To *find that* is to learn or discover something from experience.

1 In the following simulations, we fix the number of landmarks at 30, as **we have found that/***it has been our experience that* using just a few landmarks suffices for a large range of settings.

Related: discover (that), mean (that)suggest (that), tell us (that)

996 find it + opinion e.g., easy/hard/possible ...

find and *think* can be followed by *it + adjective + to + verb* to introduce an opinion about one's experience of something.

   1 Mobile developers **find it easy to** manage this technology since the mobile client, gateway and server are all based on Java.

   2 Owing to the large index space, we **found it hard to** organize incrementals using such multiway associative schemes.

Related: it: preparatory object, regard it as, consider it, etc

997 finding (n) 調查(或研究)的結果

   1 Any opinions, **findings**, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

   2 Our first **finding** is that packet size, if reasonably controlled, has a less-than-expected impact on performance...

   3 An important implication of this **finding** is that...

   4 To our knowledge this **finding** has not been previously reported.

Related: found that

998 first: at first 起先

at first (rare) is not a synonym for *first* or *firstly*. Rather, *at first* prospects/signals a contrast with what is to follow. For more, see the discussion at *initially*.

   1 Given a fixed image size, as resolution increases the number of lines **at first**/*initially* increase **but then** decrease.**[contrast]**

Related: ultimately

999 fit 適合於

   1 We then attempt to choose paths to the attributes of each object instance that best **fit**/*suit/match/satisfy* the requirements.

1000 fit: see fit

   1 Developers are free to realize services in any implementation framework they **see fit**/*deem appropriate/regard as appropriate*.

1001 fix (vb) 修理, 校準, 整理, 收拾

   1 Some changes were made to **fix**/*repair* bugs and reduce the memory footprint but the software's core functionality was not changed.

1002 fix...at/to... 確定, 決定

   1 We **fixed**/*set* the communication range for the ad hoc network **at/to** 30 m with the range measured in hops.

1003 **fixed (adj)** 固定的 確定的, 不變的, 不動的

1 Our analysis assumes first that measurements are conducted during a **fixed** time interval and second that the sizes of frames **vary** as in Table 4.

Related: constant, fluctuate

1004 **fluctuate** 波動, 變動, 動搖

1 The result is that node m incurs a **fluctuating** and unnecessary transmission overhead.

Related: constant, fixed

1005 **focus (n)** (注意, 活動等的)中心, 集中點, 重點

1 Other similar approaches to factoid questioning have recently **become a focus of research.**

1006 **focus on** 使聚焦 調節(鏡頭等)的焦距

1 However, **the main focus** of most studies to date has been **on** layout algorithms and only limited attention has been paid to the interaction with...

Related: *address,* concentrate on, deal with, emphasis, emphasize, highlight, stress, underline

1007 **follow: conform to**

1 The distribution of Web pages **follows**/*conforms to/obeys* a power law with parameters between 1.2 and 1.

1008 **follow: as follows** 下面的, 下述的

1 After calculating the distance, the angle θ between the location of the object and the APs is used to calculate the location of the object **as follows**:

1009 **followed by: tracked** 沿著...行進

1 The edges represent the links between the Web pages, i.e. the paths **followed by the users**/*the paths that the users followed*.

1010 **followed by: rank** 跟隨

Example 1

1 In the case of the second-order Markov models **the best results** were obtained by UPR **followed by** SPR and the Partial setups.

Alternative 1

2 In the case of the second-order Markov models **the best results** were obtained by UPR. **The next best results** were obtained by SPR and...

Related: preceded by

1011 **followed by: sequence**

Example 1
1 Our extraction procedure is in two steps, **beginning with** definition of the area to be extracted, **followed by** extraction.

Alternative 1
2 Our extraction procedure is in two steps. **The first step is** definition of the area to be extracted. **The second step is** extraction.

Related: preceded by

1012 **following**

1 The relationship of access rights and the data abstraction research is discussed in the **following** section.

1013 **for: overview**

for is associated with the meaning areas of *benefit, use, purpose,* and *duration.* Sometimes we can paraphrase the various uses of *for* with phrases such as *for the benefit of, on behalf of, for the use of, to be used as, in return for, the reason why*, etc.

1 In Section 6.1, we propose a clustering technique **for flexibly reducing keytoken sets** to any given size.

2 In Section 6.1, we propose a clustering technique **that will allow keyto-ken sets to be flexibly reduced** to any given size.

However, in many cases is not possible to offer a simple paraphrase of *for*. Nonetheless, the following articles generalize about some common meanings and uses of *for* in computing research writing.

1014 **for: in multi-word verbs**

for is commonly used in multi-word verbs such as *account for* and *allow for*.

1 Our simulations also **account for**/*explain* the penalty associated with lower bandwidth utilization .

2 The 3-valued logic introduced by Lukasiewicz [1970] **allows for** propositions whose truth values are 'unknown'.

In this example, *allow for* has the meaning of "provide a margin of error" 誤差幅度 a *tolerance* 公差, 容限 or *allowance.*

1015 **for: complementizer**

for often appears as a complementizer, that is, it may link a noun, verb, or adjective to the following idea (complement) that "completes" its meaning.

1 **for after a noun**

1 Second, we describe how channel estimates, which are **critical for** these kinds of communications, can be facilitated through the use of...

2 **for after a verb**

1 While it is difficult to find a closed form expression for the AFDs, it is possible to **compute** ADFs numerically **for** different values of *a*.

3 **for after an adjective**

1 While modularity is of course useful in general, it is also **useful for** this kind of knowledge-based system.

Related: Part 1, complements: for and to

1016 **for: in titles**

In the following example, the idea of *for* is simply to introduce an area of benefit or application.

1 Data sychronization and update propagation **for** heterogeneous protein databases

In contrast, in the following *for* suggests purpose or use.

2 Efficient and Scalable Algorithms **for** Inferring Likely Invariants in Distributed Systems

1017 **for: fronted**

Sometimes a phrase beginning with *for* is brought from later in the clause and placed at the start of the sentence or clause. That is, it is *fronted*. This creates an emphasized or *marked* theme.

Example 1
1 Both the number of lines of code and the number of tasks in the system grew linearly **for all the programs we considered.**

Alternative 1
2 **For all the programs we considered**, both the number of lines of code and the number of tasks in the system grew linearly.

Fronting is a text-organisation strategy. For example,we might front *for* + noun phrase in this way so as to create parallel topics to support a comparison.

3 The function RepeatTask repeats any tasks containing the relevant node. **For local nodes**, RepeatTask repeats single-task sets. **For communication nodes**, RepeatTask repeats multi-task sets.

Other goals of fronting *for* + noun phrase might be to signal information as known or background or even to emphasize a change of topic. Such themes are

common in mathematical discussions.

    4 **For a model with h components**, the VIP value of the jth independent variable is defined as <FORMULA> where b_i is the ith element in the....

    5 **For a class i**, let yi be the actual effort of the prediction model.

Related: parallelism, information order, marked themes

1018 for + time: duration

    1 The central language constructs used for conceptual modeling in UML have been extensively used for conceptual modeling **for a long time**.

    2 Centralized target tracking has been a topic of interest **for many years**, beginning with research on radar target tracking during World War II [8].

    3 If the query must read the entire partition, all subsequent disk operations may be blocked **for several seconds** as the partition is read.

1019 for: purpose or use of general-class things

for can talk about the purpose or uses of general-class or abstract things.

    1 In particular, their work has led to the development of several **theorem-provers for** first-order multi-valued logics.

1020 for: abstract noun + for + verb + ing

The pattern abstract noun + *for* + verb+ *ing* commonly has the meaning "*that can be used to/for*".

    1 Our approach is especially robust because it is facilitated using a dynamic anycast mechanism **for establishing**/*that can be used to establish/in establishing virtual links*.

Related: Part 1 relative clauses: purposes of tools and methods: short forms

1021 for: in order for: if: hypothetical

The pattern *(in order) for* + clausal noun phrase can be used to talk about a hypothetical outcome, with the meaning *if*. It is often shortened to *For...*

    Example 1
    1 **(In order) For the successful application of EVG to memory search rules**, these rules must provide a complete and error-free theory of the contents and organisation of memory.

    Alternative 1
    2 **If EVG is to be successfully applied to memory search rules**, these rules must provide a complete and error-free theory of the contents and organisation of memory.

Related: in order for: condition-consequence

1022 **for which, for whom**

1 In Section 3, we will identify <u>classes of databases</u> **for which** consistency can be very easily **checked**.

i.e., it is easy to *check consistency for classes of databases*

2 Given a first-order property, the goal of model-checking is to identify <u>sets of stakeholders</u> **for whom** the property is **valid**.

i.e. the property is *valid for sets of stakeholders*

1023 **force** 強迫, 迫使

1 If a search service absolutely requires a low response time, poor routing decisions could **force**/require/entail scaling much larger than necessary.

Related: entail

1024 **force: causative** #強迫, 迫使

1 This means that **researchers are either forced to**/*required to/must* **tackle** the enormous task of crawling and indexing the entire Web or...

Related: enforce

1025 **foster** 培養, 促進

1 Ultimately, this is all part of a large-scale effort that seeks to **foster**/*encourage/promote* model-driven code generation.

1026 **fraction** 小部分, 片段, 碎片

1027 **framework** 構造, 機構, 組織, 架構, 骨架

1 Moshi et al [18] presented a **framework** <u>for describing</u> data models that focused on...

Related: architecture, model, structure, taxonomy

1028 **free of/from** 免除...

To be "free of" something is to not contain it or to not be influenced by it. e.g., *free of sugar, free of disease,* or *free of worry.* We usually claim to be *free of* something bad.

1 A continuous will produce a scanning flow that is **free of**/*free from* interruption/*is not interrupted* and with an optimal...

Related: freely, voluntarily, willingly, devoid of

1029 **freely available (to)** 自由地, 無拘束地 大量地, 無節制地

1 We plan to make our system **freely available to** the general Web community so that users can submit Web services and...

1030 **free to** 隨意的, 不受約束的

If someone is *free to* do something, this means they "have the freedom" to try to do something, usually something good.

> *1* This services model leaves developers **free to** <u>realize the services</u> in any implementation framework deemed appropriate.

1031 **fulfil** 履行, 實現 實行, 執行, 服從

> *1* There are two main barriers to visualization **fulfilling**/*achieving/reaching/realizing* its potential.

Related: complete, satisfy

1032 **function (vb)** 工作, 運行

> *1* Yet another possible aim of an attacker might be simply to make the entire system **function**/*perform/operate* poorly.

1033 **function as** 起作用

function as introduces the role that something might play.

> *1* The final hypothesis referred to whether the size and complexity of each module was correlated with the number of faults and whether these parameters could **function as**/*act as/be used as* predictors.

1034 **fundamental** 基礎的, 根本的, 十分重要的 原始的, 主要的

> *1* In this section, we briefly describe the two **fundamental** components of the middle-layer, the middle-layer schema model and...

Related: basic, critical, crucial, essential, important, must, necessary, vital

1035 **further (adj)** 另外的, 進一步的, 深一層的

> *1* Queries are entered via the simple interface and then *undergo/go through/are put through* two **further**/*additional/more* processing steps, as described in the following.

Related: additional, also

1036 **further/furthermore (adv)** 而且, 此外, 再者

> *1* As was shown in Section 4, n is usually a small number (less than 30), even in relatively large ad hoc network of 3,000 nodes. **Further(more)**, it will change little as N increases.

1037 **gap** 分歧, 隔閡, 差距

> *1* The ranking can also hide significant **gaps**/*differences* in relative performance.

1038 **generalization** 普遍化, 概括, 綜合, 歸納

1039 **generally speaking** 一般來說

Related: roughly speaking, strictly speaking **Part 1:** misrelated participles

1040 **genuinely** 真誠地, 誠實地

1 The inclusion of too many predictors may also have the effect of hiding **genuinely** important relationships between predictors and outcomes.

1041 **get vs to be**

get is sometimes used in a rather informal way to mean *is* or *are* or *were.* This pattern is also commonly used as a causative, but that is not the meaning intended here. Given this ambiguity, this usage should be avoided in research writing.

1 All of the theories **got**/*were* tested, however, and some were disproven.

1042 **get: ascertain, determine, find, obtain, receive**

get is a word with a variety of possible meanings and should be used only if a general meanings is acceptable.

1 Students who wish to participate in the experiment were given the option of submitting an alternative assignment to **get**/*receive* equivalent credits.

2 A and B are then masked and dilated to **get**/*ascertain/determine/find/obtain* the relative positions of the mouths.

1043 **get + adjective: change** 變成, 成為

1 Nonetheless, as per Brooks' Law [49], as schedules **got**/*became/grew* tighter, cycle time was adversely affected by...

Example 1
2 Clearly, as the cache size **gets larger**/*grows*, the performance improves.

Alternative 1
3 Clearly, **the larger** the cache size, **the better** the performance.

Related: the more the more , as...

1044 **get: causative**

1 Essentially, the approach seeks to **get users to**/*makes users* phrase queries using terms offered by the system.

Related: causatives

1045 **get: numerical or experimental result**

get is commonly used to introduce numerical results.

1 We retained parameters, c, j, and v for time complexity analysis and found that for a DOS class, we **got** c = 506, 39,...

1046 **get rid of** 擺脫

1 Next, we applied a number of restrictive static methods which **got rid of**/*eliminated/removed* some wrongly-generated traces.

Related: delete, discard, omit

1047 **get to: arrive at, reach** 到達

1 Each answer leads to a different branch of the tree, ultimately **getting to**/*arriving at/reaching* a leaf of the tree where an assignment is made based on its class.

1048 **get an opportunity (to)**

1 Collecting the user data in this way, we are unlikely to **get an opportunity to** understand user demand.

Related: give an opportunity

1049 **give, offer, produce, provide, yield**

The verbs *give, offer, produce* and *provide* can all be used in two different ways. On one hand they refer things presented as neutral or positive.

1 Figure 1 **gives/offers/provides** <u>an overview of the architecture of...</u>**[neutral output]**

Or on the other hand they can act as cause-effect verbs talking about a means-result relation where the result is something neutral or positive.

2 Several other non-enumerative techniques **give/offer/produce, provide** <u>similar advantages</u>.**[positive outcome]**

And in another context, *give, offer, produce, provide,* (and *yield)* are cause-effect verbs that introduce the neutral or positive results or outcomes in a means-result relation.

1 **give**

give is a common choice in formulae.

1 **[means]** Taking the derivatives of (15) to and setting it to zero **gives [result]** <FORMULA>

give, like *produce,* suggests a rather mechanical or automatic output.

2 The concurrency of a distributed system means that in different executions the same sequence of inputs does not necessarily **give**/*produce* the same sequence of outputs.

2 **offer**

offer is strongly associated with good things and makes a claim of <u>potential</u> contribution.

offer suggests "this is what we have <u>tried</u> to do, but we leave it to the reader to decide to accept that we have succeeded".

1 This work, in contrast, **offers**/*provides* a non-intrusive failure detection approach that relies only on the information from system logs.

3 **provide**

provide is strongly associated with good things and makes a claim of <u>actual</u> contribution.

> 1 Rather than requiring the user to transpose the rows and columns of the input data table, we **provide** a convenient "exchange rows/columns" button.

4 **produce**

produce suggests a neutral and mechanical or natural outcome.

> 1 Splitting the word identification process into two steps **produced** a reduction in the processing time.

Related: achieve, accomplish, get, obtain, carry out/perform, complete, reach

1050 give, offer, produce, provide, yield vs lead to, result in

give, offer, produce, provide, and *yield* signal neutral or positive outcomes and may provide alternatives to *lead to* and *result in*, both of which introduce indirect outcomes or results that are neutral or negative.

In the following example we find the outcome is *a reduction in the processing time*. This is highly likely to be a positive so we signal that with a choice from *give offer, produce provide, yield.*

> 1 Splitting the word identification process into two steps **produced/yielded** a reduction in the processing time.

However it is also possible to use *lead to* or *result in* in this example, as they can be read with a neutral as well as a negative prosody.

> 2 Splitting the word identification process into two steps **led to/resulted in** a reduction in the processing time.
>
> 3 Regression test selection and test suite reduction techniques **produce/***lead to/result in* savings because they require the execution of fewer test cases.
>
> 4 Intuitively, the use of such domain knowledge within the recommendation process should **result in**/*produce/provide/yield* <u>more accurate recommendations</u>. **[positive outcome]**

1051 give rise to and arise from 引起

give rise to is a low frequency phrase—<10/*mill.*—that introduces a neutral or negative result

> 1 Bright lesions do not appear on FA images but they do appear on color fundus images, in which case they sometimes **cause**/*give rise to* <u>false positives</u>.
>
> Example 1
> 2 Variable and literal faults **may cause**/*may give rise to* <u>different types of possible faulty implementations</u>.

Choices for reversing this order of cause-effect are to use *arise from*, which introduces the source of the difficulty, but this verb is rare in the corpus at *<5 mill.* Alternatively we could use *cause* or of *due to,* which is common.

> Alternative 1
>
> 3　Different types of possible faulty implementation **may arise from**/*be caused by/be due to* variable and literal faults.

Related: bring about, give rise to, lead to, result in

1052 **give up** 放棄

give up can be used with or without an object.

1 **give up**

> 1　At that point, per-hop routing would **give up**/*stop* trying and drop the message because the next hop is no longer available.

If there is an object, it is possible to replace *give up* with *abandon*.

2 **give up + object**

> 1　We should also point out that at no time did the participants become frustrated with the natural language interface and **give up**/*abandon* their querying attempts **[object]**.

Related: take up: a topic, a direction of discussion

1053 **given (adj)** 規定的, 特定的

> 1　Fix-point calculations are carried out using a representation to determine the states that satisfy a **given** formula.

Related: certain, particular

1054 **given that**

given that can express either reason-result or grounds-conclusion.

> 1　**Given that**/*because/since/as* the silhouettes were rather noisy, **[reason]** we first derived a set of coarse features providing a robust description of the shape. **[result]**

> 2　This is necessary, **[conclusion] given that**/*seeing as* our models are equivalent to zero-mean stationary processes. **[grounds]**

1055 **glance: at first glance**

The relation in this example is statement-denial.

> 1　**[statement]** Although the computational complexity of our algorithm may **at first glance**/*at first/initially* appear to be a significant drawback, **[denial]** in reality it is not because...

1056 **go through** 經歷

We might *go through* something in reality— for example, a tunnel—or we may figuratively *go through* an experience or *go through* (implement) a series of steps. The figurative 比喻的 meaning suggests someting unpleasant, stressful, tedious 使人厭煩的, or painstaking 不辭辛勞的.

> Literal meaning
> 1 In this approach all access requests **go through**/*pass through* the central module which provides a centralized view of the environment.

> Figurative meaning
> 2 Of course human beings are prone to making mistakes and it is unlikely that a programmer will write an error-free program without **going through**/*implementing* a debugging cycle.

Related: undergo, going on, ongoing

1057 **goal: achieve a goal** 目的, 目標

> 1 In that earlier version of this work, **this goal could not be achieved** because an optimal algorithm had not yet been developed.

1058 **goal: the goal is to: means-purpose** 目的, 目標

In the pattern, *the goal is to, goal* as an abstract signalling noun. The following example shows *goal* occupying a strategic position in the paragraph, connecting its two sentences and contributing to cohesion across the paragraph.

The long first sentence (in italics) details the operation of *DIV*. At given position in the next sentence, *goal* both carries this idea of the preceding sentence (*the goal of these activities of DIV*) and prospects an upcoming means-purpose relation.

> 1 *DIV applies a parameter-free, fully-automatic approach that assumes that clusters are groups of tuples with a high degree of overlap and searches for syntactically homogeneous clusters by applying an overlap evaluation algorithm.* **The goal is to** <u>improve the current partition</u> **[purpose]** <u>by identifying a suitable cluster split</u> **[means]**, one which isolates clusters of transactions with the most frequent attribute values.

Related: abstract nouns: signalling nouns

1059 **goal: with the goal of** 目的, 目標

with the goal of is an emphatic alternative to *in order to* (means-purpose.)

> 1 The tree structure selects the 'best' node as the root node **[means]**, **with the goal of** minimizing its maximum distance to leaf nodes **[purpose]** thereby speeding up the searching process **[result]**.

Related: objective

1060 **going on** 發生

> 1 They cannot produce an analysis of the entire structure such that it is possible to determine what is really **going on**/*happening/taking place*.

Related: go through, ongoing, undergo

1061 **gradually** 逐步地, 漸漸地

1 The accuracy of CF either **gradually** increases or remains constant as the number of users increases.

保持 固定的, 不變的 : remain constant

1062 **grant (vb)** 同意, 准予

Things that are *granted* are desirable and are granted by those with authority. These things include *access, abilities, permission,* and *requests.*

1 The drawback of locking is that concurrent writes are not **granted**/*allowed*/*permitted* **access to** the disk while a query is reading a particular partition.

1063 **granted (adv)** 假定, 就算

The sentence adverb *granted* signals the concession element of a concession-contraexpectation relation.

1 A real-world database is dynamic and it is costly to re-analyse the whole database after just a few insertions. Of course, **granted (that)**/*admittedly* **[concession]** a single data point insertion should not greatly impact clustering and dimensionality reduction in a very large database, **however, [contraexpectation]** over time, the accuracy and efficiency of querying will deteriorate if the indexing mechanism is not adaptive to new data insertions.

Related: acknowledge, admit, admittedly, concede, deny, given

1064 **granted: taken for granted** 假定, 就算

1 In the more established sciences, it tends to be **taken for granted**/*presumed* that theory has a role and discussions tend to focus on how rather than whether to use a particular theory.

1065 **gratitude: grateful, gratefully** 感謝的, 感激的**...**

We may express our gratitude to colleagues, supervisors, reviewers, and others. In these cases any *advice, suggestions, comments, remarks* or *support we have received* is always *constructive, helpful, insightful, invaluable, perceptive, useful, valuable* and *worthwhile* because colleagues are always *(unfailingly) generous with their time.*

1 The author is **grateful to** Peter Politis, Lucille Nernot, and Peng Qin for so generously providing their time and attention, and for their numerous valuable suggestions and helpful comments.

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Related: acknowledge, appreciate, comment: comment and make comments, remarks, due to: thanks, grateful, like, thanks (n), thank (vb)

1066 grow...with...., grow...as... 增大, 增加, 發展

Both *grow as* and *grow with* refer to simultaneous change. The impact of the choice of *as* or *with* is that *as* is followed by subject + verb and *with* is followed by a noun phrase. The result is different orders of information.

1 As can be seen, the server and network loads **grow** sublinearly **with** increases in the number of tiles. **[noun phrase]**

2 As can be seen, the server and network loads **grow** sublinearly **as** the number of tiles **[subject]** increases **[verb]**.

Both the *as* and *with* phrases can be fronted.

3 As can be seen, **as the number of tiles increases**, the server and network loads **grow** sublinearly.

4 As can be seen, with increases in the number of tiles, the server and network loads **grow** sublinearly.

1067 growing (adj) 增大, 增加, 發展

1 The **growing**/*increasing* complexity of information systems has greatly increased both the difficulty and cost of maintaining and managing large-scale distributed systems.

1068 growth 增長, 增大, 發展

1069 guarantee (that) 保證, 擔保

1 Obviously, this does not **guarantee (that**)/*ensure (that)* all possible scenarios are accounted for, since…

1070 guess 猜測, 推測 :

A very low frequency word: < *2/mill.*

Related: approximate, assess, determine, estimate, evaluate, judge

1071 had: if: inversion

When *had* is followed by its subject, e.g., *had he*, it indicates a past hypothetical condition and consequence.

Example using had

1 **Had** the trajectory **[subject]** been through just a few stationary points **[hypothetical condition]**, the result **would have been** very different **[hypothetical consequence]**.

Alternative using if

   2 **If** the trajectory **had been** through just a few stationary points, the result **would have been** very different.

Related: inversion, if and when: past tense hypotheticals: omitting if

1072 hamper 妨礙, 阻礙

   1 A sophisticated agent communication language was not required and in any case would have greatly **hampered**/*interfered with/reduced* the efficiency of the system.

1073 hand: at/to hand, near to hand 在手邊

   1 Working with the moments also requires that we determine their appropriate number and order for the data at **hand**/*the data that we have/the available data.*

   2 As a result, we may be faced with an inefficient arrangement wherein less frequently accessed items are located **near to hand**/*conveniently/nearby* while frequently accessed items...

1074 handicap (of)

   1 Given large data sets, the computational problem is a major **handicap/***drawback/disadvantage* of kernel-based methods.

Related: abstract nouns: signalling nouns

1075 handle

When we *handle* problems, it usually implies some degree of success—or at least an acceptable outcome. In contrast, *cope with* implies that difficulties are only just handled, that is, with few resources or little capacity to spare 剩下.

   1 The use of the template feature of our algorithm thus provides the ability to better **handle**/*deal with/address/cope with* the problem of color overlap between the lip and background.

Related: barely, hardly, scarcely, only just, spare

1076 happen (偶然)發生

   1 If the network handoff **happens**/*occurs/takes place* before update, the new access link could be congested and session signalling could be lost or delayed.

   2 Sometimes, we find a smaller power law exponent at the beginning of several of the measures. **This happens** when files are small and...

Related: arise, occur, take place

1077 happen: it sometimes happens that

The phrasing *it does happen that* (or *it occasionally/sometimes/often happens that*) introduces some new fact or observation into the discussion while pushing this information into a more focused position later in the sentence. In short, it is a strategy for introducing a new topic.

   1 It often/may/could/does **happen(s) that** data nodes on the same path contain related content so it makes sense to...

1078 **happen: if...happen to** 碰巧

if + noun + *happen to* suggests that an occurrence is unlikely, or infrequent, or somehow accidental or not planned.

> 1 Opportunistic aggregation is applied so that packets are aggregated only **if** they (**happen to)** meet at a node.

1079 **hardly** 幾乎不可能, 簡直不可能

See barely, hardly, scarcely, only just

1080 **hardly ever**

> 1 Observe that under the first system the mean response times go up to more than 3 seconds during the overload period, while under the second they **hardly ever**/*rarely*/*seldom* exceed 0.5 seconds.

1081 **harm (n)** 損傷, 傷害, 危害

> 1 This approach is expected to minimize the **harm**/*damage* that can be caused by profile injection.

1082 **harm (vb)** 損害, 傷害, 危害

> 1 This produced a somewhat counterintuitive outcome, where using a translation resource actually **harmed**/*reduced*/*retarded* retrieval effectiveness.

Related: worse: affect, aggravate, burden, damage, degrade, deteriorate, exacerbate, harm, interfere with, suffer from, undermine, worsen, **better:** alleviate, ameliorate, enhance, improve, mitigate

1083 **harmful** 有害的

> 1 Thus, **to avoid the harmful**/*damaging* **effects of** noise and errors at the gene expression level...

1084 **have to vs must** 必須

have to and *must* are similar in some but not all ways. They are similar in that both refer to a motivation that can be either internal or external and the recipient of the motivation is the subject of the verb.

> 1 To avoid a different texture for each pose, the texture from a reference pose **[subject: receives motivation] has to/must** be transferred to all of the other poses.

> 2 In [12} it has been shown that this problem is NP-complete and that the compiled solution **[subject: receives motivation]** is static and **has to/must** be recomputed if any policy is changed or updated.

Grammatically however, *must* is much more limited than *have to*. *must* cannot be marked for tense, used with modal verbs, or passivized.

In contrast, *have to* can be marked for tense and hedged with modal verbs such as *may, might, would, should,* etc.

> 3 On the other hand, if we used handles instead of digital objects, **we would have to** map each handle back to its digital object.

The fact that *must* cannot show tense is useful in that it makes it a clear signal of instructions and descriptions of procedures, i.e. habitual or ideal activities.

Similarly, because *have to* can be marked for tense and is suitable for describing what happened and what people or things did.

> 4   The last transaction (Fig. 5e) **was** a multicast transaction which **had to** be aborted when one of the users could not be allocated transaction level resources.

Finally, *must* and *have to* have different meanings when negated, ie. *must not* and *do not have to* are not synonyms (See next article).

Related: text-types: procedures, need, require, should

1085 have to: do not have to vs must not

do not have to and *must not* are not synonyms. *do not have to* conveys the idea that something is <u>not</u> a requirement but is simply optional or merely a potential outcome.

> 1   We prefer this style since the expression portion **does not have to be**/*it is not essential that they be* changed if additional events are added to the property alphabet.

In contrast, *must not* conveys the idea that something is forbidden 禁止, 不許.

> 2   If the ROI changes, the overhead **must not**/*is not permitted to* increase and the aggregation performance must stay the same.

1086 having: because

We can nominalize *because + have* as *having*.

> 1   **Because we had** test cases of different sizes, it was impossible to draw conclusions about the effects of granularity.
>
> 2   **Having** test cases of different sizes would make it impossible to draw conclusions about the effects of granularity.

1087 having: if

having can be used to mean *if + have*

> 1   <u>**If we had** test cases of different sizes, it</u> would be impossible to draw conclusions about the effects of granularity.
>
> 2   <u>**Having** test cases of different sizes</u> would make it impossible to draw conclusions about the effects of granularity.

1088 help (to) + verb 幫助

After causative *help* , the use of *to* before the following verb is optional.

> 1   Animations <u>**help** users **(to) understand**</u> how the layout has changed.

Related: aid, assist

1089 **help in + noun phrase** 幫助, 有用

1 It was generally agreed that the view incorporating dynamic clusters **helped in understanding** both the region of interest and its surrounding areas.

1090 **help: with(out) the help/aid/assistance of vs use**

The phrases such as *with(out) the help/aid/assistance of* are all interchangeable.

1 These test graphs are usually derived manually, **without the help of/aid of/assistance of** a formal specification.

These phrases can be fronted.

Example 1

2 This methods uses subject templates to build a tree and then carries out NN searching **with the help of/aid of/assistance of** the tree structure.

Alternative 1: the phrase is fronted within its clause

3 This method uses subject templates to build a tree and then **with the help of/aid of/assistance of** the tree structure, carries out NN searching.

A concise alternative to all of these phrases is *use*.

Alternative 2: more concise

4 This method uses subject templates to build a tree and then **uses** the tree structure to carry out NN searching.

The information focus can be changed with *by using*.

Alternative 3: different information focus

5 This method uses subject templates to build a tree and then to carry out NN searching. **(by) using** the tree structure

Related: use: the use family verbs and phrases

1091 **hence** 因此, 由此

1092 **henceforth** 今後, 從今以後

1 **Henceforth**/*From now on/From this point on/Hereafter* we will use the term predicates rather than properties.

1093 **hereafter** 此後, 今後

1 A secondary function of the alert period is to support best-effort data traffic, **hereafter referred to a**s data traffic.

2 The collections and queries used **hereafter** are the same as those used in the previous sections.

Related: thereafter

1094 **hide (hidden)** 把...藏起來, 隱藏

Related: conceal, discover, disclose, display, exhibit, expose, find, reveal, show

374

1095 **hierarchy** 等級制度, 階層

Related: architecture, framework, structure, taxonomy

1096 **highlight (vb)** 顯著, 突出, 強調

Related: emphasize, focus on, stress

1097 **hinder** 妨礙, 阻礙

1 In particular, the improvement in recall suggests that the proposed approach may be a solution to a familar problem that *has* greatly **hindered/ *has been a hindrance to/has been an obstacle to*** past efforts at query classification.

Related: semi-causative verbs, block, hamper, impede, interfere, prevent,

1098 **hint (at)** 暗示, 示意

1 Both the coupling and the cohesion values **hinted at***/indicated/suggested* problems as significant as whether...

1099 **hitherto** 迄今, 至此

1 Many of these expositions have **hitherto***/previously* appeared in articles and reports, partially and otherwise, but some have never been disclosed.

Related: previously

1100 **hold: contain** 容納, 包含

1 A manifestation is defined as a physical file **holding***/containing/storing any part* of the content of a digital object [2].

1101 **hold: point of view** 認為, 持有(見解等)

1 While anything of such low specificity might not qualify as a theory, we **hold***/argue/believe/maintain that* this depends on the existing level of knowledge.

Related: advocate, think,

1102 **hold: assumption, condition** 有效, 適用

1 The iteration round of boosting may be ended if the conditions of the corresponding algorithms no longer **hold***/apply*.

Related: apply

1103 **hurdle** 欄, 跳欄

Related: barrier, bottleneck, hindrance, pitfall, roadblock, shortcoming, stumbling block, trap

1104 **hypothesis** 假說, 前提

The noun *hypothesis, (*plural *hypotheses)* collocates with the following adjectives and verbs.

Adjs: *alternative, converse, initial, valid.*

Verbs: *confirm, find evidence/support for, form, formulate, generate, provide evidence/support for, reject, state, support, test.*

We may say that a hypothesis is either *rejected* or *supported*. We also say that *support* or *evidence for* it may be *insufficient, limited, little, strong,* or *weak.*

    1 There is <u>not sufficient support for the</u> **hypothesis** that....

Related: valid, validity

1105 **hypothetical** 假設地, 假定地

1106 **I: personal pronouns in research writing**

See Part 1: personal pronouns in research writing

1107 **ideal** 理想的, 完美的

    1 The great advantage of the Haar filter is that its linear computational complexity makes it ideal for data streams.

Related: suitable, best-suited to, well-suited, poorly-suited, unsuitable, appropriate

1108 **ideally** 理想地 觀念上

ideally introduces a contrast with reality.

    1 Finally, the approach should not impose significant overheads on existing protocols and mechanisms and, **ideally,** it should even eliminate inefficiencies in existing systems.

Related: apparently, hypothetically, ostensibly, superficially, technically, theoretically

1109 **identical (to/with)** 同一的 完全相同的, 完全相似的

The adjective *identical* suggests "exactly the same in every way".

    1 If two motions are indeed very similar yet not **identical***/exactly the same*, are we justified in claiming they are consistent?

to and *with* can be used after *identical* with the same meaning.

    2 This behaviour is **identical to/ identical with***/exactly like/exactly the same as* that of the original algorithm in Fig. 5 except that the original algorithm had just one flag.

Related: alike, equivalent (to), like, same, similar

1110 **if: had**

See had: if,

Related: Part 1, tense: in conditionals

1111 **if and when: conditionals: tense**

The use of tenses in conditionals is both covered in the following articles (*if and when…*) and summarized in *tense: in conditionals.*

Related: tense: in conditionals

1112 **if and when: types of conditions**

if-statements are made up of a *condition (if)* clause and a *consequent* clause. The *if* or condition clause states some condition or circumstance under which the consequent is true. A condition can be either *factual* or *hypothetical*.

1113 **if and when: factual conditions: two types**

Most *factual if*-statements specify realistic conditions and—whether they refer to the present or to the future—are written in the present tense. The realistic conditions that they specify are either *zero* (introducing a truism) or *true* (introducing something that is "probably true").

1114 **if and when: factuals: zero conditions (truisms): tense**

Zero conditionals express true statements that are truisms, certainties, observations, rules, and laws. Both the condition and consequent clause are in the same tense, either present or past, however, because the past tense is also used for hypotheticals, it is generally better to avoid ambiguity by using the present tense for zero conditionals.

> Present tense
> 1 **If** the number of virtual users **increases [truism/generalization]**, then CPU usage also **increase**.

> Past (or perhaps hypothetical)
> 2 **If** the number of virtual users **increased [hypothetical]**, then CPU usage also **increased]**.

It is also possible to express zero conditionals using *when* or *whenever*.

> 3 **When/whenever** the number of virtual users increases/ed, CPU usage also increases/ed.

Zero conditionals are common in procedures, which describe what usually/ideally happens.

> 4 **If/When** a sensor receives more packets than it can forward, congestion results and the sensor has to drop some packets. At the same time, upstream sensors redirect packets to other paths but **if/when** all forwarding paths are congested, the sensors must also reduce their rate of data generation.

Related: text-types: procedures

1115 if and when: factuals: (probably) true conditions

The *if*-condition of a true conditional is in the present tense and refers to a hypothetical situation which may be true or is likely to be true. Even though the *if* clause is in the present tense, it may refer to

a) a current event which may be true or not true,

b) a future event, or

c) a possible future result.

It is possible to write the consequent (outcome) clause of a true conditional as past, present or future. However, it is easiest simply to develop the habit of writing both the condition and consequent of both zero and true factuals in the present tense and to reserve the past tenses for use in the hypotheticals. In the following both condition and consequent are written in the simple present.

> 5 **If it is [present tense]** our goal to limit the average delay of packets or the average queue size, **we can use [present tense]** the approach outlined in Section 3.

1116 if and when: hypothetical conditions

Hypothetical conditionals may be written in the present or past tense.

Related: tense: in conditionals

1117 if and when: present tense hypotheticals: use of modal verbs

In present-tense hypotheticals, the condition is either untrue or unlikely. The unreality of the outcome in the consequent is signalled with the modal verbs, *would, could, should,* or *might.*

> 1 **If** all of the details of the client access patterns **were** available **[hypothetical condition]**, **it would be possible** to identify the organisation with the optimal access latency. **[consequent]**

1118 if and when: past tense hypothetical: use of past perfect

The past tense hypothetical uses the past perfect (*have* + past participle). To signal the unreality of the outcome in the consequent, we use the modal verbs, *would, could, should,* or *might.*

> 1 Because our evaluation of the effects of the filter parameters relies on an analysis of variance, we used a variety of texture datasets and computed the output variable for each singly. **If we had grouped** all the textures together, **we would have obtained** only a single output value for each combination of parameters, **which would have been** of little value for subsequent comparisons.

> 1 **Related:** tense: tense in conditionals

1119 **if and when: past tense hypotheticals: omitting if**

If we wish to omit *if* in a past hypothetical, we can instead signal the condition by reversing the order of the subject and the auxiliary verb *(have)*. The effect of the inversion is to emphasize the hypotheticality of the condition. It is quite a formal choice.

> *1* **If we had grouped** all the textures together, we **would have obtained** only a single output value for each combination of parameters.

> *2* **Ha**d **we [inversion of subject and verb] grouped** all the textures together, **we would have obtained** only a single output value for each combination of parameters.

1120 **ignore vs neglect** 不顧, 不理會, 忽視 **vs** 忽視, 忽略

ignore and *neglect* are not synonyms. To *ignore* something is *intentional*, 故意的, to actively not take it into account.

> *1* Days or months are grouped together but the crawler **ignores**/*does not consider/does not take account of/ does not take into accoun*t either future dates or dates prior to 2000.

To *neglect* something is also to not pay it any attention. However, this is not deliberate, intentional, or calculated.

> *2* Finally, we also apply measure the additional energy overhead caused by switches, an area of study which **has previously been neglected**/*has not previously been addressed*.

See ignore vs neglect, **Related:** disregard, ignore, miss, overlook

Related: fail to, leave aside, neglect, omit, overlook

1121 **illustrate: show in a diagram** 插圖於(書籍等), 圖解
> *1* Fig. 9 (b) **illustrates** the process of inter-scale geomorphing.

Related: depict

1122 **illustrate: provide an example** (用圖, 實例等)說明, 闡明
> *1* To **illustrate** this, let us consider a simple example. Imagine a warehouse with N entrances and M exits.

1123 **illustrate that: demonstrate, show**
> *1* This is important because it **illustrates**/*demonstrates/shows* **that** the modularity of independent site crawlers simplifies the enforcement of local site rules.
>
> *1*
>
> *1*
>
> *1*
>
> *1*

1124 **immediate/ly (adv)** 立即的, 即刻的, 直接的 最接近的, 緊接的

immediate/ly can refer to close proximity in either time, space, or mentally e.g.,
in the immediate future, the immediately following, the immediate consequence.

1　The matching tuple is passed **immediately**/*at once/straight away/without
delay/directly* to the suspended agent.

2　EDFSR and NESR both assume that <u>the recent past</u> will approximate **the
immediate future** and so rely on past queries to estimate future informa-
tion needs.

3　In such cases, it might be possible to extract the answer by directly search-
ing for an expected answer and extracting words that occur on either **the
immediate** <u>left or right</u>.

4　For example, in **the immediate** <u>vicinity</u> of such an impermeable wall,...

5　For K = 1, **the immediate** <u>ancestor</u> of M is the node which...

6　As shown in Table 3, users do not typically scan below a click, but rather
are much more inclined to go straightaway to **the immediately** <u>following</u>
abstract.

7　Every part of the following lemma **follows immediately from**/*follows di-
rectly* from the definitions.

Related: instantaneous, proximity, vicinity, neighbourhood,

1125 **impact (n) (on)** 影響, 作用 衝擊, 撞擊, 碰撞

The noun *impact* often refers to measurable changes, i.e, in degree, size, or extent.

1　As noted earlier, the mean average precision has *little/a small/some/a lot
of/a big/a large/a considerable* **impact on** smoothing the query depend-
ence.

2　In Section 3.3, we perform additional experiments to test **the impact of**
using the non-informative terms retrieved in the first pass **on** retrieval in
the second pass.

3　The FSTA estimates **the economic impact of** the fantasy sport industry to
be in the vicinity of US$2 billion annually.

Related: impact (n), the effect of, leviate, effect (on) (n) vs impact (on) (n) mitigate, reduce

1126 **impact (n): collocation**

The noun *impact* collocates with the following adjectives and verbs:

Adjs: *accumulated, additional, adverse, average, (very) big, considerable, detrimental, dramatic, great(er), important, insignificant, large, less (of an), little, main, marginal, maximum, (relatively) minor, negative, negligible, no, no particular, overall, positive, possible, potential, pronounced, qualitative, relative, severe, (statistically) significant, small, strong, substantial, various, (very) weak*

Verbs: *analyse, assess, demonstrate, examine, have, highlight, increase, investigate, isolate, judge, limit, localize, magnify, measure, minimize, observe, reduce, study, test*

Related: effect (n)

1127 **impact: the impact of…on…**

Approximately half of all occurrences of *impact* in the corpus for this book are in the phrase *the impact of.* The use of *impact* often implies a phenomenon that is quantifiable.

> 1 This study focuses on CMM level 5 projects from a variety of organisations and studies **the impacts of** mature processes **on** effort, quality, and cycle time.

1128 **impact (vb)** 壓緊, 擠滿

> 1 Table 10 shows how pipelining **impacts**/*affects*/*influences* the time required to process and generate unsorted runs for a variety of input sizes.

Related: affect, bearing, contribute to, impact, influence, cause-effect and reason-result verbs

1129 **impair** 削弱, 減少 損害, 損傷

> 1 Interruption or failure of our network and information systems would of course **impair**/*interfere with* their ability to provide their services.

1130 **impede** 妨礙, 阻礙, 阻止

Related: block, interfere with, prevent

1131 **impediment** 妨礙, 阻礙, 障礙物

Related: barrier, bottleneck, hindrance, obstacle

1132 **imperative mood** 極重要的說法

Instructions or requests may be expressed using the *imperative* form of the verb (bold italics).

> 1 **Combine** the remaining test grains into a single pool and from this pool randomly **select** groups of test cases of size n until none remain.

> 2 **Note that** the time dimension in these figures is represented along the horizontal axis.

1133 **impetus** 推動

Related: inspiration, motivation, rationale

1134 **implication (of)** 含意, 言外之意, 暗示

1 These results are consistent across programs and test input groupings. The **implication of this is that** test engineers can safely harness granularity to increase the likelihood that...

Related: abstract nouns: signalling nouns

1135 **implicit** 內含的, 固有的 不言明的, 含蓄的

Related: explicit, imply, infer

1136 **implement** 履行, 實施, 執行

implement means "put into practice" or "put into operation".

1 In order to guarantee the uniform use of energy across clusters, we **implement** a load-balancing policy that....

2 We **implemented** this index **on** a variety of prototype P2P applications. The following presents our results.

Note that *apply* and the verb *implement* are not synonyms. That is, *implement* does not mean "use as a tool".

1137 **imply** 暗指, 暗示, 意味著

1 An unstructured approach to WLAN infrastructure design **implies** poor resource utilization.

Related: explicit, implicit, indicate, infer, mean. suggest

1138 **imply that**

1 The use in this article of the names of products and companies is not intended to **imply that**/*suggest that* they are recommended or endorsed by either the authors or by the National Institute of...

Related: demonstrate, indicate, mean that, prove, show, tell us

impractical 不切實際的, 無用的, 不現實的

Related: feasible

1139 **imprecise** 不嚴密的, 不精確的, 不正確的

Related: accuracy, accurate, inaccurate, precise, precision

1140 **impose (on)** 加(負擔等)於

burden, constraint, cost, overhead, requirement, rule

1 Certainly this is an easy and elegant way for users to **impose** both high-level and low-level constraints. **[direct object]**

2 Finally, the system should be efficient in that it does not **impose** significant overheads **[direct object] on** existing protocols and mechanisms. **[indirect object]**

Related: comply, enforce, impose, maintain

1141 **improve** 改進, 改善, 增進

See enhance vs improve

1142 **in order for + noun + to + verb: condition-consequence**

in order for + noun + *to* + verb signals a condition-consequence relation where the outcome is hypothetical but, like *in order to*, it also signals a means-purpose relation.

Example 1
1 **In order for** a virtual MISO link **to be established [consequence/purpose]**, groups of nodes must simultaneously transmit suitably encoded information to a single receiver.**[condition/means]**

In order for can also be reduced to *for*.

Alternative 1
2 **For** a virtual MISO link **to be established**, groups of nodes must simultaneously transmit suitably encoded information to a single receiver.

Related: for: in order for: if: hypothetical

1143 **in order that: a hypothetical or future outcome**

in order that signals a future condition-consequence relations.

1 Another approach is to choose the parameters **in order that**/*such that/ so that* the iso-curves of the filter bank touch each other in the frequency plane.

1144 **in order to: means-purpose: intentions**

in order to signals the relation of *means-purpose*, where an action is taken with the *intention* of achieving a certain outcome. The emphasis is on *why* we did it

1 (**In order) to** reduce the processing time [why we did it], we split the word-identification process into two steps **[what we did]**.

We can place the purpose clause (*in order to)* either before or after the main clause.

2 We split the word-identification process into two steps **[means] in order to** reduce the processing time **[purpose]**.

in order to deals with human intentions, and often introduces an explanation or a recount. The means 手段, 方法 element commonly occurs with the past tense and personal pronouns.

> 3 **In order to** reduce in the processing time, **we split** the word identification process into two steps.

Related: semantic relations, text types: recounts, text-types: explanation

1145 **include:** 包括, 包含

include introduces a list that may or may not be complete and the relationship is container-contained.

> 1 The United States **[contains] includes** many states. **[contained]**

> 2 The current generation of commercial and open–source DBMSs [18–21] **includes** extensions of models that...

includes can be written in the passive voice, i.e., *Other elements are also included.*

Related: exclude, preclude, composed of, comprise, consist of, consist in, constitute, contain, encompass, entail, incorporate, involve, made up of, make up

1146 **inclusion (n)** 包括, 包含

inclusion is the noun form of *include*.

> 1 The results are certainly in accordance with the model but the authors might consider **the inclusion of**/*including* more constructs in order to account for HCI-imposed constraints.

1147 **inclusive (adj)** 包含的, 包括的

> 1   It is our goal to be as **inclusive** as possible when canvassing the view of domain experts.

Related: complete, comprehensive, exhaustive

1148 **inconclusive** 非決定性的, 不確定的

Related: conclusive, definitive, tentative

1149 **incorporate (into)** 包含, 加上, 吸收

incorporate introduces a list that is complete. The relationship is one of absorption 吸收, 吸收過程 .

> 1 In 1845, The United States **[absorber] incorporated** the Republic of Texas **[absorbed]**

> 2 Our current system is designed for structured XML databases and **incorporates** full-text techniques that support phrase matching, making it applicable to databases comprised largely of text stored as XML.

To reverse the relations in the clause we say *incorporate into.*

3 It should be noted, however, that none of this takes into account how dialog strategies can be **incorporated into** the manager.

Related: containing and including: verbs, composed of, comprise, consist of, consist in, constitute, contain, encompass, entail, include, involve, made up of, make up

1150 incorporate into 包含, 加上, 吸收

1 Peers that cover related topics **are incorporated into**/*are combined into/are included in* the same cluster.

1151 increase (vb) 增大, 增加, 增強

1 As the number of bidders **increases**, the density of bids at the upper level of the distribution also increases.

Related: trends: verbs for talking about trends, lower, raise, reduce—decline, drop, fall, rise—decrease (as), increase (as), diminish (as)

1152 increased (adj)

Related: participles: as adjectives: advanced, developed, increased, **Related**

1153 increasing with: simultaneous change

1 Moreover, the time taken for the greedy approach **increases with increasing n and m**/increases as n and m increase.

1154 increasingly: more and more 漸增地, 越來越多

1 The shape of the curves in Figures 7 and 9 can be attributed to the decreasing quality of elements as the system fetches **an increasingly large**/*and ever large*r number of/*more and more* results.

1155 increase by + an amount

This is by far the most common use of *increase by*

1 For each region <45, the weight of each edge is **increased by** 1.1 if it links to just one exemplary authority.

1156 increased by + how it is done

1 When the network size N is **increased by** increasing the density of nodes density D, the minimum transmission range eventually falls to 0.

Related: decrease, fall, reduce, rise

1157 incremental 增加的, 增值的

1 The proposed framework supports an **incremental** approach to developing the system model.

1158 incur 招致, 惹起, 帶來, 遭受

1 However, the fact that dynamic adaptation can **incur** such significant overheads may make it unacceptable for...

Related: burdened with, suffer from

1159 **indeed** (加強語氣)真正地, 確實, 實在

Authors use *indeed to* emphasize the truth value of a statement. Emphasizers like *indeed* are usually placed next to the element that they apply to.

1 Current empirical evidence indicates that pair programming **does indeed/** *does* have an impact on duration, effort, and correctness.

Related: semantic relations: truth and validity, actually, certainly, clearly, definitely, indeed, in fact, no doubt, obviously, of course, plainly, really,

1160 **indefinitely** 不定地, 無限期地

1 The problem for adaptive systems that depend on such profiles is that anonymous users of an online system can multiply their profiles and identities nearly **indefinitely/***without limit*.

1161 **independent of** 獨立於

1 There are some notable differences between our approach and theirs. For a start, the number of slices we use is **independent of/***not associated with* the number of volume objects but...

1162 **indicate** 表明, 象徵, 暗示

indicate may indicate an inference or an <u>uncertain</u> 不確定的 claim.

1 A low value of QUAL **indicates/***implies/points to/suggests* higher quality software.

1163 **indicate that: imply that** 表明, 象徵, 暗示

1 These results **indicate that/***imply that/suggest that* even if we run the algorithm over many more rounds and...

1164 **indicate: unless otherwise indicated** 指示, 指出

In the following expression *indicate* means "Unless we *say* or *suggest* otherwise".

1 **Unless otherwise indicated** the distribution of nodes in most of these scenarios is random between 200 and 51,200 over a 2D CC square area.

1165 **indication** 徵兆

1 The work reported in [22] provided **strong indications that/***strong signs that/strongly suggested that* cross-layer design taking into account cooperative diversity may significantly...

Related: evidence, proof, sign

1166 **infer** 推斷, 推論

1 The system works by **inferring** the existence of invariants at specific program points, for example procedure entries and exits.

Related: explicit, implicit, imply, indicate, mean. suggest

1167 **inferior** (地位等)低等的, 下級的, 低於...的 (質量等)次的, 較差的, 次於...的

1 The **inferior** performance of FINv can be mainly attributed to the SSS encountered at the internal nodes closest to the leaves.

Related: superior

1168 **influence (n) have an influence on** 影響, 作用

    1 In the next set of experiments we vary features, the scale of the features, and the directionality of matching so as to identify **their influence on/***effect on/to what extent they influence/to what extent they affect/to what extent they are a factor in* the overall performance of the algorithm.

Related: effect, impact, purpose, way, reason, result, outcome

1169 **influence (vb)** 影響

influence is a cause-effect verb. It can be written in the active or passive voice and introduces indirect reasons and causes.

    1 Any decisions on the topology and control regime will be heavily **influenced b**y, among other factors, the need for organisational efficiency.

    2 As shown in Table V, length limitation has **does not influence/***has no influence on/does not affect/has no effect on/has no impact on* precision in either direction.

Related: affect, bearing, contribute to, impact, influence, cause-effect and reason-result verbs, effect (n) vs impact (n), factor

1170 **inform: tell** 通知, 告知, 報告

    1 The clients start rendering a frame as soon as they receive all the necessary data and **inform the server/***let the server know/notify the server* immediately that they are ready to swap the buffers.

1171 **inform: contribute to** 鼓舞, 激勵, 驅使

    1 It is our belief that the work described here can **inform/***contribute to/provide a theoretical basis for* the further development of adaptive hypermedia systems in that...

Related: inspire, motivate

1172 **information** 報告, 消息, 報導, 情報資料, 資訊

information is an uncountable noun. In the singular, it requires a classsifier such as *item* or *piece*.

    1 The service choreography is **an item of/a piece of information** that the designer typically must annotate to establish every possible interaction sequence with the service.

1173 **inherently** 固有地, 天性地

    1 It is important to remember, however, that similarity measurement is **inherently** imprecise and thus we prefer retrieval settings that are approximate but fast rather than exact but slow.

Related: nature: by nature, intrinsically,

1174 **inhibit** 禁止

Related: block, interfere with, prevent,

1175 **initial (adj)**

initial- 381/*mill.*

1176 **initially (adv)** 最初, 開頭

initially—89/mill., is an important time-signalling adverb but it does not a synonyms for *first* (and its high frequency is somewhat acounted for by misuse). It is in fact a synonym for *At first* in that it prospects (signals) an upcoming and perhaps "surprising" or "remarkable"contrast, as can be seen in the pairings in the following examples: *initially + but then* and *initially + ultimately*.

1 **Initially**/*At first* the delivery ratio rises steadily **but then [contrast]** suffers quite a sharp fall.

2 **Figure 4 shows the data flow in standard Linux. Each connection has a matching socket buffer**. Data streaming into each socket buffer is processed by the TCP and the IP. This processing **initially** keeps the packet streams of each connection separate but **ultimately** all the streams feed into a single priority queue (up to 100 packets), taking equal turns at feeding into the queue, subject to TCP windowing constraints. Finally, packets feed out of this queue into a short Ethernet card queue and then out to the network.

穩定地, 不斷地 : steadily · 陡的 : sharp

Related: end up, finally, turn out, ultimately

1177 **initiate** 開始, 創始, 開始實施

1 A mobile client **initiates** a route request message by first flooding the message to all its neighbors within a certain range.

Related: launch

1178 **input into** 投入

1 Keeping the same learning framework, the cost items can be **input into**/ *added into/entered into/fed into/included in* the weight update formula (Eq. (3.3)) to bias its weighting strategy.

1179 **inputting**

1 This class of feedback can also be obtained simply by **inputting** a similar document into one the usual retrieval methods.

1180 **input:** ~~inputted~~

The past participle of *input* is also *input*, not ~~inputted~~.

1 To obtain this class of feedback, we ~~inputted~~ **input** a similar document into one the traditional retrieval methods .

1181 **insight into** 洞悉, 深刻的理解

1 Persistent overload is a common experimental setup where a server is run under a fixed load ρ>1 with the goal of *gaining/getting/obtaining/acquiring* **some insight into** what happens under such conditions.

1182 **inspiration** 靈感

Related: adopt, apply, based on, extend

1183 **inspire: inspired by** 有靈感的:從....得到啟示

When we say that something has *inspired* or *motivated* us, we should be specific. Do we mean that our work *modifies, extends, adapts, adopts, exploits, makes use of,* or *is based on* or *influenced by* some earlier work? Or is our work in some way *similar to* previous work? In that case, we need to say how it is similar and how it is different.

> *1* Our iterative search model is **inspired by**/*based on/influenced by* research in the areas of dynamic text messaging systems as seen in chat room and discussion forums. **In particular, our proposed model is most similar to** Threaded Text as developed by Smith et al. [2000].

Related: inform

1184 **instance** 實例[

> *1* Given that data, a system could simply count **instances**/*occurrences/ examples* of multi-response answers and derive more concise answers from them.

Related: case, circumstance

1185 **instead (of)** 作為替代

See: rather (than) vs instead (of)

1186 **instructions**

See: text types: instructions

1187 **integrate into vs integrate with**

integrate into 融成一體, 合併在一起 suggests the idea of "absorbing" 吸收

> *1* Other modules can be easily **integrated into**/*incorporated into* this system.

integrate with 聯合為一體, 結合在一起 suggests the idea of "combining"

> *2* Hence, it would be highly desirable to **integrate**/*combine* automated discovery **with**/*with* adaptive interactive techniques,...

1188 **intend to** 想要, 打算

> *1* In future research, we **intend to**/*our goal will be to* investigate the use of a variety of other weighting functions.

Related: aim, design, intention, mean, purpose

1189 **intend as/to be** 打算將...成為, 為...而準備

intend as/to be introduces the idea of "intended role or function".

> *1* This is **intended as/intended to be**/*meant as/meant to be/designed to be* just one component in a larger...

1190 **intention** 意圖, 意向, 目的

    1 Candidate answers then pass through a series of coarse-grained filters, <u>the</u> **intention**/*goal/purpose/aim* **of which is to** remove obviously erroneous n-grams.

1191 **intentionally** 有意地, 故意地

    1 This architecture is **intentionally**/*purposely* similar to that earlier approach and resolves heterogeneity in similar ways.

Related: accidentally, deliberately, unintentionally, on purpose

1192 **interact (with)** 互相作用, 互相影響 互動

    1 In a profile injection attack, an attacker **interacts with** the target system to build profiles which it will use to…

1193 **interaction** 互相影響 互動

    1 Unfortunately, **interaction between the university and industry** is minimal. There are few academia-industry research partnerships and few faculty are involved in industral consultancies.

1194 **interest (n): common collocants**

The noun *interest* collocates with following adjectives and verbs:

Adjs: *a common, considerable, great, greatest, growing, main, particular, potential, practical, primary, real, recent, renewed, special, strong, sufficient, theoretical*

Verbs: *arouse, attract, show, express, generate, provoke, revive, share, stimulate*

Related: attention, focus, scope, of interest

1195 **interest: the + noun + of (no) interest**

The pattern *the* + noun + *of interest* essentially means *the (noun) that in this context interests us.*

    1 **The events of interest** are obtained from the property and from the constraints and determine the sequencing of the analysis.

    2 For our analysis, there are two properties of the classifier C that are **of particular interest**/*we are particularly interested in*:

    3 Moreover, the relevant language processing costs are well understood and **not of interest/of no interest** here.

1196 **interfere with** 妨礙, 衝突, 抵觸

interfere has a negative connotation.

    1 Even if DNS resolution were carried out over an ideally reliable network, the lookup would still introduce sufficient delay to **interfere with**/*affect/hamper/hinder/impede/negatively impact* crawling.

Related: worse: affect, aggravate, burden, damage, degrade, deteriorate, exacerbate, harm, interfere with, suffer from, undermine, worsen, **better:** alleviate, ameliorate, enhance, improve, mitigate

1197 **intervene in** 插進, 介入, 介於中間

1 The proposed approach reduces the need for designer to **intervene** manually **in** the development cycle and this improves...

1198 **introduce: work, research, methods** 介紹, 引見

The verbs *introduce* and *present* can talk about work that is or was novel, whether it is our own work or that of others.

1 In this paper, we **introduce**/*present* a framework that enables the integration of...

In the following, the focus is on the fact that Zimmer's work was novel at the time that it was "introduced".

2 Zimmer et al. [22] **introduced** dynamic feature location as a tool for..

1199 **introduce: add things** 引進, 傳入, 採用

The verb *introduce* may mean "add". What is added may be added either intentionally or accidentally and may be presented as either neutral or negative. In the following, something neutral is *introduced*/added intentionally (by the unmentioned researchers).

1 **A width variance (WidVar) parameter was** i**ntroduced**/*added* to capture the degree of variation between the width of a given profile and that of an average length in the database.

In the following, something challenging (neutral/negative) has been introduced/added unintentionally (as an unforeseen result of an implementation).

2 However, the implementation of a multiagent system paradigm of course **introduces a number of novel abstractions and design/development issues**. Accordingly**,** new analysis and design methodologies and new tools are required.

In the following, something problematic (negative) has been introduced/added unintentionally.

3 As it turned out, view expansion **introduced_redundancies where expanded queries sometimes contained one another**.

Related: present, describe

1200 **invaluable** 非常貴重的, 無價的, 無法估價的

1 The authors would like to thank the anonymous referees for their **in-valuable** comments, which have significantly improved the paper.

Related: acknowledge, appreciate, comment: comment and make comments, remarks, due to: thanks, grateful, like, thanks (n), thank (vb)

1201 **invariably** 不變地, 永恒地

1 The algorithms guarantee that the test synthesis method is exhaustive in that it is possible to synthesize a test case that **invariably** will/*will almost always* reject any nonconformant implementation.

Related: commonly, customarily, generally, habitually, normally, ordinarily, usually.

1202 **investigate** 調查, 研究

1203 **involve** 需要, 包含, 意味著

involve—386/*mill.*—introduces a list of activities. The list may or may not be complete. The relationship is whole-part.

1 Low cost development **[whole activity] involves** addressing problems through local knowledge. **[sub-activities]**

involve is often used to introduce definitions and procedures.

2 Our simulation **involved the construction of four taxonomies.**

3 Attacking a coordinator **involves jamming it with traffic so that data packets or ACK frames are dropped and**...

4 An appropriate response might thus **involve/require/use an on-demand routing approach which...**

5 The previous implementation of the temporal part of the SQL extension [33] **involved applying optimization techniques based on...**

With this meaning *involve* has no passive voice use ~~is involved~~.

Note 1: As an adjective, *involved* means "complicated" (See *involved (adj)*).

Note 2: The set phrase *to be involved in* (See following article) refers to "doing/being engaged in"

Related: concern, concerned with, composed of, comprise, consist of, consist in, constitute, contain, encompass, entail, include, incorporate, involve, made up of, make up

1204 **involved in: engaged in** 專注於..., 忙於...

1 As a result, software components debugging, it is necessary for pro-grammers to be **involved in**/*to take part in/to engage in* instruction-level program execution.

2 The specific functions of a feature are defined as all of the functions that **are involved in**/*have a role in* implementing the feature.

1205 **involved (adj): complicated** 複雜的

1 As both the basic theory and the implementation are *quite/rather/some-what/very* **involved**/*complex/complicated*, the following provides an in-troduction to the relevant details.

1206 **irrespective of** 與…無關的, 不用理會…的

1 The proposed genetic algorithm can detect all types of clusters, **irrespective of**/*without regard to/regardless of* their geometrical shape or whether they overlap, as long as they are symmetrical.

Related: respectively

1207 **issue (vb)** 發行, 發佈 發給

1 In cases (4), (5), and (6), they must **issue** reports as to the validity of the credentials.

1208 **issue (n)** 問題, 爭論, 爭議

1 A further **critical issue** is how to either increase or decrease the number of fuzzy rules during optimization.

Related: problematic, problems

1209 **issues vs problems**

The words *issue* and *problem* are not interchangeable. For example, *design issues* are not necessarily *design problems*. Consider an image processing application, where relevant *issues* might include image enhancement, feature extraction, detection, classification, and matching. However, none of these things are "problems".

Grant applications and project proposals may require authors to distinguish between *problems* and *issues*.

1210 **it: pronoun: referring to previous information**

See *this/these, it/they and those: as pronouns*

1211 **it: pronoun: preparatory object**

it can be used as a preparatory object, where *it* refers forward to an object noun phrase. In the following example, it avoids having a long *that*-clause as subject.

Example 1

1 **That** they have all the necessary tools even if they used them rarely **[subject] is thought by** the workers to be very important.

Alternative word order 1

2 The workers **thought it** very important **that** they have all the necessary tools even if they used them rarely **[object]**.

We can also use preparatory subject *it* to push a signalling noun later into a sentence as follows. The signalling noun is *task*.

Example 2

3 **A central task** of these applications **is thus** to detect the available bit rate and to adapt their behavior when changing access networks.

Alternative word order *2*

4 **It is thus a central task** of these applications to detect the available bit rate and to adapt their behavior when changing access networks.

Reasons for doing this include the desire to push new information out of given position, to signal a change of topic, or even to improve readability by finding a better balance of grammatical words to content words.

Related: it: preparatory subject, find it, think it, this

it: pronoun: preparatory subject

it can be used as a preparatory subject to refer forward to a lengthy object noun phrase. It provides an alternative to a long and complex noun phrase in subject position. **[object]**

Example 1
1 To quantify the utility of intelligent evaluation strategies is also difficult.

Alternative word order1
2 **It** is also difficult to quantify the utility of intelligent evaluation strategies.

Example 2
3 That an update request expressed on the wrapper schema be automatically mapped onto the legacy database is natural.

Alternative word order 2
1 **It** is natural for an update request expressed on the wrapper schema to be automatically mapped onto the legacy database is natural.

Example 3
2 Collision events between moving 3D objects in computer animations or simulations are hard to detect due to the difficulty of accurately sampling their paths.

Alternative word order 3
3 **It** is hard to detect collision events between 3D objects in computer animations or simulations due to the difficulty of accurately sampling their paths.

Related: this, it: preparatory object, it: preparatory subject. information order

1212 it is possible vs can + passive

1 In addition, the preferred decision for each state at each decision epoch **can also be determined**.

2 In addition, **it is also possible to determine** the preferred decision for each state at each decision epoch.

1213 it is necessary vs is required

1 As the false accept and false reject rates cannot be lowered at the same time, **a trade-off is required**.

2 As the false accept and false reject rates cannot be lowered at the same time, **it is necessary to make a trade-off**.

Related: basic, critical, crucial, essential, fundamental, important, vital

1214 **it is difficult/hard/easy**

Example 1
1 **It is hard to detect** high-level failure **using** current tools.

Mistake 1
✗ High-level failure *is hard to be detected by* current tools.

1215 **it is worth**

1 Finally, **it is worth pointing out that** the use of a voting threshold gives our approach much more flexibility.

Related: advantageous, beneficial, worth + verb + ing, worthwhile

1216 **it took... + time/duration** 持續, 持久, 持續期

1 The computational time increases linearly with the number of unlabeled documents. For example, in our environment **it took about 5.0 secs** using 50 unlabeled documents.

1217 **itself: by itself** 單獨地

1 The class imbalance distribution is not **by itself**/*alone* a problem, but in conjunction with highly overlapped classes...

1218 **jeopardize** 困於危險境地,

Related: conflict with, interfere with, put at risk, undermine

1219 **judge** 審判,評判, 裁決

1 There is no doubt that while it is simple enough to **judge**/*assess/evaluate* the performance off a search engine on a page-by-page basis, it is much harder to **judge** the response set of a search engine as a whole.

Related: estimate

1220 **just: only** 僅僅, 只是

1 This behavior is identical to that of the original algorithm in Fig. 5 except that the original algorithm had **just**/*only* one flag. The modified algorithm provides a flag for every branch.

1221 **just as many: equally as many**

1 Their coarse granularity test suites make use of **just as many**/*the same number of/an equal number of* inputs as make up their test grains but require fewer setup and cleanup operations.

Related: equivalent

1222 **just like: identical**

1 **Just like**/*Just as/Exactly like/Exactly as* in Phase I, candidates in the normal position receive Google's original ranking.

Related: alike, equivalent, like, same, similar

1223 **keep + noun + adj** 使...保持在

1 Parameter adaptation in the classification and regression trees is carried out by **keeping** all the parameters **fixed** [**adjective**] except the one optimized to improve the Gini index [4].

2 The three data sets in Group 1 were generated by us but we **kept** the structure of the clusters **as close as possible to** [**adjective**] that described in Refs [30,40].

1224 **keep: retain, preserve** (長期或永久)持有, 保有

1 All nodes for which transitions on input symbols are defined **keep**/*retain*/*preserve* their outgoing edges without the addition of more edges.

1225 **keep + verb + ing: continue** 繼續不斷

1 If the distance matrix and vector are not yet in cache, the relaxation and closing processes **keep going**/*continue* until the destination node is closed.

1226 **keep: maintain (without change)**

1 The cache rate was **kept at**/*kept unchanged at/maintained at* 5% and all the other experimental settings were the same as in…

1227 **keep: maintain, store** 存放, 保留, 保存

1 SOLA **keeps**/*maintains*/*stores* a query history and query template mechanism so that old queries can be easily located, refined, and resubmitted.

1228 **keep from: causative** 阻止, 妨礙, 控制住

1 Another reason why sites might restrict crawler traffic is to **keep**/*prevent* their content **from** being mirrored elsewhere.

1229 **keep track of** 記錄

1 Defining Boolean attributes for every location step in the query allows us to **keep track of**/*track* whether a node has…

1230 **keep pace with** 跟上

See keep up with

1231 **keep up with: keep pace with** 跟上

1 This reduces the frequency with which we must relabel training data to **keep up with**/*keep pace with* changes in the query stream.

1232 **kind: a kind of: type** 種類

1 This pair is referred to as a dissimilarity space, **a kind of** topological space.

Related: class, sort, type

1233 **kind of + adj: sort of: more or less** 有點兒

In everyday English the phrases *kind of* and *sort of* can be used to mean not only *type/category/class of* but also *rather/quite/somewhat*, where they function to reduce the force of a following adjective. With this meaning, *kind of* is quite informal 口語的 and should not be used in a research paper.

1 We should also point out that this approach to searching for anomalous distance triplets is ~~kind of~~ **more or less/somewhat** analogous to...

2 And again, the total number of possible cache configurations is also ~~kind of~~ **rather/quite/somewhat** limited.

Related: enough, kind of, more or less, quite, rather, sort of, sufficiently

1234 **know** 知道, 了解, 懂得

1 This index will allow the algorithm to even skip scanning intermediate results once we **know that** they are not part of the result.

2 It would be interesting to **know if** and **how** the performance of the proposed disk-based SP algorithms are affected by...

1235 **know of (no), we know of, that we know of**

Example 1
1 Previous work has applied algorithms to identify suitable places using location data, however, **we know of no**/*are aware of no/have no knowledge of any* systematic empirical evaluations of these algorithms,....

Alternative wording 1
2 Previous work has applied algorithms to identify suitable places using location data, however, **there have been** no systematic empirical evaluations of these algorithms that we **are aware of/know of**.

Related: scope, to our knowledge

1236 **knowledge** 知識, 學識, 學問

1237 **knowledge: to our knowledge**

1 This finding, **to (the best of) our knowledge**/*so far as we know/so far as we are aware,* has not previously been reported.

1238 **knowledge: prior knowledge** 預知的知識

1 The proposed method is also efficient, with a time complexity that is linear to the number of nodes and links and requires no **prior knowledge** of the community structure.

Related: before and prior, prior to

1239 **known as** 通認

1 This situation, **known as** the class imbalance problem [1], [2], occurs frequently in real-world applications.

1240 **known: as is well known** 出名的, 眾所周知的
1 **As is well known,** the number of minutiae decreases as resolution increases.

1241 **lack (n)** 欠缺, 不足, 沒有, 缺少東西
1 On the other hand, the main problem we initially faced was **a lack of**/*not enough/insufficient* documentation.

Related: an absence of, an excess of, too few, too many

1242 **lack (vb)** 缺少, 不足, 沒有
1 Given that the field currently lacks any/has no theoretical or heuristic support for deciding how much data to collect, for our studies, we chose to use...

Related: absent, absence of, miss, missing

1243 **large: by and large** 總的說來
1 **By and large**/*Gene*rally speaking, the theories classified here as software engineering theories also incorporate constructs that are fundamental in other disciplines.

1244 **largely** 主要地, 主力地
1 Our current system is also applicable to databases comprised **largely**/*for the most part/mostl*y of text stored as XML.

1245 **last: recent** 最近的, 緊接前面的
1 **Over the last few years,**/*In recent years,* attempts have been made to identify appropriate abstractions for MASs and to...

2 Of course, this function is activated only if a transfer has taken place since **the last**/*the most recent* save action.

1246 **last: final** 最後的
1 The **last**/*final* phase of our research strategy is application development.

1247 **last (vb)** 持續
1 In this scenario, epidemic routing is not able to deliver all the messages as there is only a small buffer space and because the contacts do not **last long enough to** exchange all the messages.

1248 **launch** 發動, 開辦
1 There is certain information that attacker must have in order to **launch** each kind of attack.

2 The website was **launched** in March 2009 and provides visitors with a number of opportunities to participate in...

Related: block, prevent, resist, thwart

1249 **lay/laid** 準備, 安排, 擬定
1 The theoretical <u>foundation</u> of the concurrency expressed in modern programming languages was **laid** in the late 1960s.

1250 **lead to: route** 指向

1 The focused crawler strategies focus on on-topic documents and hyper-links, or those that are likely to **lead to** on-topic documents.

1251 **lead to: indirect reason-result** 導致

lead to—243/*mill.* is one of the most common cause-effect verbs. It introduces the indirect logical outcome of a reason-result (i.e., why it is so) relation. It typically introduces results that are neutral or negative.

1 Playing with matches **[indirectly] leads to** fires **[negative result]**.

In the following example there is an indirect reason-result relationship between *memory leaking* and *program crashes.* It is indirect because a third factor intervenes, *exhaust(ed) memory resources.* This indirectness is signalled by the choice of *lead to.*

Example 1

1 Memory leaking **[reason]** is a software bug that can exhaust system resources **[intervening factor]** and ultimately **lead to**/*cause/result in* **[result]** program crashes.

i.e., *memory leaking is an indirect <u>reason for</u> program crashes.*

1252 **lead to: indirect or direct causation?**

Readers may notice that in the example in the previous article, the verbs *cause* and *result in* are provided as synonyms for *lead to.* Yet *cause* and *result in* usually indicate <u>direct</u> causation. So how can this be?

The reasoning is grammatical. If we take the view that we are talking about a chain of causation一連串的事件—then *lead to* (indirect cause) is pointing to *memory leaking* the subject of the preceding clause, as the (indirect) initiating cause of *program crashes.*

Or we may say that the verbs *cause* and *result in* (direct cause) are referring to the the entire preceding noun phrase—including the relative clause *that can exhaust system resources*—as one unit, and so the cause-effect relation has two elements, not three, and is thus direct. It is a matter of interpretation.

A similar situation is seen in the following, using the same example, where using a non-defining clause with *which* means that *a software bug that can exhaust system resources* is the subject of *cause,* and so signals that it is the direct cause of *program crashes.*

Alternative 1a

1 Memory leaking is a software bug that can exhaust system resources **[reason]**, *which* **causes/results in** program crashes **[result].**

Alternative 1b

2 Memory leaking is a software bug that can exhaust system resources **[reason]** *and* **causes/results in** program crashes **[result].**

Related: give, offer, produce, provide, yield vs lead to, result in

1253 lead to: cannot be used in the passive

lead to cannot be written in the passive, i.e., ~~is led to~~. One way to change information order or the order of a reason-result relation sentence is by using phrases such as *the source of, the reason for, the result of, the outcome of, a cause of.*

Example 1

1 **One reason for/One source of** software crashes **[result]** is memory leaking, a software bug that can exhaust system resources.

Alternative order 1

2 Software crashes **[result]** are **the result of/ an outcome of** memory leaking, a software bug that can exhaust system resources.

Like *lead to, cause* and *result in*—in a cause-effect pattern—typically introduces negative effects or results but unlike *lead to, cause* makes a strong claim of direct causation. So if used as a substitute for *lead to*, *cause* should be hedged, e.g. with *can, may, perhaps, possibly, typically.*

Example 2

3 We have seen that extreme parameter values **lead to**/*are a source of* **excessively noisy and sparse feature sets**.**[result]**

Alternative order 2

4 **We have seen that excessively noisy and sparse feature [result]** sets **can/may** *be caused by* extreme parameter values.

1254 lead to: not means-result

lead to signals an indirect reason-result relation. To signal means-result, we would use *give, obtain, provide, produce.*

Example 1

1 We will now describe discuss how UBCC combined with proposed versioning scheme **[means: a tool or method]** ~~leads to~~ **produces [result]** fast full-version retrieval queries.

1255 least: at least 至少

1 All of these visualization techniques were applied **at least**/*a minimum of* 25 times.

Related: at most, no more than

1256 leave aside 不考慮

1 The consideration of themes cannot **leave aside**/*ignore* semantic issues.

Related: fail tor

1257 **leave out: omit** 省去

1 Finally, for convenience of notation, the specifier **leaves out**/*omits/does not include* the values for some or even all locations.

1258 **leave unchanged: does not change**

1 Of course, processing N in this way decrements counter if X 24N and **leaves** counter if X 6N **unchanged**.

1259 **left to (leave to)**

1 The details of how load shedding is carried out **are left to**/*decided by/ the responsibility of* the in-operator load shedder, which may choose to retain all unexpired tuples within its join windows.

1260 **legitimate** 正當的, 合理的. 合法的

1 The continuing massive growth of networks means that ISPs must cope with both more **legitimate traffic** and more malicious attacks.

1261 **less: the less...the more, etc**

1 Intuitively, **the less** entropy that this set has, **the higher** the compression rate that can be achieved with DWT.

1262 **less than** 比....還少

1 Except when there is strong interreflection, the degree of polarization is always equal to or **less than**/*lower than* the expected value.

Related: below, under

1263 **less...than: not as much...as**

less...than and *not as much ...as* are essentially equivalent.

Example 1

1 FindMesh searches for relationships between measurements in different clusters and so may not discover **as much** variation as AllMesh.

Alternative wording 1

2 FindMesh searches for relationships between measurements in different clusters and so may discover **less** variation **than** AllMesh.

Related: at least, at most, close to, more than, compare-phrases

1264 **lessen** 變小, 變少, 減輕 使變小, 使變少, 使減輕

lessen and *reduce* are transitive verbs. In other words, they both require a direct object. i.e., something has to be *lessened* or *reduced*.

1 Obviously, the creation of new versions **lessens**/*reduces* the usefulness of existing pages. **[direct object]**

Related: Part 1: trends: verbs for talking about change and trends: decline, drop, fall, increase, lower, raise, reduce, rise, clauses: four basic patterns

1265 **let vs allow and permit**

Most causative verbs allows us to omit the agent object and have a nominalization as object (the semi-causative pattern). However, *let* cannot. If we wish to omit the agent object after *let*, we can use *allow* or *permit*.

> Example 1
> 1 DHD **lets users program** a wide array of action groups that can launch at a specific time or in response to specified variables and sequences.

> Alternative wording 1
> 2 DHD **allows/permits** the programming of a wide array of action groups that can launch at a specific time or in response to specified variables and sequences.

1266 **leverage (vb)**

See: use: the use-family verbs, by means of

1267 **liable to: have a tendency to** 易患...的, 易...的

In this example *liable to* means "have a tendency to" or "are vulnerable to". What follows is often negative.

> 1 Examination of the retinas of diabetic patients is a time consuming process and very much **liable to**/*prone to/subject to* human error.

The use in the following example of *likely* is informal (口語的).

> 2 Therefore, the attribute Salesman is more **liable**/*likely* to be a foreign key if it is supported by an index.

Related: prone, tend, tendency, vulnerable

1268 **lie in (differences)** (事情)在於, (錯誤等)發現於

> 1 All three techniques did well. **The main differences lie in**/*were in/resided in* how much data was to be collected and...

1269 **lie on (can be found on)** 位於

> 1 In our experimental arrangement the two pixels of any given pair **lie on**/*fall on/are found on* the same horizontal line.

1270 **like (vb)** 喜歡

The meaning of *would like* in this example is "it would please us". The use of *would* is not really conditional. This is just a set phrase.

> 1 The authors **would like** to thank the referees for their valuable comments and suggestions.

Related: acknowledge, appreciate, due to: thanks, grateful, gratefully, thank (vb), thanks (n)

1271 **like: for example** 像, 如
1 This has informed subsequent attempts to clarify and formalize the semantics of associations like/such as/for inst*ance/for example* aggregation [1] and multiplicity [9].

1272 **like: similar to** 像, 如
1 Another threat to the generality of our results is that, **like**/*similar to* most of the existing literature, we considered only...

2 **Like/As in** all empirical studies, the evaluation of our techniques suffers from various threats to validity.

Related: different, different from, identical, like, same, the same as, similar, unlike

1273 **likely** 很可能的
1 Participants were asked to rank the hazards on a scale of 0 to 100—where 0% = no chance and 100% = certain to happen (100% chance). They were also asked to select from a list of natural language estimates of 1) **no chance** 2) **very unlikely** 3) **unlikely** 4) **moderately likely** 5) **likely** 6) **very likely** 7) **certain to happen**.

Related: chance: possibility, probability, likelihood, chance: opportunity

1274 **likely to** 有(做...)的可能
1 We may suppose that information about such personal preferences is *more/less* **likely** to be relevant to the way someone uses a location-aware application.

1275 **likely: it is likely that** 很可能的
1 It is **highly likely that**/*probable that* the method would have difficulties with larger meshes with numerous unknown spring coefficients.

1276 **liken** 把...比作
1 This process **can be likened to** Shneiderman's [4] "visual information-seeking mantra: "overview first, zoom and filter, then details-on-demand"

Related: alike, identical, like, same, the same as, similar, unlike

1277 **likelihood** 可能, 可能性

likelihood refers to the ideas of possibility and probability. Unlike the word *chance*, it carries no connotation of "luck".

1 In this approach, rule truncation and tree pruning were used to reduce ~~any chance~~ **the likelihood of**/*probability of* over-fitting.

Related: chance

1278 limit (n) 限度, 限制, 極限
1 As shown in Figure 6, we added processes until the CPU usage approached the 200% **limit**.

1279 limit (vb) 限制, 限定
1 However, the usefulness of a Web as a repository of human knowledge is **limited by**/*restricted by* our ability to effectively access it.

1280 limited (adj) 有限的
1 However, all these methods have had only **limited success**.

1281 limited to: scope 不多的

limited to introduces the scope of a limitation

1 The selected language is independent of the firewalls and routers but it **is limited to**/*applies only to* packet filtering.

2 Credentials in that system are **limited to verifying**/*are restricted to verifying/can only verify* membership of a group or a role,...

1282 line: in line with 與...一致
1 **This is in line with**/*This accords with* our intuition that the third direction of the join is more valuable than the others.

1283 list (vb) 把...編列成表, 把...編入目錄 , 列舉
1 Table 6 **lists** the input parameters which were used to identify....

Related: chart, display, illustrate, show

1284 locate 探出, 找出

1285 long: as long as 只要

See as: as long as: condition

1286 long: so long as 只要

See as: as long as: condition

1287 long: how long it takes...to 長時間, 長時期
1 Fig. 3 shows **how long it takes** each of the two strategies **to** packetize the XDUs.

Related: time: take time

1288 longer: no longer

See no longer

1289 look: look like 看起來像... (一樣)
1 Activity diagrams **look like**/*are similar to/resemble* flow charts.

1290 **lower and raise (vb)** 放下, 降下, 放低

lower and *raise* are transitive verbs. That is, they both require a direct object.

> 1 Strengthening trace information by providing more proximal cues **lowers** the costs associated with information access.**[direct object]**

> 2 Obviously, the creation of new versions **lessens**/*reduces* the usefulness of existing pages. **[direct object]**

See also: Part 1: trends: verbs for talking about trends, lower, raise, reduce—decline, drop, fall, rise—decrease (as), increase (as), diminish (as)

1291 **lower (than) (adj)** 較低的

The adjective *lower* makes a comparison. The comparison may indirect (*lower*) or direct (*lower than*).

> Indirect comparison
> 1 Knowledge sharing under global time-management allows all of these tasks to be carried out **at a lower cost. [lower than what?]**

> Direct comparison
> 2 Knowledge sharing under global time-management allows all of these tasks to be carried out **at a lower cost than previously.**

See below, less than, lower than, under, comparison: direct and indirect

1292 **made up of**

made up of introduces a complete list. The relation is whole-part.

> 1 The United States **[whole] is made up of** fifty states. **[parts]**

> 2 The best trade-off between the segmentation result and the processing time is achieved by using images **made up of**/*composed of/comprising/ consisting of* about 50,000–100,000 pixels.

> 3 Our experiments use the same eight two-class benchmark datasets used in [14,24]. Each dataset is randomly partitioned into 100 parts with each ~~including~~ **being made up of** four subsets: training, training label, testing, and testing label.

> 4 A data warehouse system is **made up of**/*is composed of/consists of* a server, network hardware and client hardware.

made up of has no active voice use, i.e., *The system ~~is make up of~~*. To reverse the relations in the clause we can use *constitute.*

Related: composed of, comprise, consist of, consist in, constitute, contain, encompass, entail, include, incorporate involve, made up of, make up

1293 **maintain (store)** 維持, 保持, 使之繼續
    1 The dispatcher **maintains**/*keeps/has* a list of applicants registered for each event, and when it receives an event, it passes it on to...

1294 **maintain (opinion)** 堅持, 主張, 斷言
    1 Up to this point we have **maintained**/*said/argued that* the key to good separation results are sparsity and...

1295 **maintain (upkeep)** 維修, 保養
    1 In mobile environments, delays in route discovery can make it harder to establish and **maintain** routes.

1296 **majority** 多數, 過半數, 大多數
    1 To date, **the vast majority of**/*most* such network applications have relied on high availability assurance of a kind which...

1297 **make sure, make certain** 查明, 設法確保, 確定
    1 Push-style assignment is suitable when users have different competences, and can be used to **make sure**/*make certain/ensure/guarantee* that all users have an equal chance of...

1298 **make it + adj + to** 使得, 使...做....
    1 Fusing the two maps with the "OR" logic operation **makes it possible/impossible/easy/hard/etc to** obtain a more robust vessel map.

    2 Web Ontology Language (OWL) extends RDF(S), **making it easy to** express meaning and semantics.

Related: preparatory object it

1299 **make it + adj + for + to** 使得, 使...做...
    1 These kinds of treemaps **make it possible/easier/etc for** users **to** browse large data sets.

Related: it: pronoun: preparatory object

1300 **make this possible by** 使...變得有可能
    1 The multicast communication scheme and the server's data-push approach **makes this possible by** permitting concurrent...

1301 **make up** 構成.
*make up—<1/mill.—*introduces a list that is complete. The relation is part-whole.

    1 Fifty states **[parts] make up** the United States. **[whole]**

    2 Popular queries and query terms **make up**/*comprise/constitute* only a small portion of the total query stream and in fact...

make up has no passive voice use, i.e., *The system ~~is made up~~*. To reverse the relations in the clause we can use *composed of, comprise,* and *made up of*.

Related: composed of, comprise, consist of, consist in, constitute, contain, encompass, entail, include, incorporate involve, made up of, make up

1302 **make up for** 補償

1 Using supervised machine learning to generalize from manually labeled queries does improves coverage but cannot **make up for**/*compensate for* inadequate coverage of vocabulary.

1303 **make use of** 利用

See use: the use-family verbs and phrases

1304 **many: not many vs few** 不太多的 vs 很少數的

1 We did consider ThinkPad but **not many**/*few* other programming-by-demonstration languages.

1305 **marginal** 微小的, 不重要的

1306 **marginally** 少量地, 最低限度地

1 It should be noted that some words may be only **marginally**/*barely/just* topical, in which case their inclusion...

Related: about, approaching, around, close to, exactly, more or less, nearly, precisely, roughly

1307 **mask** 掩飾, 偽裝, 遮蔽

1 A further drawback of simple ranking is that it **masks**/*conceals/hides* significant gaps in relative performance.

1308 **match (n)** 相配者

1 Face image and face depth biometrics are correlated, as a good **match** in one predicts a good **match** in the other.

1309 **match (vb)** 比較, 使...成對, 使...相配

1 Finally, the system should optimally **match**/*be consistent with* the performance curve achieved by the service replication.

Related: according to, agree with, correspond to

1310 **matter (n)** 事態, 情勢

1 There is no doubt that **this complicates matters**/*this makes the situation more difficult* because it requires us to...

1311 **matter: to be a matter of** 事情, 問題, 事件

1 In such a system, extending the privileges of an existing user **is simply a matter of**/*simply involve*s issuing a new id.

1312 **matter: as a matter of fact** 事實上

as a matter of fact emphasizes the truth value of a clause or part of a clause.

1 **As a matter of fact**/*in fact*, the results for TT-DA are comparable (and, in most cases superior) to those of parameter-laden algorithms.

Related: actually, certainly, clearly, in fact, indeed, obviously, of course, really, undoubtedly, semantic relations: truth and validity

1313 **matter (vb)** 有關係, 要緊
1 The efficiency of the space usage in the source model **matters as much as it does**/*is as important as it is* in the containers.

1314 **matter: does not matter** 沒有關係, 不要緊
1 Although the header information is not entirely reliable, it is the best available and a little variation **does not matter**/*is not important*.

1315 **matter: no matter** 無論...
1 **No matter how**/*Notwithstanding how* these flow intensities change with user loads, the equations of the flow intensities are always constant.

1316 **maximally** 最大地, 最高地
1 Intuitively, the less entropy that this set has, the higher the compression rate that can be achieved. Consequently, DWT prefers coefficients with **maximally similar absolute values**/*absolute values that are as similar as possible*.

1317 **maximize** 使...增加至最大限度
1 The I/O time savings come from **maximizing the number of**/*having the maximum number of* concurrent tips that...

Related: minimize

1318 **may vs might**
See Part 1: modal verbs: possibility: may and might

1319 **mean (that)** (言詞等)表示...的意思
mean (that) signals grounds-conclusion. It introduces a confident claim of knowledge: *suggest that* (weak) > or *indicate that* (stronger) > *mean that* (strongest).

Example 1
1 The fact that HTTP consists of bursty traffic **means that**/*tells us that* a connection has alternating active and idle periods...

Alternative wording 1
2 **From** the fact that HTTP consists of bursty traffic, **we know that/we conclude that** a connection has alternating active and idle periods...

Related: conclude that, find that

mean: by...we mean (that) 我們是指....意思
1 **By "total" we mean that** each state must register an outgoing transition for each event in the table.

1320 **means (n)** 手段, 方法, 工具
1 Furthermore, **this provides an effective means to**/*method/way* to automatically check specifications against an implementation.

2 The development of meta-CASE technologies **provided the means**/*resources/tools* to customize software design...

1321 **means: by means of** 用, 以

See Part 1: use: the use-family verbs and phrases

1322 **meant: is meant to: intended to** (言詞等)表示...的意思

1 Candidate answers then pass through a series of coarse-grained filters that are **meant to**/*intended to/designed to* remove...

1323 **meantime and meanwhile: do not mean "in addition" or "also"**

The words *meantime* and *meanwhile* are not synonyms for *in addition*. They have no uses in computing research writing and are more normally used in storytelling to signal temporal overlap.

1324 **mention** 提到, 說起

A *mention* is a brief or short reference or comment.

1 A very large amount of work has been done in the fundamental areas of text classification and query understanding, **so we can mention here only** a fraction of the potentially relevant work. In particular, we will focus on...

2 As **mentioned above**/*noted above/remarked above/As previously mentioned/noted/remarked*, poor worst-case insertion times make...

3 As previously *mentioned/noted/remarked*, poor worst-case insertion times make...

4 Ten theories were tested and the three theories **mentioned** in [22] were refuted, as they were not supported by...

Related: comment, describe, discuss, note, observation, observe, refer to, remark

1325 **merely** 提到, 說起

1 Several types of risk factor scales were used to avoid the possibility that one scale would perform better **merely**/*just/simply* because...

Related: only

1326 **metric** 公尺的, 公制的

Related: criterion

1327 **mind: keep/bear in mind that** 把...記在心

1 At the same time, **we should keep/bear in mind that** there is an inherent trade-off between cohesion and coupling.

Related: bear

1328 **mind: with...in mind** 把....記在心

1 Initially, users may start a visual analysis task **with** only vague task-goals **in mind**.

2 Corporate (and other) networks are rapidly increasing in size and being used in increasingly more complicated ways. **With this in mind,** the proposed system must be able to handle...

1329 **minimal (adj)** 最小的, 極微的 最低限度地

1 The cost of setting up the testgraphs for the case study was **minimal/** *small*, requiring less than one person-day of effort.

1330 **minimally** 最低限度地

minimally specifies a smallest requirement or effect.

1 Architecture description languages **must minimally provide** methods for describing...

1331 **minimize** 使...減到最小, 使...縮到最小

1 Network requirements are **minimized**/*kept to a minimum* by caching objects at the clients.

Related: maximize, reduce

1332 **minimum** 最小量, 最小數, 最低限度

1333 **misleading** 使人誤解的, 騙人的, 迷惑人的

1334 **miss: overlook**

1 Because this procedure focuses on simplicity and efficiency, it can **miss**/*overlook/fail to find* some valid matchings.

1335 **miss: opportunity**

1 Although they may **miss**/*fail to take* **the opportunity to** buy the item at a low price ...

Related: opportunity

1336 **missing** 缺掉的

Related: absent, available, lack, present

1337 **mitigate** 使緩和, 減輕

To *mitigate* a problematic situation is to soften or lessen its negative affects.

1 A further advantage of dividing a partition into multiple levels is that it reduces the number of bytes transferred and so **mitigates**/*lessens the impact of/reduces the impact of* the costs associated with...

Related: good change: alleviate, ameliorate, benefit, benefit from, enhance, enjoy, improve, mitigate, **bad change:** affect, aggravate, burden, damage, degrade, deteriorate, exacerbate, harm, interfere with, suffer from, undermine, worsen

1338 **modify** 更改, 修改

1 While this method can detect most of the injected failures, it still has to **modify**/*make changes to* the middleware to…

Related: alter, become, change, vary

1339 **monitor (vb)** 監控, 監聽, 監測, 監視

Related: control, govern, manage, supervise

1340 **more and more (adv)** 越來越

1 With the recent growth in the complexity of systems, we have also seen more support for **more and more**/*increasingly* abstract concepts in programming languages and environments.

1341 **more or less (adv)** 多少有些, 大約

more or less reduces the force of an adjective.

1 All the curves fall **more or less** steadily as mobility increases.

Related: about, approximately, around, enough, quite, rather, sufficiently

1342 **more: the more…the more…** (由於...)越發, 更加

1 Essentially, **the more** minutiae, **the more** likely we are to make a correct identification so in this approach we…

1343 **moreover: a reinforcing reason** 並且, 加之, 此外

moreover signals an additional reason that <u>reinforces</u> a preceding reason. Thus, in the following example, <u>both</u> reasons support the same assertion, that *This is not desirable*.

1 <u>This is not desirable</u> **as [first reason]** the developer may have to inspect quite a long list of results and, **moreover**, **[second reason]** there is no guarantee that the services can be composed in a semantically meaningful way.

1344 **most: at most** 至多

1 Typical path conditions may have fewer than one hundred or **at most**/<u>not more than</u> a few hundred conjunctions and…

1345 **motivate** 給...動機, 刺激, 激發

1 Physical constraints such as heat dissipation and power consumption **have motivated** CPU manufacturers to produce chips with multiple CPU "cores" chip rather than just one fast core alone.

Related: Part 1: cause-effect and reason-result verbs **Part 2:** account for, attribute to, drive, explain, inspire, motivate

1346 **motivated by** 使...緩和, 減輕

Example
1 The choice of Oracle 7 as the relational database was **motivated by** a number of factors.

Alternative wording
2 There were *a number of reasons for* choosing Oracle 7 as the relational database.

Related: inspired by

1347 **motive** 動機, 主旨, 目的
1 Another motive/reason for sites to restrict crawler traffic is to prevent their content being mirrored elsewhere.

1348 **multiple** 由許多部分組成的, 複合的, 多樣的
1 **Multiple** factors can influence the compression and querying performances.

Related: single, individual, numerous, various

1349 **must** 必須, 得

See have to v must, have to: do not have to vs must not

Also see: modal verbs: motivation and impetus: must, have to, need to, should

Related: need, require, must, have to, should: meaning/grammar

1350 **must be vs require**

Example 3
1 Finally, to evaluate the outcomes of state propagation, every state associated with the final node **must be examined** by us.

Alternative order and wording 3
2 Finally, evaluating the outcomes of state propagation **requires** us **to examine** every state associated with the final node.

Related: text-types: instructions: allow, can, let, you, and user manuals

1351 **narrow (adj)**
1 In Section 2.1 we provide **a narrow definition of** semantic Web services that suits our own present purposes. For **broader definitions** of this concept, the interested reader is referred to [1].

1352 **narrow (vb)** 使...變窄,限制, 縮小 (範圍等)
1 The use of the Boolean value AND **narrows** the search by requiring that the results of a search match both criteria. The use of the OR value OR **broadens** the search by...

Related: broad, wide

1353 **nature: by its nature** 天性地, 固有地
1 Obviously, because midrange cache size is **by its nature**/*inherently* application dependent...

Related: inherently, intrinsically

1354 **near (adj)** 近的

Related: close (to), vicinity: in the vicinity of

1355 **near (vb)**

1 As the number **nears**/*gets nearer to/approaches* 50, more emails are sent to more users and more conversations are...

Related: proximity, vicinity

1356 **nearby (adj)** 附近的

1 In the simple flooding scheme, a sensor broadcasts data messages to **nearby** sensors, which keep them in queue and...

Related: adjacent, contiguous, neighbouring, proximity, vicinity: in the vicinity of

1357 **nearly** 幾乎, 差不多

1 The algorithm also employs an agent-based heuristic that makes it efficient and capable of obtaining **nearly**/*almost/close to* optimal solutions.

Related: about, approaching, approximately, around, exactly, more or less, precisely, roughly

1358 **necessarily: not necessarily: not have to**

(不)必定, (不) 必然地

not necessarily emphasizes that alternatives <u>do</u> exist. It is equivalent to *do not have to.*

1 Unlike stream throttling, operator throttling **does not necessarily**/*does not have to* drop tuples as they arrive from incoming streams.

1359 **necessary** 必要的, 必需的

Related: basic, critical, crucial, essential, fundamental, important, must, require, vital

1360 **necessary: it is necessary to/for/that**

it is necessary can be a substitute for *have to, must,* and *require.* In the theme of a sentence or clause, it emphasizes *requirements.* It also pushes other, perhaps "new" information out of "given" position and into a later, more in-focus position in the sentence.

In the following examples, notice how the original topic of the clause (underlined) moves later in the sentence and the idea of 'requirements' becomes the topic.

1 **it is necessary to + verb**

Example 1

1 In the hierarchical approach, <u>a path in the taxonomy tree</u> **must/has to be traversed** all the way from the root to the target node.

Alternative order 1

2 In the hierarchical approach, **it is necessary to traverse** <u>a path in the taxonomy tree</u> all the way from the root to the target node.

2 **it is necessary for + noun**

Example 2

1 At some stage in the manufacturing pipeline, the protocol **must/has to/ is required to request** a reduction in the speed of items.

Alternative wording 2

2 At some stage in the manufacturing pipeline, **it is necessary for** the protocol **to request** a reduction in the speed of items.

3 **it is necessary that + clause**

Example 3

1 In the presence of competitive and self-interested behavior, the adopted structure **must/has to/is required to** not only respect the organisational rules but also...

Alternative wording 3

2 In the presence of competitive and self-interested behavior, **it is necessary that** the adopted structure not only respect the organisational rules but also...

Related: it: preparatory subject

1361 **necessary: the necessary (adj)** 必然的, 無法避免的

1 If a server cannot properly handle Chinese domain names or is not configured with **the necessary**/*the required* domain name,...

Related: have to, must, need, require, should

1362 **necessitate (that) (vb): require**

necessitate is used causatively to mean "make it necessary for someone or something to do something". Its causative pattern is *necessitate that.*

Example 1

1 Any shift from the minimal-coupling to high-cohesion would **necessitate that** /*require* that collaborating parties cooperate more closely.

It can be rewritten as a semi-causative (omitting the agent object)

Alternative 1: as a causative

2 Any shift from the minimal-coupling to high-cohesion would **necessitate**/*require* closer cooperation between collaborating parties.

The same idea can also be expressed as *make it necessary.*

Alternative 2: make it necessary

3 Any shift from the minimal-coupling to high-cohesion would **make it necessary for** collaborating parties to cooperate more closely.

1363 need, require, must, have to, should: meanings

As verbs, *need, have to, must, require,* and *should* refer to three main areas of meaning.

1. They refer to *motivation* or *impetus*
2. They identify whether the motivation is

   a) *real* or *hypothetical* or

   b) *internal* or *external* (or this information is not relevant)

3. They identify the agent as either the *source* or the *receiver* of the motivation

1 need

real, internal motivation. The agent is both the *source* and the *receiver* of the motivation.

Note however that in computing—and in informal speech—*need* is also often used to refer to external motivation. (See Part 2: *need: inanimate objects*)

> 1 Finally, **we [internal motivation] need** to be able to resample the shapes into identical point distributions.

2 require

real, external motivation. The agent is *source* of the motivation.

> 1 **Implementing the supervised detector [source of external motivation] requires** the calculation of the initial values of the correlation.

3 must, have to

real motivation. *must* and *have to* do not indicate whether the motivation is internal or external. The agent is the *receiver* of the motivation.

> 1 To avoid this, **we [receiver of motivation] must/have to** first determine when the two databases are equivalent.

4 should

hypothetical motivation: *should* does not indicate whether the motivation is internal or external. The agent is the *receiver* of the motivation.

> 1 If the display exhibits overplotting, **users [receiver of hypothetical motivation] should/ought to** be informed, otherwise they may not realize that some data is out of their view.

Related: need and require: non-typical usage, need: inanimate objects

1364 **need, require, must, have to, should: grammar**

There are big differences in the ways that *need, have to, must, require,* and *should* can be used in a sentence. As verbs, the chief criteria are

1. Whether they can be modified with a modal verb
2. Whether they can be marked for tense
3. Whether they can be passivized
4. Whether they can be used causatively

Apart from their use as verbs, we can also consider

1. Whether they can be used as adjectives
2. Whether they can be used as nouns

- *require* is by far the most flexible of all of these verbs as it easily satisfies all of these criteria except that it is not used as a noun.
- *need* satisfies the first three criteria and is often used as a noun but is seldom used causatively or as an adjective in front of a noun.
- *have to* can be modified with a modal verb and marked for tense.
- *must* and *should* cannot be changed in any of these ways.

Each of these verbs, *require, must, have to,* and *should,* is considered in more detail under their separate entries.

1365 **need (vb) (n) (adj)**

need indicates a real, internal motivation where the agent of the clause is the source of the motivation. *need* can be modified with modal verbs, marked for tense, and used in the passive.

1 Finally, **we [source of motivation] may_[modal verb] need** to resample the shapes into identical point distributions.

2 Finally, **we needed [past tense]** to resample the shapes into identical point distributions.

3 We applied a similar operation on the edgeObjects and created intermediate objects **as (they are) needed [passive voice]**.

need is seldom used causatively.

Example 1
4 Finally,_**the design** ~~needed~~ **required us to_[causative]_**resample the shapes into identical point distributions.

Alternative wording 1
5 Finally, **it was necessary to** resample the shapes into identical point distributions.

need is also seldom used as an adjective in front of a noun.

> 6 The current approach is that a developer must manually construct a web service composition that fetches the ~~needed~~ **required/necessary** data without knowing whether...

1366 **need: inanimate entities** 生活窮困

In daily life, inanimate entities are not usually thought of as having internal "needs". For example, *prices* don't have "needs". By this reasoning, the following example is not correct.

> Example 1
> 1 Figure 4 shows the price in euros at a scale factor of 1 because the WSDL file was sourced in Europe so the price **needs** to be converted and scaled in local currencies.

This might be more accurately written using *must* or *have to* (motivation is external and unnamed).

> Alternative wording 1
> 2 Figure 4 shows the price in euros at a scale factor of 1 because the WSDL file was sourced in Europe so the price **must/has to** be converted and scaled in local currencies

Nonetheless, it is common in computing and IT writing to attribute "needs" to subjects that are inanimate concepts and methods, perhaps because these can be regarded as having *motivations* that are internal to their logic, constraints, or requirements.

> Example 2
> 3 For example, the method described in [7] **needs to modify** the system middleware before it can...

Even so, as seen in the following alternatives, the use of *must* and *have to* and *require* and *involve* would all provide clearer signals of the fact that a procedure is being described.

> Alternative wording 2a
> 4 For example, the method described in [7] *must/has to* modify the system middleware before it can...

> Alternative wording 2b
> 5 For example, the method described in [7] involves/requires modification of the system middleware before it can...

Related: Part 1: need, require, must, have to, should: meanings/grammar

1367 **need: depend on, rely on** 依靠, 信賴

depend on/rely on is sometimes a more precise choice than *need*.

> 1 To date, the vast majority of such network applications have **needed** *depended on/relied on* high availability assurance...

1368 **need: need not + verb: no obligation or requirement**

need not means "there is no obligation". It suggests that a related outcome is simply an option.

1 Our testing also shows that granularity **need not**/*will not necessarily* adversely impact the effectiveness of...

2 This means it is possible to obtain the correlation coefficient from sample data offline and, so, it **need not**/*does not have to* be calculated from corpus to corpus.

This use of *need not* in this example can be replaced with all the following:

- ♦ **they do not have to be calculated** from corpus to corpus.
- ♦ **it is not necessary to calculate them** from corpus to corpus
- ♦ **there is no need to calculate them** from corpus to corpus

1369 **needless/ly**

needless + noun and *needlessly* + verb are synonyms for *unnecessary/ily*. It always refers to something negative e.g. *accidents, expense.*

1 The International Transport Workers' Federation today labelled the Port of Montreal lockout **"a needless overreaction"** and...

2 Different from most existing denoising algorithms, the use of CLEAR **makes it** ~~needless~~ **unnecessary to** hypothesize a...

3 Including object types or attributes that a user is unlikely to use as search criteria only serves to **needlessly**/*unnecessarily* clutter up the interface.

1370 **neglect** 忽視, 忽略

See ignore vs neglect, **Related:** disregard, ignore, miss, overlook

1371 **negligible** 可以忽略的, 無關緊要的, 微不足道的

A *negligible impact* is an impact so small as to be of no importance.

4 As Fig. 12 shows, the use of semistructured database techniques has only **a negligible**/*a very small impact on* the performance of...

1372 **neighboring** 鄰近的

1 The use of a physical hypercube reduces the communication cost between two **neighboring** nodes to only one hop of message transmission...

Related: adjacent, contiguous, nearby

1373 **no longer** 不再

1 As the connect operator **no longer produces**/*has ceased to produce/ has stopped producing* an output, it is also marked for deletion.

1374 **nevertheless** 仍然, 不過, 然而

Interchangeable with *nonetheless.*

1375 **none** 一點兒也沒有, 沒有任何人,無一人, 無一個

1 <u>All of these tools</u> work at a lower level, providing a good development solution for implementers, but **none (of them)** addresses business processes in a comprehensive way.

1376 **nonetheless and yet** 仍然

nonetheless is a sentence adverb. *yet* is a conjunction. Both *nonetheless* and *yet* signal the contraexpectation element in concession-contraexpectation.

1 **nonetheless**

1 Wide variation in environments and technologies makes it difficult to provide general modeling abstractions technique. **Nonetheless**, **[contraexpectation]** it is possible to develop a reasonably general approach by...

2 **yet**

1 Wide variation in environments and technologies makes it difficult to provide general modeling abstractions technique **yet [contraexpectation]** it is possible to develop a reasonably general approach by...

nonetheless may also be used with *and, yet, but,* or *so* as follows:

1 Of course the time cost does increase with the length of the chain **but nonetheless** our algorithm still performs better than the baseline.

1377 **nonetheless: position in the clause**

nonetheless can appear at the start of the clause or between the subject and verb. On rare occasions it appears at the end of the clause.

1 **Nonetheless**, our algorithm still performs better than the baselines.

2 Our algorithm **nonetheless** still performs better than the baselines.

3 Our algorithm still performs better than the baselines, **nonetheless**.

Related: although, however, still, yet, nonetheless

1378 **normal/ly** 正常的/地

1 The focus is **normally** the eye point of the camera and is controlled by the user.

Related: common, conventional, customary, familiar, normal, popular, traditional, typical, usual, well-known, widespread

1379 **not only....it also...: inversion** 不僅...而且

When a negative adverb, e.g. *not only*, is placed at the beginning of a clause for emphasis, the subject and the auxiliary verb are reversed. In the following, the subject is *this* and the auxiliary is *does*.

1 When wireless access points are placed too close together, there is signal overlap. **Not only** *does this* cause interference, (but) **it also** poses a potential security risk.

Related: Part 1: inversion: of subject-verb after certain adverbs

1380 **not only...but also...** 不僅...而且

not only...but also often suggests that the *not only* part of the relation is somehow inadequate unless the *but also* part is taken into account.

1 In the presence of competitive and self-interested behavior, it is necessary that the adopted structure **not only** respect the organisational rules **but that** it promote adherence to them.

2 **Not only** must the adopted structure respect the organisational rules, **it must also** promote adherence to them.

Related: Part 1: inversion: of subject-verb after certain adverbs

1381 **note (that)** 提到, 指明, 注意, 注目, 注意到

note (that) is very frequent at sentence-intial, where it draws our attention to something.

1 **Note that** the time dimension in these figures is represented along the horizontal axis.

But it also occurs in other positions in the sentence.

2 As van Wijk **notes**, an infovis system can, at its most simple, be a visualization of "a single bit," the smallest quanta of information [38].

3 As **noted**/*mentioned/observed/pointed out* above, custom software became important only in the late 1970s.

4 While Figure 11 shows mean response times over the entire life of the experiment, it is important to **note (that)** the peak response times are in fact much higher.

Related: comment, observe, observation, remark, **Part 1:** the imperative

1382 **notice** 提到, 談到

1 Many researchers have **noticed**/*observed/remarked (upon)* the effects of data redundancy.

Related: mention

1383 **noticeable** 值得注意的, 重要的

noticeable is a weak claim.

> 1 The impact on accuracy of closed-class filters is the smallest but the effects are nonetheless both **noticeable** and statistically significant.

Related: acceptable, considerable, dramatic, great, observable, remarkable, significant, small

1384 **notwithstanding** 儘管

> 1 Finally, the Trust-Region method is suitable for every environment, indoor or outdoor, **notwithstanding**/*without regard to* topography, manmade structures, or environmental conditions.

1385 **notwithstanding that** 雖然, 儘管

> 1 **Nothwithstanding that**/*Even though/Leaving aside the fact that* users' beliefs and expectations can change unpredictably, we believe that automatic techniques can nonetheless/still be a worthwhile complement to manual approaches.

1386 **number: a number of**

> 1 There are **a number of**/*several* rules in the conference management system that drive proper implementation.

1387 **number: the number of: how many**

The phrase *the number of* means *how many*. For example, the noun phrase *the number of index cards* would mean *how many index cards*.

> 1 In this experiment, we use Scheme 2 as it is very flexible and allows us to freely choose **the number of**/*how many* key nodes to use.

Related: Part 1: noun compounds, noun phrases, and "of"

1388 **numerous** 許多的, 很多的

> 1 A high value of K will result in **numerous**/*a large number of/(very)many* false hits but will retrieve no actual reverse nearest neighbors of q.

1389 **obey: rules, principles** 服從, 聽從, 執行, 遵守

The verb *obey* collocates with the nouns *rule, principle,* and *distribution* .

> 1 Our message scheduling approach thus **obeys**/*follows* just one simple principle.

1390 object (n): object of study vs objectives of study

objects of study are the things that we are studying 物體. The *objectives* of a study are "what we hope to achieve or find out" 目的, 宗旨.

1 In this paper, the *objects* of study **[what we are studying]** are domain name and Web services.

2 The **objective** of this approach **[what we hope to achieve]** is not to find a single suitable value but to increase the number of suitable candidates.

Related: Part 1: introductions: what are objectives and outcomes? **Part 2:** objective (n)

objective (adj) 客觀的, 如實的, 無偏見的 客觀存在的

1 Thus, a comparison of such values gives us an **objective** criterion for evaluating the results of the AT-DC algorithm.

Related: subjective

1391 objective (n) 目標的

1 The **objective**/*goal* of this approach is not to find a single suitable value but to…

Related: object (n) **Part 1:** introductions: what are objectives and outcomes?

1392 objective: with the objective of

with the objective of signals the purpose element of means-purpose.

Example 1

1 In this paper, we nevertheless adopt the latter approach **with the objective of** maximizing the life of a directional sensor network…

Alternative 1

2 In this paper, we nevertheless adopt the latter approach. **Our goal is to** maximize the life of a directional sensor network…

1393 observe: see 觀察, 觀測, 監視

1 Behavior-based detection permits the detection of patterns that have not been previously **observed**/*seen*.

1394 observe: say 說,評述,評論

1 Researchers have [18] **observed**/*noted/noticed/remarked* a correlation between the number of times an answer appears in…

Related: comment, describe, discuss, mention, observation

1395 obsolete 廢棄的,淘汰的,過時的,老式的

1 Replacing **obsolete records**/*out-of-date records* with new ones creates the discontinuities which…

Related: up-to-date, update

1396 obtain 得到, 獲得

See *"achieve, accomplish, get, obtain, carry out/perform, complete, reach"*

1397 **obviate (the need to/for)** 排除, 消除

A problem is *obviated* when changes in circumstances cause it to cease to be a problem.

> Example 1
> 1 Adapting a retrieval system to particular document collections improves retrieval quality because it **obviates**/*avoids/removes* the need to…

> Alternative wording 1
> 2 Adapting a retrieval system to particular document collections improves retrieval quality because it **makes it unnecessary** to…

Related: circumvent

1398 **obvious: it is obvious that** 明顯的, 顯著的

> 1 We will not make any general claims about the shape of such curves, as **it is obvious that**/*clearly* they vary depending on…

Related: apparent, apparently, seem:there seems/appears, seemingly

1399 **obviously (adj)** 明顯地, 顯然地

> 1 After voting, candidate answers are passed through an array of coarse-grained filters that remove n-grams that are **obviously** wrong.

Related: apparent, apparently, seem: there seems/appears, seemingly

1400 **occupy (with): busy with** 忙碌於…,從事於…

> 1 The remainder of this paper will now be occupied with/be concerned wit*h/engaged in/focus on/be taken up with* the evaluation of other types of universal quantification

1401 **occupy: position** 居 (某種地位)

> 1 The physical document has traditionally **occupied**/*held* a privileged position as the basic unit of information retrieval.

1402 occur: two meanings

The verb *occur*—415/*mill.*—is used in two different ways. In both cases, the associated phenomenon is neutral or negative.

1 occur: take place, happen, appear, arise 發生, 出現

> 1 Other authors [18] have discussed the **problems [negative] that can occur**/*arise* when…

> 2 It also often **occurs**/*happens* that users **fail to** explicitly specify a query.

2 **occur: exist** 存在

With this meaning *occur* is associated with things that are perceived as neutral or negative.

> 1 UML 2.0 specification [8] states that "an association specifies a semantic relationship that can **occur**/*exist/be found* between typed instances".

> **2** A well-known problem with multiscale image completion is that any **errors that occur**/*are found/are observed* at the coarse scale will probably also be found at the finer scales.

Related: carry out, conduct, happen, occur, take place,

1403 **offer** 給予, 提供, 拿出, 出示

offer invariably introduces something good. (For a comparison with similar verbs, see *give, offer, produce, provide, yield*)

> **1** Combining multiple flow analyses into a single flow analysis **offers the potential to improve** the precision of analyses.

> **2** XML schemas **offer an easy way to** define constructs in one schema and extend them in another.

Related: provide

1404 **omit** 遺漏, 省略, 刪去]

> **1** For the sake of simplicity, **we have omitted**/*left out/not included* explicit information about the ordering of towns in a route.

Related: discard, eliminate, delete, get rid of, remove

1405 **once**

See: after and once: given information

1406 **once: frequency** 一次, 一回, 昔日, 曾經, 一旦, 一經

> **1** When it was realized that priorities were changing too quickly, it was decided that project managers should reprioritize only **once a week.**

Related: after and once

1407 **once: at once: immediately** 馬上, 立刻

Does not occur in the corpus.

1408 **once: (all) at once: simultaneously/together**

(all) at once can mean both "simultaneously" but often suggests the idea of "as a group" or "as a whole".

> **1** The question is whether analysis should be carried out on the whole program **at once**/*at the same time* or on individual functions separately.

Related: after and once, at a time, when

1409 **one** 一個人, 任何人

Related: Part 1: personal pronouns: you and one: "everyone" and "no one in particular"

1410 **one-size-fits-all**

> **1** Yet current Web search engines take too little account of the varying needs of users and even current approaches to personalization really adopt a **one-size-fits-all** approach.

Related: custom, custom-made, customize, tailored

1411 **ongoing** 繼續下去 前進的, 進行的, 不間斷的

An *ongoing project* would be one that is currently "in progress" or "under way".

1 This case study is based on a joint **ongoing** project with our collaborators in the Chemistry Department at the University of Tokyo Department of Physics.

2 We currently have research **ongoing**/*in progress/under way* in all of these areas.

1412 **only just**

See barely, hardly, scarcely, only just

1413 **onset** 開始

1 We first focus on the application of these models to the detection of **the early onset** of a viral propagation...

1414 **open question** 一個尚未解決的問題。

1 Notwithstanding these recent successes, it remains **an open question** whether overlap segmentation would be equally accurate in a Web search setting.

Related: remains to be seen

1415 **open to** 願意接受的

Things can be "open to" *attack, challenge, interpretation,* or *question.* People can be "open to" *suggestions, new ideas,* and *approaches.*

1 Publicly accessible collaborative recommender systems are **open to**/*vulnerable to* manipulation by attackers who can...

2 Some questions, for example, "When was the first television broadcast?" are **open to interpretation.**

1416 **opportunity: collocation** 機會, 良機

The noun *opportunity* collocates with the following verbs: *arise, give, have, identify, lose, miss, offer, open up, pass up, present, provide, take (advantage of)*

See chance vs opportunity

1417 **opportunity to** 機會, 良機

1 They were *given/offered/provided (with)* **an opportunity to** participate in the experiment, which they were told would count as a class assignment.

1418 **oppose: as opposed to** 反對

1 Participant satisfaction with the openness of the process can be an important argument for using an open ascending price auction **as opposed to**/*instead of/rather than* a sealed bid auction.

1419 **opt for/to** 選擇

opt for + noun, *opt to* + verb

1 A variety of control regimes may be applied to different topologies. For instance, it is possible to **opt for**/*choose* <u>a hierarchy</u> **[noun]** where the leader coordinates the activities of the subordinates.

2 For example, a big conference may **opt to**/*choose to* <u>divide</u> **[verb]** the papers among co-chairs according to their areas of interest.

1420 **optimal** 最理想的

1 Depending on available network and CPU resources, the system typically runs 500 crawlers simultaneously. The **optimal**/*ideal* number would vary from installation to installation.

1421 **option** 選擇, 選擇自由

1 However, those who did not wish to participate were <u>given the</u> **option**/*alternative/choice* of submitting a different assignment for equivalent credits.

Related: nouns: replacement, substitute, **verbs:** exchange, replace, substitute, swap, switch, place: take the place of, **prep:** instead (of), rather (than)

1422 **optional** 隨意的, 非必須的

1423 **originally** 起初, 原來

1 This index was **originally**/*first* proposed in [6] as a way to speed up structural joins.

1424 **originate from** 發源, 來自, 產生]

1 The complexity of information systems **originates from**/*derives from/ comes from* their scale as much as from their dynamics or heterogeneity.

Related: source, the source of

1425 **ostensible/ostensibly** 外表的, 假裝的

Related: apparent, supposed, supposedly

1426 **otherwise** 否則, 不然

1 If the display exhibits overplotting, users should be informed. **Otherwise**/*If they are not (informed)*, they may not realize that some data is not visible.

1427 **ought to** 應當, 應該 該

1 If the display exhibits overplotting, users **ought to**/*should* be informed.

1428 **out of** 從(數個)裡

1 **Out of 23 respondents who provided additional comments, 11** thought that...

1429 **outcome** 結果, 結局, 後果

1 The desired **outcome** of a push attack **is that** the pushed item will be more highly ranked after the attack than it was before.

Related: abstract nouns, result

1430 **outline: of an introduction**

See introduction Stage 4: the outline

1431 **outline (n)** 外形, 輪廓, 提綱, 概要, 要點, 草案

1 Fig. 2 provides an **outline** of the proposed routing strategy.

Related: diagram, figure, plot, sketch

1432 **outline (vb)** 概述, 略述

1 Thus our approach satisfies the design goals **outlined** */briefly described/mentioned* at the beginning of this section.

1433 **outperform** 在操作或性能上)勝過

Example 1

1 Our experiments show that our approach **outperforms**/*performs better than* other sequence alignment algorithms with regard to accuracy.

Alternative wording 1

2 Our experiments show that our approach **is more accurate than** other sequence alignment algorithms.

Related: perform

1434 **over: more than**

1 For example, when we were running five concurrent crawler processes, they consumed 70% of the first CPU while crawling 500 sites concurrently, and gathering **over**/*more than/in excess of* 3.25 MB/s of HTTP data.

Related: at least, between...and..., less than, until, up to

1435 **overall (adj)** 從頭到尾的, 從一端到另一端的

1 The algorithm must then also take into consideration the effect of the change on **the overall**/*the entire* structure of the model.

1436 **overall (adv)** 總的, 全部的, 全面的

In the following examples, *overall* suggests "on average" or "after all of the results were calculated".

1 They used hill-climbing to find optimal thresholds for maximizing F1 and precision separately, submitting a run for F1 that was good for second place **overall**.

2 So **overall**/*in sum*, the complexity of the algorithm with an R-tree index is O(n log n)

1437 **overcome (vb)** 戰勝, 克服

The verb *overcome* collocates with the following nouns: *barrier, challenge, constraint, deficiency, difficulty, drawback, limitation, obstacle, problem*

1 However, specialized solutions are required to **overcome the constraints imposed by** the small form factor of mobile devices.

Related: address, handle

1438 **overlook** 看漏, 忽略

1 Such a dilation can **overlook**/*fail to see/fail to take account of/miss* some pixels on the edge of the targeted objects.

2 The ability to move and rotate representations in the workspace allows users to discover previously **overlooked**/*unnoticed/missed* aspects of the display.

Related: ignore

1439 **overly** 過度地, 極度地

1 On the other hand, **overly small Mn values**/*Mn values that are too small* may admit noisy PN examples, as can be seen...

1440 **overwhelm (vb)** 淹沒

1 To avoid **overwhelming** a user with *too much* detail, the browser initially displays only a subset of the available information.

1441 **owe: owing to** 由於

See *due to, because of, owing to, thanks to*

1442 **part: on the part of** 在...方面

Example 1

1 This requires even more effort **on the part of** users/*from users*, since they must peruse every link on the page.

Alternative 1

1 This requires **users to make even more effort** since they must peruse every link on the page

1443 **partial/y** 部分的, 局部的, 不完全的

1 This is very useful when people have only **partial**/*incomplete* information about...

2 This research is **partially**/*in part* supported by the US National Science Foundation.

Related: entirely, wholly

1444 **participant** 參加者

Related: candidate, respondent, subject,

1445 **particular, in** 特別地, 尤其 特別地, 明確地, 具體地

In particular must be preceded by a more general statement

> 1 This paper considers current strategies for the representation of multivariate data that are dependent on color mixing **[general statement]**. **In particular**, we provide a quantitative assessment of the effectiveness of color blending and color weaving.

1446 **particularly** 特別, 尤其 詳細地, 詳盡地 具體地, 明確地

particularly can modify (comment on) just a word or a whole clause. In the following, *particularly* modifes the adjective *high*.

> 1 Project 4 exhibited **a particularly high**/*an especially high* correlation between faults in the function test and faults in the system test.

And in the next example it modfies an entire clause.

> 2 The overall performance was significantly better in color weaving, **particularly**/*especially* **when more than two colors were used.**

1447 **pass (test)** (考試等)及格, 通過, 被批准

> 1 The final invariants are drawn from among those initial invariants that **passed** all seven sequential testing phases.

1448 **pass (by)** 經過, 穿過, 越過, 超過

> 1 However, the message delay can still be considerable because the vehicle travels primarily on its predetermined route and **passes (by)** nearly every node at least once before returning.

Related: traverse

1449 **pass (on/along) to** 傳遞, 傳達, 傳(球)

> 1 *When there is* no acceptable solution, a failure is reported and the case adaptation problem is **passed (on/along) to** the rule-based component.

1450 **pass up (opportunity)** 拒絕, 放棄

> 1 IBM was already manufacturing for export in India in the 1970s and could have expanded in hardware but **passed up**/*did not take (up)/did not take advantage of* the opportunity.

1451 **pass: time passes** (時間)推移, 流逝, 變化, 轉化

> 1 Based on a profile, the fetch is aborted if a certain amount of **time passes** from completion of the most recent fetch.

1452 **peak (n)** 山頂, 山峰, (有尖峰的)山

> 1 Another way to capture the dynamics of the time series is to determine how much of the probability distribution is represented in the **peaks** and how much in the troughs.

Related: steep, trough, valley

1453 **peak (adj)** 最高的, 高峰的

1 While Figure 11 shows <u>mean response times</u> over the entire life of the experiment, it is important to note that the **peak response times** are in fact much higher than the mean.

1454 **peak (vb)** 達到高峰

1 This is a Gaussian-like function, and so **peaks** in the middle and falls off to either side.

1455 **perceive...as...** 察覺, 感知

1 Human beings **perceive**/*see* colors **as** approximately constant, a phenomen known as color constancy, but...

2 The overall execution time is long but the testing is fully automated so we do not **perceive**/*regard*/*see* this **as**/*as* a major issue.

1456 **perception** 認識, 觀念, 看法

1457 **perform** (機器)運轉, (人)行動, 表現

1 In most cases considered here the total bypassing strategy **performs better than**/*does better than*/*outperforms* the partial bypassing strategy used in express cubes.

1458 **performance: the performance of** 機器等的性能, (人的)技能

1 In a scenario that takes into account only network traffic reduction, **the performance of** the dynamic programming algorithm is far superior to that of both the greedy and random algorithms.

1459 **periodically**. 週期性地, 定期地, 偶爾

1 The node **periodically** sends out a HELLO message with its own certified public key and, at the same time, collects...

Related: from time to time, regularly

1460 **permit: causative** 允許, 許可, 准許

permit—27/mill., is often very similar in meaning to *allow.* It simplifies matters to just restrict the use of *permit* to mean the opposite of *forbid* 禁止, 不許.

1 Firewalls are systems for examining network traffic between a protected network and the outside world and can either **permit a packet to pass** or <u>refuse it entry</u>.

2 The ROC curves in Figure 12 only summarize the results of this test as space limitations **do not permit**/*forbid*/*prohibit* the inclusion of all of the data.

Related: allow, enable

1461 **pertain to** 有關

1 Individual sites usually apply a single set of policies **pertaining to**/*concerned with* the location of pages that...

1462 **pitfall** 陷阱, 圈套

Related: barrier, bottleneck, drawback, hindrance, hurdle, roadblock, shortcoming, stumbling block, trap

1463 **place: in place of**

1 Work in [7] discussed the potential for applying incremental Web crawls **in place of**/*instead of/rather than* the currently approach of collecting periodic Web snapshots.

Related: replace, substitute, take the place of

1464 **place: take the place of** 代替

1 The Internet and intranets are **taking the place of**/*replacing* newspapers and the telephone as ways of communicating...

Related: nouns: alternative, choice, option, replacement, substitute, verbs: exchange, replace, substitute, swap. switch, prep: instead (of), rather (than)

1465 **plague (vb)**

A rare word (like *bedevil*). It suggests a problem that is recurring and typical.

2 Such strictly rationalist methods, in contrast, inevitably <u>suffer from</u> many of the same problems that **plagued**/*bedevilled/burdened* early NLP systems dependent on hand-crafted grammars.

1466 **plan to** 打算

1 **We plan to**/*We intend to/It is our intention to* make our system freely available to the general Web community so that...

Related: aim, goal, intention

1467 **plentiful** 豐富的, 充足的, 多的,富裕的, 豐產的

Related: ample, abundant, adequate, enough, lack of, shortage, shortfall, sufficient,

1468 **plot** 標繪, 繪製...的圖

1 Figure 9 **plots** the throughput of the crawler processes in bytes (left) and in Web pages (right).

Related: chart, display, illustrate, show

1469 **point** 要點, 中心思想

1 There are two important **points** to be emphasized here: (1) the approximation is valid only under the Assumption 1, and...

1470 **point of** 要點, 中心思想

1 Of course, calculation time is the most important metric as **the entire point of**/*purpose of/reason for* this procedure **is to** reduce it.

1471 **point of view** 觀點, 見地

1 **From a technical point of view**, this provides a stark contrast with the approach used in...

1472 **point out** 指出

We *point out—45/mill.—*something that otherwise might not be noticed.

1 Even though the accuracy in both experiments was around 50%, **we should point out that** this value represents the average of the top ten ranks.

2 **It was pointed out** in [12] that traditional scheduling would lead to long average access times in cases where the access frequencies were not uniformly distributed.

1473 **point to** 指向, 對準, 朝向]

This is the literal (照字面的) idea of "pointing to".

1 Each node has two pointers which **point to** its neighbors, clockwise and counterclockwise.

1474 **policy** 策略, 手段:

1 It may be necessary to **establish policies**/*implement policies/put policies in place* to restrict users from making...

1475 **popular** 民眾的, 大眾的

1 For example, **the most popular**/*commonly used/widely used* definition pattern is the appositive pattern and so...

Related: common, conventional, customary, familiar, normal, traditional, typical, usual, well-known, widespread

1476 **portion** (一)部分

1 Crawler page requests comprise a significant **portion**/*share/proportion/part of* traffic on the Web.

1477 **pose: a problem/threat** 造成, 引起

1 At such small numbers masking is just a nuisance variable and **poses only a minor threat** to the validity of our experiments.

2 *However, a* slight increase in the number of iterations does not **pose**/*is not a serious problem* for our approach.

1478 **pose as + (a type of) + problem**

1 Since this kind of tracking the objects may split and merge, the data association problem was **posed as a minimum weight edge cover problem.**

1479 **possess** 擁有, 持有, 具有, 佔有

We might *possess* different kinds of specific *abilities attributes, characteristics, properties, qualities,* and *skills.*

1 This framework permits the definition of a class of prefetching algorithms which **possess**/*demonstrate/display/exhibit* both path and cache awareness.

Related: demonstrate, display, exhibit

1480 **possible: it is possible to + verb**有可能的

1 The algorithms guarantee that the test synthesis method is exhaustive in that **it is possible to** synthesize a test case that invariably will reject any nonconformant implementation.

Related: make it possible to

1481 **possible: it is possible that + clause** 有可能的

1 Our system is robust but not perfect and in a few cases, **it is possible that** it will fail to detect any features at all.

See: make it possible/to/for/that

1482 **possibilities** 發展前途, 潛在價值

1 A range of encodings and interactions were developed to demonstrate **the possibilities of**/*the potential* of the mashup and...

1483 **possibility, any/the/this** 可能的事, 可能發生的事

1 Given that there is no simple way to estimate power in quasi-experiments [11], we cannot **rule out the possibility that** our results lack...

2 We use standard SQL so as to retain **the possibility**/*option* of using an alternative relation dataset.

3 Second, the tracks were assigned to distinct channels on the map so as to reduce **the possibility/**/*likelihood/chance* of overlap.

Related: option, opportunity, potential, chance: possibility, probability, likelihood, chance: opportunity

1484 **practicable** 能實行的, 行得通的

Related: feasible, practical, realistic

1485 **practical (adj)** 實踐的, 實際的

1 For most tasks it is not **practical** to view the whole IP hierarchy at once, so we may omit large parts of the hierarchy and focus just on the data of interest.

Related: feasible, practicable, realistic

1486 **practically: two uses** 幾乎, 差不多 vs 實際上, 事實上

1 Video cameras and motion sensors are nowadays commonplace in p**ractically**/*almost/nearly/virtually* every office or public place and even in many private homes.

2 In the context of offline assignment problem, this problem can be dealt with **practically**/*in a practical way* without the need to capture the entire data stream before...

1487 **practice (n)** 習慣, 常規, 慣例

1 **Standard testing practice** stipulates a number of heuristics for selecting special states, such as the interval rule.

2 However, push-button tools are the kind of instruments that are more readily accepted and deployed i**n industrial practice**, ...

Related: convention, custom, habit, practice, standard, tradition

1488 **practice: in practice** 實行, 實施, 實踐

1 In our experiments so far, we encountered no false hits and expect that **in practice** false alarms should be rare.

1489 **precaution: take precautions** 預防措施

1 **Taking these precautions** guaranteed that the clickthrough data was unbiased.

1490 **precede** 在...之前

1 In the two-stage approach, the intermediate dimension reduction stage **precedes**/*comes before* the LDA stage.

2 In the two-stage approach, the LDA stage is **preceded by**/*follows/comes after* the intermediate dimension reduction stage.

1491 **precisely** 精確地, 準確地

Related: about, accurately, approximately, around, more or less, exactly, roughly

1492 **precision** 精確(性), 精密(度), 準確(性), 確切(性)

1493 **preclude** 排除, 防止, 杜絕

to preclude is to "exclude in advance"

1 So as to **preclude** getting better results merely by chance, in this case study we have...

1494 **predictable/predictability**

See readability is predictability

1495 **preparatory it**

See: it: preparatory subject, it: preparatory object

1496 **prepositional phrases**

See fronting: prepositional phrases, fronting: false starts

1497 **prefer** 寧可, 寧願(選擇), 更喜歡

1 Intuitively, the less entropy that this set has, the higher the compression rate that can be achieved with DWT. Consequently, DWT **prefers** coefficients with very similar absolute values

2 Their study discovered that where the system supported an individual work style, users **preferred** to work individually, at least on parts of the problem.

1498 **prefer: would prefer to + verb and would rather + verb...than...**

寧可, 寧願, (與其...)倒不如, 而不是

1 Analysts **would rather**/*would prefer to* work on their own tasks <u>than</u> spend time training with graphic design tools.

1499 **preferable** 更好的, 更可取的, 更合意的

1 As a wildcard query may produce many possible matching items, it would be **preferable** to have some kind of ranking mechanism to help select relevant objects.

1500 **preferred (adj)** 更好的, 被喜好的, 優先的

1 Further, we also discuss a problem that frequently arises when it is necessary to estimate the power-law exponent from empirical data and then outline our own **preferred approach to dealing with this**.

1501 **preference (for)** 更加的喜愛, 偏愛

1 ...yet that is a very crude metric if it does not take into account affective factors such as a personal **preference for** one place over another.

1502 **preference: in preference to**

1 Because it uses the ratings of an well-matched reference group **in preference to**/*rather than* the average rating of all users,...

1503 **preliminary** 預備的, 初步的, 開始的

1 We implemented a **preliminary** version of the analyser subsystem that...

2 In the following, we present **preliminary** results from these tests.

1504 **preliminary to** 初步, 開端, 預備

1 **Preliminary to**/*Before/Prior to* defining our varied-value model-checker, we created a data structure that allows...

1505 **prerequisite** 名詞 首要事物, 必要條件, 前提

1 In both cases, Internet technology was **the prerequisite for** the new framework for transferring knowledge and...

1506 **prescribe** 規定, 指定

1507 **presence: (in) the presence of** 出席, 在場, 存在

1 Fuzzy clustering enjoys the advantages of being stable and not overly sensitive to initialization, but its performance suffers **in the presence of outliers**/*when outliers are present/when there are outliers*.

2 The drawback of this approach is that **the presence of** test cases of varying sizes would make it impossible to draw conclusions about the effects of granularity.

Related: absence, existence

1508 **present (vb): appear** 呈現, 描述, 出示

1 Their symmetry-based clustering technique [14] assigns points to a particular cluster if they **present symmetrically**/*appear to be symmetrical* relative to the center of the cluster.

1509 **present (vb): exist** 出席的, 在場的

1 The clusters **present**/*that exist* in these data sets may be symmetrical but the clusters themselves are not.

Related: absent, the absence of, the presence of,

1510 **present (vb): problems** 引起(問題), 造成(困難)

1 This is the simplest approach but the fact that it requires the local storage of all policy information at an enforcement point may **present**/*be a source of/cause/give rise to* **problems** for embedded systems.

Related: problem (n): verb collocations

1511 **present (adj): current, this** 出席的, 在場的

1 In **the present research**/*this research* we respond to this problem by....

2 At the **present**/*current* stage of development, this program is not efficient enough to process such very large word sets.

3 An exhaustive discussion of the features of this system is beyond the scope of this paper, so **for present purposes**/*here* we focus only on the animated transitions in Figures 1-5.

1512 **preserve** 保護, 維護

1 In particular, in this paper, we aim to **preserve**/*keep/retain* sharp features in the mesh while removing noise.

Related: delete, discard, omit, remove, throw away

1513 **presumably** 據推測, 大概, 可能, 想必

1 If more than ten APs are used, the accuracy does not increase significantly, **presumably** due to mutual interference.

1514 prevent: transitive verb

prevent may be used causatively (followed by an agent object) but in this example it is simply a transitive verb. That is, it is followed by an ordinary direct object.

> 1 Although the size of the buffer size can be increased to **prevent** tuple dropping, this would be at the cost of introducing delay.

1515 prevent: semi-causative 阻止, 制止, 妨礙

prevent is used semi-causatively in the following example. The direct object *the building of...* is a nominalization that can be easily written with an agent object in the causative pattern as follows:

prevent + agent object + *from* + verb + *ing*.

> 1 However, several factors, such as short time to market and lack of expertise, **prevent the building of**/*prevent someone from building* ad hoc performance models...

Related: block, hamper, hinder, impede, interfere with

1516 prevent.... from...: causative 阻止, 制止, 妨礙

> 1 The first important lesson was that teams should be the same size at every location, to **prevent** the largest team **from taking** over the design.

> 2 Specifically, support vectors (tree nodes) are allowed to grow while non-support vectors are **prevented from growing**.

1517 primarily 首要地, 主要地, 根本上

> 1 Researchers in adaptive hypermedia were primarily/principally concerned with using existing methods and techniques from...

1518 primary 首要地, 主要地, 根本上

> 1 As discussed before, the **primary**/*chief*//*main/principal* saving of the table scan operator is in memory usage.

Related: secondary

1519 principal 主要的, 首要的, 最重要的

> 1 The **principal**/*chief/main* goal of this article is to provide a detailed exposition of the various algorithmic components that...

1520 principally 大部分, 主要地

1521 principle 原理, 構造, 工作方式

> 1 Although we do not use Ajax directly, we do **apply** many of its basic design **principles**.

1522 principle: in principle 原則上

> 1 If we can extract the factors motivating the selection of the item, we should **in principle** be able to use these factors to generate....

1523 **prior knowledge** 預先學得什麼知識

See: knowledge: prior knowledge

1524 **prior to** 在前, 居先

See: before and prior to

1525 **priority** 優先權

1526 **privilege (n)** 特權, 優侍

1527 **probable** 有充分根據(但未經證實)的, 可信的

1 One **very probable**/*highly likely* reason why there was initially little work on this problem is the difficulty of...

1528 **probability**

1 Thus, if the path condition imposes few constraints on the program variables, **there is a high probability that** y influences x. However, if it imposes many constraints, then t**he probability is low.**

Related: chance: possibility, probability, likelihood, chance: opportunity

1529 **problem (n) and (vb)**

See problem verbs

1530 **problematic** 問題的, 疑難的, 不確定的

1531 **procedure** 程序, 手續, 步驟

1532 **procedure: text-type**

See text types: procedures

1533 **proceed to** 開始, 著手, 出發

1 Agents in S2 then **proceed to model**/*start to model/set about modeling* interpolation using models computed in their neighborhood.

Related: precede

1534 **proceed with** 繼續進行, 繼續做(或講)下去

1 We **proceed with** the verification using two techniques, ...

1535 **produce** 生產, 出產, 製造, 創作

produce introduces a neutral outcome or result. (For a comparison with similar verbs, see *give, offer, produce, provide, yield*)

1536 progress (n) 前進, 行進

The noun *progress* collocates with the verbs *demonstrate, hamper, indicate, make, show*.

1 Much of the **progress that has been made** in that direction has been made through multidisciplinary work based in both...

1537 progress (vb) 前進, 進行

1538 progress: in progress 進行, 進展

1 We currently have research **in progress**/*under way/ongoing* in all of these areas.

Related: current, existing, present

1539 prohibit (1) 禁止

1 In our example, hospitals can **prohibit**/*forbid* access from hospitals managed by competing healthcare providers.

Related: allow, block, permit, prevent

1540 prohibit (2) 妨礙, 阻止, 使不可能

1 The necessity of binding the matched tuple and free variable in this case **prohibits**/*prevents* the use of the copy function but does not change the semantics.

Related: block, interfere with

1541 prohibitive 過高的

1 However, as discussed below, the number of paths generated by such a naive algorithm can be **prohibitively** large.

1542 promote 促進, 發揚, 引起

1 Traditional object-based computing **promotes**/*encourages* a view of software components as either "functional" or "service-oriented" entities and this directly influences the way that...

1543 prompt (n) 提示, 提示臺詞

1544 prompt (adj) 敏捷的, 及時的, 迅速的

1545 promptly (adv) 準時地, 正(指時間)

1 In large-scale Internet services, it is essential that failures be detected **promptly** as even a single hour out of service could cost millions of dollars.

1546 **prompt (vb) (1)** 提示, 給
1 When a goal again becomes active the system initiates by **prompting/***asking* the user to make a choice.

1547 **prompt (vb) (2)** 引起, 激起
1 The high level of interaction between grouping and technique **prompted us to/***motivated us to* analyse the grouping strategy further.

Related: inspire

1548 **prone: error-prone** 易出錯
prone—<20 *mill.,* refers to probability or frequency. Equally acceptable are *mistake-prone, failure-prone,* etc., as well as *prone to mistakes, prone to erriors, prone to failure,* etc.

1 The automatic generation and management of these relationships would relieve analysts of this tedious and **error-prone** task.

1549 **prone to** 有...傾向, 易於...
prone to—refers to probability or frequency. It is always associated with negative things and activities. See the discussion at *tend to*

1 Of course human beings are **prone to making mistakes/***liable to make mistakes* and it is unlikely that a programmer will write an error-free program without going through a debugging cycle.

Related: liable, tend to, tendency

proof 證據

Related: evidence, indications, signs, support

1550 **proper** 適合的, 適當的, 恰當的
1 The problem of how to estimate **the proper/***the correct/the appropriate/a suitable* number of clusters has been widely studied.

Related: suit, ill-suited, well-suited

1551 **proposition** 陳述, 主張, 論點

1552 **proportion: in proportion to** 與...成比例, 與...相稱
1 Observe that when index loads are evenly distributed, the search cost grows **in proportion to** the recall rate.

1553 **prove that** 證明, 證實
1 **This proves that/***shows that* the method can certainly be applied to the simple case of a smooth object with basic geometry.

Related: conclude that, indicate that, mean (that), prove (that), suggest (that), support, tell us (that)

1554 **prove to be + adj** 表現, 顯示

prove to be introduces a comment on an outcome or events, usually reporting them as slightly surprising, unforeseen (未預見到的, 預料之外的) ironic (出乎意料的) or problematic. The word *prove* does not suggest formal testing.

> *1* Symbolic encoding can reduce the space and time required for model checking by several orders of magnitude but it has **proved to be very difficult to**/*turned out to be very difficult to* predict whether such reductions will be effective for a given system.

> *2* This, however, **proved (to be)**/*turned out to be* too error-prone to be useful.

Related: discover, find out

1555 **provide** 提供

provide—1363/*mill.* introduces a neutral or positive outcome or result. In contrast, *give* is typically neutral. (For a comparison with other similar verbs, see *give, offer, produce, provide, yield.)*

1556 **provide...with the ability to**

Example 1
> *1* The interaction techniques described here **provide** users **with the ability to** both directly and indirectly change and redefine representations.

Alternative wording 1
> *2* The interaction techniques described here **give** users **the ability to** both directly and indirectly change and redefine representations.

Related: offer

1557 **provided that** 以...為條件, 假如
> *1* **Provided that**/*As long as/So long as* a lane describes a single Web service, all of the control flow links traversing its borders...

Related: given that

1558 **proximity** 接近, 鄰近, 親近
> *1* The recall value is usually not very high **in proximity to/in the proximity of**/*in the vicinity of/ close to/near* this threshold.

Related: nearby

1559 **proxy (for)** 代理人, 代理權
> *1* Intuitively, the amount of time someone spends in a place can be a **proxy for** how important that place is to them

Related: represent, stand for

1560 **purpose** 目的, 意圖

1561 **purpose: the purpose of...is to...** 用途, 效用, 效果

purpose speaks to "what it is for"

1 The **purpose of** the small point placement algorithm **is to** identify a selection of evenly distributed small points inside...

1562 **purpose: on purpose** 故意, 有目的地

Example 1
1 Fig. 10 shows the results when we drop a JSP file **on purpose**/*deliberately*.

Alternative order 1
2 Fig. 10 shows the results when we *purposely/deliberately* drop a JSP file.

1563 **pursue** 追求, 向...求愛
1 When spoken dialogs are used, the system will seek to accomplish some main goal while at the same time recursively **pursuing** some number of subgoals.

1564 **put another way**
1 **Put another way**/*In other words*, AR allows similarities between X values to be weaker than similarities between Y values.

1565 **put in place**

See policy

1566 **quality (1)** 質, 質量
1 These concepts include familiarity of design, **quality** of software, and reliability.

1567 **quality (2)** 特性 品質
1 This application evaluates a suite of software **qualities**, including portability, performance characteristics, and functional correctness.

1568 **quantify** 為...定量, 以數量表示
1 Constructing fuzzy rules involves addition and removal of rules and requires a measure for **quantifying** the usefulness of a rule for a given data set.

Related: relative clauses: purposes of tools and methods: short forms

1569 **quantity** 數量, 分量
1 In practice, it is difficult to obtain the large **quantities**/*amounts* of user rating data that collaborative filtering systems require, and this is certainly a barrier to optimal performance.

1570 **question: in question** 討論中的, 考慮中的

In the following, the *candidate in question* is the candidate who is the current topic or focus of discussion.

1 This tells us that the conditional probability of a voter supporting the candidate **in question** is between 46 percent and 49 percent.

1571 **raise (1)** 增加, 提高, 提升

1 Given that such data dependences occur in very small numbers, even covering them only marginally can **raise**/*increase* the total data-flow coverage of the programs.

See also: trends: verbs for talking about trends, lower, raise, reduce—decline, drop, fall, rise—decrease (as), increase (as), diminish (as)

1572 **raise (2)** 提出, 發出

The verb *raise* collocates with the following abstract nouns: *concern, issue, problem, question, objection, topic*

1 This **raises the problem** of developing a wrapper that permits updates that satisfy a set of either explicit or implicit constraints.

2 All of these possibilities **raise interesting questions about** other uses of pair programming.

1573 **random: at random** 任意行動, 隨機過程

1 We generated the database by randomly assigning a rectangle of a **random** width and height. The lower bound of the was **chosen/selected at random**/*randomly* from within the range 0 to 0.1.

Related: arbitrary vs random

1574 **range: a range of** 知識等的範圍, 區域

1 We have now had several decades of research in the area of dialog management systems (DMS), encompassing **a wide range of** conceptual and technical knowledge...

1575 **range from...to....** (在一定範圍內)變動, 變化

1 APFD measures the weighted average of the percentage of faults detected over the life of a test suite in a **range from** 0 **to** 100, higher numbers imply faster fault detection rates.

Related: reach, up to, vary from/between...to/and...

1576 **range between...and....** (在一定範圍內)變動, 變化

1 APFD measures the weighted average of the percentage of faults detected over the life of a test suite in a **range between** 0 **and** 100, higher numbers imply faster fault detection rates.

1577 range: out of range

1 Whenever a source node generates a packet to be delivered to an **out-of-range** destination node, the source transmits...

Related: out-of-reach

1578 rank (vb) 列為...,把...分等, 把...評級

1 Using SPR, we obtained a list of entities (that is, methods and classes) and once again **ranked them according to** their relevance to a feature of interest.

1579 rare/ly 很少, 難得 稀有的, 罕見的

1 Of course, the notion of an inverse of a schema mapping is rather restrictive since a schema mapping **rarely possesses**/*seldom possesses* an inverse.

2 Of course, the notion of an inverse of a schema mapping is rather restrictive since **it is rare that**/*rarely does/seldom does* a schema mapping possesses/*possess* an inverse.

Note the auxiliary verb *does* and the subject *a schema*—are in reverse order. This occurs when they follow a clause beginning with an adverb that has a negative or restrictive meaning, like *rarely* or *seldom*.

Related: inversion, not only... **Part 1:** inversion: verb-subject after adverbs

1580 rather: quite 相當, 頗, 有點兒

rather (like *quite*) can reduce the force of what is said.

1 And again, the total number of possible cache configurations is also **rather**/*quite/somewhat* limited.

Related: enough, kind of, more or less, quite, sort of, sufficiently

1581 rather (than) vs instead (of) 反而 vs 作為替代

We use *instead (of)* is to talk about one thing *replacing* another.

1 For example, using the DLMS of the future, **instead of** downloading and working on a physical printed document**,** users will be able to simultaneously collaborate on an electronic version.

We use *rather (than)* to talk about *preferring* one thing to another. It usually occurs in parallel patterns.

2 Given that the definitional patterns contain many tokens, **we do not adopt** the pruning technique. **Rather, we employ** a statistical method to identify candidate words.

3 **It is not the purpose** of this system to provide an exhaustive survey of systems with annotation capabilities. **Rather/On the contrary, it is to** describe basic uses and features of annotations...

Also see prefer: would prefer to

1582 rationale (behind/for) 基本理由(理論基礎)

1 The **rationale behind**/*reasoning behind* this approach is that the Fisher criterion can be associated with…

2 The **rationale for** using/*The reasoning behind* the use of generic attributes is that attack profiles and authentic profiles have different statistical signatures.

Related: impetus, motivation, motive

1583 reach: arrive at destination, goal 抵達,到達,達到

1 The newly-learned decision tree classifies new instances *starting at* the base of the tree and checking whether each instance satisfies the relevant condition. Each answer *leads to* a different branch of the tree, ultimately **reaching**/*arriving at* a leaf of the tree where an assignment is made based on its class.

1584 reach + number/amount/range/limit 達到, 延伸

reach can be used to express "extent", or an "upper or outer range", often with numbers.

1 It is computationally prohibitive for any Web search engine to achieve this when the volume of queries can easily **reach**/*can be easily up to/can easily be as many as* hundreds of millions per day.

1585 reach a conclusion 抵達, 到達, 達到

See: conclusions: draw/come to/arrive at/reach…(about)

1586 reach: out of reach 拿不到的地方

1 A relay path breaks when the proxy, relay, or destination client moves *out of range*. If the next-hop relay client is then **out of reach**/*cannot be contacted*, the IEEE 802.11b MAC layer calls…

1587 readily 無困難地, 容易地

The idea of *readily* is "both quickly and easily".

1 Unlike pure knowledge-poor systems, we can also take advantage of knowledge that is **readily** available in the system.

1588 realistic 現實的, 注重實際的, 實際可行的

1 We simulated viruses by inserting "dummy" emails into an email archive using a **realistic** propagation strategy.

Related: feasible, ideal, practical

1589 reality: in reality 實際上

1 Our discussion has so far treated all sensors equally but **in reality**/*in fact* they may be equipped with different on-board instruments and their tasks may have different priorities.

Related: ideally, in practice, realistically

1590 **realize: be/become aware of** 領悟, 了解, 認識到

1 Both government agencies and large corporations **also realize**/*are also aware of/also understand* the importance of devising effective security measures for global information transfer.

1591 **realize: make real** 實現, 使...成為事實

1 We believe the key issue in **realizing**/*achieving* the vision of a community of Web users sharing resources in a dynamic ad-hoc context is resource discovery.

Related: achieve, fulfil, satisfy

1592 **reap** 獲得, 得到

The verb *reap* collocates only with the noun *benefits*.

1 These figures clearly show that there are a number of **benefits** to be **reaped**/*obtained/derived* from recording these link-tracks and inserting them alongside the results list.

Related: benefit, benefits, collocation

1593 **reason (n)**

reason—221 mill.

Related: cause (n), effect, impact (n), result (n)

1594 **reason: reason-result language**

See cause-effect organisation

1595 **reason why** 理由, 原因, 動機

1 There are a number of **reasons why** the difficulties of ERP implementation are often underestimated.

1596 **reason: for a variety of reasons**

1 **For a variety of reasons,**/*For various reasons,* the difficulties of ERP implementation are often underestimated.

1597 **reason for**

1 The difficulties of ERP implementation are often underestimated. There are a number of **reasons for this**.

1598 **reasonable** 有理智的, 有理性的,合理的

1 *We apply/follow/make* **the reasonable assumption that** Web search engines obey the probabilistic ranking principle.

2 If maximum accuracy is required, we recommend MAPLMG but if the goal is to minimize variance with **reasonable**/*acceptable* accuracy, we recommend AODE.

Related: satisfactory

1599 reasonably

1 All of this indicates that duration, effort, and correctness are all affected by PP and we can be **reasonably**/*fairly* sure that this is not simply due to chance

1600 reasoning 推論, 推理 論據, 理由

1 Applying/using the same **reasoning** as in (2), we compute the complete computational complexity as...

Related: rationale

1601 recall 回想, 回憶, 使...想起 記得

1 **Recall that**/*It was mentioned earlier that* recommendation accuracy is calculated by comparing estimated and real evaluations.

Related: keep/bear in mind, mention, remember

1602 recent 最近的, 近來的, 近代的

The adjective *recent* collocates with the following nouns: *advance(s)approach(es), development(s), effort(s), generation(s), interest (in), observations, the ~past, presentation, proposals, research, records, results, study(ies), trend(s), version(s), work, years*

1 The fundamental assumption of both methods is that *the immediate future* will be very like **the recent past**.

不久以前 : the recent past · 不久將來 : the immediate future

Related: current. of late, to date,

1603 recipient 接受者, 受領者, 接受器, 容器

1604 receive: well-received 很受歡迎

well-received means "people liked it". The meaning here is that "the community liked the functionality".

1 This functionality has been **well received** by the application's large (and highly critical) user community.

1605 recounts

See: text-types: recounts

1606 recur 再發生, 復發

1607 reduce 減少, 縮小, 降低

1 The dynamic programming algorithm **reduces** network traffic far more effectively than either the greedy or random algorithms.

See also: trends: verbs for talking about trends, lower, raise, reduce—decline, drop, fall, rise—decrease (as), increase (as), diminish (as)

1608 **reduction: a reduction in** 減少, 削減

1 At some stage in the manufacturing pipeline, it may be necessary for the protocol to request **a reduction in** the speed of items.

1609 **refer the interested reader to**

1 Full proof of this is beyond the scope of this paper. For a more complete discussion, we **refer the interested reader to**/*the interested reader is referred to* [24].

1610 **referred to as**

1 The concept of an issue graph was first proposed for feature location in [2], where features are **referred to as**/*are called/are known as/are termed* "issues".

1611 **reference: with reference to** 關於

The phrases *with reference to* should be used at sentence initial only if it introduces given information.

1 From 562 sessions we randomly selected 585 navigation trails and 20 computer scientists then assigned relevance judgments **with reference to**/*according to* a 5-point scale (values 0−4).

1612 **reflect** 反映, 表現

1 In practice, we cannot know these costs in advance, especially the hold cost, which can **reflect**/*be a function of/arise from* dynamic network conditions such as...

2 Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily **reflect** the views of the Australian National Science Foundation.

1613 **refute** 駁斥, 反駁, 駁倒

Related: disprove, verify, validate

regard as 把...視為

This is one of a group of frequent 'viewpoint' verbs that are used hedge to hedge generalizations in research, including *consider as, see as, think of as, view as.*

1 These distributed software components are/can be **regarded as**/ *seen as/viewed as* first-class objects that can be reused and combined to implement business processes.

Related: treat as

1614 **regard: with regard to** 關於

1 This may be because when the function is nonlinear, effects seen in one or a few of the streams may be misleading **with regard to**/*with reference to/with respect to/about* the global picture.

See concerning: at given position, in terms of

1615 **regardless of** 不注意的, 不留心的, 不關心的
  1 The simulation results show that the proposed scheme performs well **regardless of**/*without regard to/irrespective of* the call-to-mobility ratio.

1616 **regular/ly** #有規律地#定期地, 定期地
  1 This process is repeated **regularly**/*on a regular schedule/on a regular basis/at regular interv*als/at set times/according to a schedule to keep track of current user preferences.

1617 **relate to** 符合
  1 Some of this information about the results list URLs was used in deciding on their rankings, which should reflect how well the pages **relate to**/*correspond to/match* the user's current query.

  2 Note that the performance of the scheme is also **related to** factors such as the current speed, intended speed, and the number of nodes deployed.

Related: involve

1618 **related (adj)**有關, 涉及
  1 Most research in QoS for wireless networks has focused on resource utilization and the management of call dropping probabilities, but there has been some attention given to **related** issues such as adaptation [11], [12].

Related: participles: as adjectives: advanced, developed, increased, **Related**

1619 **relatively** 相對地, 比較而言
  1 The differences between these three metrics are **relatively** small so, unless otherwise specified, we use the infinite window metric.

1620 **reliable** 可信賴的, 可靠的, 確實的

1621 **reliant on** 依賴的, 依靠的
  1 Unlike mainframe users, users of the newly-invented PC were retail users who were **reliant on**/*relied on/were dependent on/depended on* product software.

1622 **relieve** 緩和, 減輕, 解除
  1 On the other hand, a policy of occasionally choosing the least active partition can **relieve**/*alleviate/mitigate/reduce/lower* the cost of having memory associated with...

Related: lessen

1623 **rely on** 依賴, 依靠
  1 A number of techniques that **rely on**/*depend on* this technique for watermark embedding operate directly on...

Related: depend on, use: the use-family verbs and phrases: make use of

1624 **remain + adjective: no change** 保持, 仍是

1 While in these results the number of inner CG iterations does increase slightly, it **remains**/*is still* low.

Example 1
2 Third, the training error of the current classifier is zero and both the sample weights and the classifiers in the succeeding iterations remain **unchanged**.

Alternative wording 1
3 Third, the training error of the current classifier is zero and there is **no change in** either the sample weights ~~or~~ the classifiers in the succeeding iterations.

1625 **remain: are still, are yet** 留待, 尚待

Example 1
1 However, there **remain**/*are still* a number of important issues to be studied.

Alternative wording 1
2 However, a number of important issues **remain**/*are yet* to be studied.

Related: nonetheless, still

1626 **remainder** 剩餘物, 其餘的人

1 For the **remainder**/*rest* of the paper, we refer to this method as per-frame computation.

See remaining

1627 **remaining (adj)** 剩餘的, 剩下的

1 Each data set is randomly divided into two parts: 80% for training and **the remaining 20%**/*the remainder* for testing.

1628 **remains to be seen**

If some fact or outcome *remains to be seen* then we will not know the truth about it until some time in the future.

1 In fact, *for all we know*, this problem cannot be solved. There may be a class of schema mappings that develop such that much of this complexity does not arise, **but that remains to be seen**

1629 **remark(s) (n)** 言辭, 談論, 評論

1 The authors gratefully acknowledge support from DOE grant, DE-G D63-04-NB3427. We also thank the anonymous referees for their very insightful and constructive **remarks**.

Related: comment, mention, observe, state

1630 **remark (vb)** 談論, 議論, 評論

1 It was also **remarked**/*observed*/*pointed out* that an emphasis on reuse implied an emphasis on portability, modularity, and maintainability [Wegner 1984].

2 In fact, as **remarked**/*mentioned*/*noted*/*observed*/*pointed out* earlier, a VEG specification is similar to a grammar where the syntactic aspects are complemented with semantic functions.

1631 **remarkable** 值得注意的, 非凡的, 卓越的

remarkable makes a very strong claim, stronger than *considerable* or even *great*. It suggests something truly surprising.

1 The parser also exhibited a **remarkable** robustness to perturbation in the source text, so that even...

Related: noticeable

1632 **remedy (n)** 治療, 治療法, 藥物

1 One **remedy**/*answer*/*solution* to the problem of varying capabilities is content adaptation.

Related: answer (n), response, solution

1633 **remedy (vb)** 補救, 糾正, 去除

1 These energy imbalances in the network can be **remedied**/*resolved* by including the power consumption E of the node.

1634 **remove** 脫掉, 去掉, 消除

1 It is also possible to add or **remove**/*delete* trees, providing both a comparative view of subsets of trees and views of individual tree structures.

Related: delete, discard, eliminate, get rid of, omit, remove, keep, preserve, retain

1635 **render** 使得, 使...成為

Example
1 Therefore, the negation of that condition will be true for most objects in the database, which **renders**/*makes* the plan inefficient.

Alternative wording
2 Therefore, the negation of that condition will be true for most objects in the database, which **causes** *the plan* **to be** inefficient.

1636 **replace (vb)** 取代, 以...代替

See substitute

1637 **represent** 象徵, 表示 作為...的代表

1 Fig. 4 illustrates the application of the algorithm where nodes are randomly distributed. Solid circles **represent**/*stand for* nodes and empty circles...

2 Another way to capture the dynamics of the time series is to determine how much of the probability distribution is **represented** in the peaks and how much in the troughs.

1638 **representative** 代表性的, 典型的 典型

1 We next selectively replace certain lexical items with their syntactic classes so as to generate **representative**/*typical* patterns and prevent overfitting.

1639 **require** 需要

require 858/*mill*—indicates an external motivation where the source of the motivation is identified as the subject. The great frequency of *require* is accounted for by its grammatical flexibility as it can be marked for tense, modified with modal verbs, passivized, used causatively and semi-causatively, and used as an adjective.

1 **tense**

1 Once most mobile devices were equipped with two wireless interfaces, all they **required**/*needed* [**tense**] to operate in UCAN was a 3G interface card.

2 **with a modal verb**

1 These transactions **may require** a significant amount of network resources and/or bounded delays.

3 **passive**

1 The primary advantage of flat approaches over hierarchical approaches is that fewer human operations **are required** to find an item of information.

4 **semi-causative**

1 Implementing the supervised detector **requires the calculation of**/*requires (someone) us to calculate* the initial values of the correlation.

5 **causative**

1 However, if the application requires the network to collect data for weeks or even months, the limited power supply may limit the sensors to...

6 **adjective**

1 The server serves a data request by retrieving **the required** data object from the corresponding data server and then broadcasting this object to all its clients.

Related: have to, must, need, require, should

1640 **require: as required**

1 A simulation API is used to construct all or part of the LTS **as required/as needed/as necessary**, enabling on-the-fly treatment.

1641 **requirements: satisfy requirements** 要求, 必要條件, 規定

1 These **requirements** cannot be *satisfied/met* by addressing just a single layer of the network stack.

1642 **resemble** 像, 類似]

1 Several types of risk factor scales were used to avoid the possibility that one likelihood scale would perform better merely because it <u>more closely</u> **resembled**/*looked more like* one of the rating scales.

Related: different, identical, like, same, the same as, similar, unlike

1643 **reservations (about)**

1 At the same time, we also <u>have some</u> **reservations about**/*concerns about* the use of the ranked approach, as the use of ranks rather than values means that gaps are overlooked.

1644 **resistant** 有抵抗性

1 The distance is robust in the sense that it is **resistant to** both the sampling frequency and a time shift.

防水的: resistant to water.

1645 **resolve** 議決, 解決, 解答

1 Many issues must be **resolved**/*settled/worked out* before this approach can be completely integrated into computer systemsl and in particular into database applications.

Related: obviate, solve

1646 **resort to** 依靠, 求助於

See use: the use-family verbs and phrases

1647 **resources (n)** 資源

Related: consume, deplete, exhaust, expend, expenditure, use, use up, waste

1648 **respect: in some respects**

The following terms a also used in place *of some: certain, some, many, a number of, one, one particular, several, in this (respect/s)*

The noun *respect* is rather empty of meaning. This makes it occasionally quite useful. In the following, it introduces a discussion of "difference" without having to specify the nature of the difference, e.g., method (way) or domain (area).

1 These processes were **in a number of respects**/*ways/areas* structurally quite different and so required their own declarations.

1649 **respect: in this respect** 關於, 涉及

Example
1 Epidemic routing requires no knowledge of a network and **in this re-spect** satisfies the first of our three design criteria but...

Alternative wording
2 *In that* epidemic routing requires no knowledge of a network, **it** satisfies the first of our three design criteria but...

1650 **respect: with respect to** 有關

1 Figure 2 shows the frequency distribution of co-words **with respect to/** *with regard to* headwords.

See concerning: at given position.

1651 **respectable** 不錯的, 相當的, 可觀的

1 Data redundancy thus enables systems to achieve **respectable/*accept-able/reasonable*** levels of accuracy at the cost of comparatively small amounts of knowledge engineering.

Related: acceptable, reasonable, worthwhile

1652 **respectively** 分別地, 各自地

respectively signals parallel organisation. It is used for conciseness.

Example
1 In Figures 1 and 2, the vertical and horizontal axes represent **respec-tively** the dependency and the attributes of the reduction candidate.

Alternative wording
2 In Figures 1 and 2, the vertical axis represents the dependency and the horizontal axis represents the attributes of the reduction candiate.

respectively may also be placed after the information to which it refers.

3 It has a better average recognition rate than Fisherface, 2D PCA, Image LDA and Kernel LDA by 5.28%, 5.55%, 4.66%, and 1.75%, **respectively**.

Related: irrespective

1653 **respond (to)** 對...有反應

1 The adaptation mechanisms **respond to** the user model in a very uni-form way, which makes it easy to add new properties to the model with-out having to....

1654 **respondent** 被訪者, 接受訪問者

Related: people in a research paper

1655 **response: in response to** 反應, 響應

1 The connection pool starts with a default number of connections but dy-namically modifies the size of the pool **in response to** demand.

1656 **responsible for** 需負責任的, 承擔責任的

1 The server is **responsible for**/*in charge of* the storage of and access to precomputed visualization data.

2 The system administrator is **responsible for** specifying how to determine the values of...

Related: control, deal with, govern, handle, manage, oversee, supervise

1657 **responsibility of...(to)** 職責, 任務, 義務, 負擔

1 It is **the responsibility of** the system administrator **to** specify how to determine the values of...

1658 **rest** 剩餘部分, 其餘的人, 其餘

1 The **rest**/*remainder* of the paper is organized as follows:

1659 **restrict...to...** 限制, 限定, 約束

1 In this section we describe a simulation in which we **restrict**/*confine/ limit* ourselves to the case where the setup costs are identical and con-stant, that is,...

2 This algorithm derives its cost savings mainly from **restricting**/*limiting* the storage of statistics **to**/*to* only 'non-resident' pages.

Related: constrain, scope

1660 **result (n)** 結果, 成果, 效果

The noun *result* is neutral.

1 The performance gains achieved with EAGER are **a result of**/*result from/ are produced by* its optimal combination of both proactive and reactive strategies as well as its use of self-location information.

Related: outcome

1661 **result: as a result** 結果；所以

The sentence adverb *as a result* introduces results that are neutral or negative.

Example 1
1 In the final case, c has a narrower semantics than d. As a result/*For this reason/Consequently,* some properties of the concept c may not be found in d.

as a result is can be placed after the subject or even after the verb. This would bring the topic (underlined) nearer the front of the sentence.

Alternative ordering 1a
2 In the final case, c has a narrower semantics than d. Some properties of the concept c may **as a result**/*consequently* not be found in d.

as a result can be used with *and* and *but* to join two sentences.

Alternative wording 1b
3 In the final case, c has a narrower semantics than d **and as a result**/*and consequently/and so* some properties of the concept c may not be found in d.

1662 **result: as a result of** 由於

The prepositional phrase *as a result* signals a reason-result relation between a phrase and a clause. It introduces results that are neutral or negative.

> Example 1
> 1 **As a result of**/*because of* changes in HCI interfaces or in administrators **[phrase]**, the method used to configure the management mechanism may change **[clause].**

The order of reason-result can be easily reversed.

> Alternative ordering 1a
> 2 The method used to configure the management mechanism may change **as a result of**/*because of* changes in HCI interfaces or in administrators.

It can rewritten as just one clause using *result in* or *result from*.

> Alternative 1b: one clause
> 3 **C**hanges in HCI interfaces or in administrators **may result in** changes in the method used to configure the management mechanism.

1663 **result from: indirect causes and effects** 產生, 起因於

result from signals a relation of indirect reason-result. It often introduces results and outcomes that are neutral or negative.

> Example 1
> 1 Premature termination of the problematic application **[negative outcome]** often **results from [reason]** lack of knowledge of the operating context.

Paraphrases or synonyms for *results from* that give the same order of information include the verb *come from,* and the noun phrases *result of* and *reason for.*

> Alternative wording 1a
> 2 Premature termination of the problematic application **[negative outcome]** often **results from**/*is a result of/comes from* lack of knowledge of the operating context.

> Alternative wording 1b
> 3 **One reason for** premature termination of the problematic application is lack of knowledge of the operating context **[reason].**

> Alternative wording 1c
> 4 Premature termination of the problematic application is **one result of** lack of knowledge of the operating context **[reason].**

result from cannot be written in the passive, i.e., ~~is resulted from~~. The order of information can also be reversed using abstract noun phrases.

> Alternative wording 1d
> 5 **One result of** lack of knowledge of the operating context **[reason] is** premature termination of the problematic application.

1664 **result in: direct: reason-result** 導致, 結果是

result in signals a relation of direct reason-result. By <u>*direct*</u> we mean that no factor intervenes between reason and result. *result in* often introduces results that are neutral or negative.

> *1* Too little of a protein called neogenin can **results in/can cause** <u>a smaller skeleton during development</u> **[negative result]** and sets the stage for more fragile bones throughout life, according to researchers at….

Related: give, offer, produce, provide, yield vs lead to, result in

1665 **resulting in: indirect result: end of a chain of events: negative** 導致, 結果是

The use of the present participle forms e.g., *causing, resulting in*, tells us that the result is at the end of a chain of events/causes and so the relationship with the source of the causation is <u>*indirect*</u>. The outcome is often negative.

> *1* It is not feasible to apply the currently available techniques to signed networks since the process of transformation **[original impetus]** would change the underlying connectivity structure of the original network **[next link in the chain]**, **resulting in** <u>poor clustering</u>. **[final outcome]**
>
> Example 1
> *2* Memory leaking **[original impetus]** is a software bug that can exhaust system resources **{next link in the chain]**, **leading to**, *causing/resulting in* <u>program crashes</u> **[final result].**

i.e., *memory leaking is an indirect <u>reason for</u> program crashes*.

The following relationship is direct. The grammar of the sentence—in *1b* the non-defining relative clause using *which* and in *1c* the ellipsis following *and* — makes the reason, *a software bug that can exhaust system resources* the subject of *cause,* which signals a direct causal impact of *program crashes.*

There is no other factor intervening between reason and result. It i not indirect. Thus this relation is not signalled with *lead to*.

> Alternative 1a
> *3* <u>Memory leaking is a software bug that can exhaust system resources</u> **[reason]***, which* **causes/results in** <u>program crashes</u> **[result].**
>
> Alternative 1b
> *4* <u>Memory leaking is a software bug that can exhaust system resources</u> **[reason]** *and/,which* **causes/results in** <u>program crashes</u> **[result].**

Related: participle clauses,

1666 **resulting (adj)**

> *1* Rather than using the built-in extensibility mechanisms we can redefine UML in the metaobject framework (MOF). This permits arbitrary extensibility although the **resulting** <u>language</u>/*the language that results/the language that this produces* is not UML, and so is not supported by UML tools.

Related: bring about, cause, decide, determine, result in, , cause-effect and reason-result verbs

1667 **retain**

 1 The cache rate was kept at 5% throughout the experiment, and all the other experimental settings were **retained**/*kept* as in the first experiment.

Related: maintain, preserve

1668 **reveal** 展現, 顯露出揭示, 揭露, 暴露, 洩露

reveal—130/*mill.* carries a connotation that something was previously hidden, concealed, or secret but, *revealed,* is exposed to view. The following uses of *reveal* effectively exploit these areas of its meanings.

 1 The application of the metrics **revealed** <u>problems</u> with two frames: Attribute and Hypothesis.

 2 One cost of regression test selection and test suite reduction is that faults can be missed that would have been **revealed**/*exposed/found/identified* by test suites prior to selection or reduction.

 3 The improved test suites **revealed** an above-average number of problems in the specifications that we tested.

This is similar to the use of *expose*, which in everyday English is found in phrasings such as *expose to danger/daylight/infection*, *expose a scandal/corruption* or perhaps, with reference to surgery, in *expose the underlying tissue.*

 Thus we would not say *Fig 3 exposes...* or *The experiments reveal that...* unless, perhaps, some kind of unknown or surprising phenomenon is involved.

Related: conceal, discover, expose, hide, **Part 1**: connotation

1669 **revolve around**

 1 The fact that much architectural design **revolves around**/*involves/is concerned with* composing architectural configurations makes it a recurrent and potentially error-prone activity.

Related: address, associated with, concern, deal with

1670 **rise (n)** (數量, 程度等)增加, 上漲

 1 Fig. 8 shows the impact of the speed of nodes. As the speed increases, we get <u>a steep</u> **rise**/*increase* in the delivery ratios of every approaches except the simple flooding, while there is <u>a slight fall</u> in the delivery delays of every approach without exception.

1671 **rise (vb)** 上升, 升起, 上漲, 升高, 增加

 1 Fig. 9a and 9b show how varying the number of sensor nodes impacts network node density. In Fig. 9a, the GREEN scheme is sensitive to changes in node density. Initially, its delivery ratio **rises**/<u>*climbs*</u> steadily but then it suffers quite a sharp fall.

See also: Part 1: trends: verbs for talking about trends, lower, raise, reduce—decline, drop, fall, rise—decrease (as), increase (as), diminish (as)

1672 **rising (adj)** 上升的, 升起的, 增大的, 成長中的
1 The dominance of the Wintel standard in the mid-1980s contributed to both a sharp decline in hardware prices and **a rising** demand for applications.

1673 **role (have/play)** 角色 作用, 任務
1 Figure 3 illustrates the role/part that WebGuide has/plays in the results ranking process.

1674 **role is to** 作用, 任務
1 The **role** of the global control agent **is to** carry out global tasks such as partitioning the initial image.

Related: abstract nouns: signalling nouns

1675 **roughly** 粗糙地
1 Our message scheduling scheme is **roughly**/*approximately* based on the priorities that are assigned to the nodes.

Related: about, accurately, approximately, around, more or less, exactly, precisely

1676 **roughly speaking**

Related: generally speaking, strictly speaking

1677 **route**

See trajectory. Related: path, trajectory, way

1678 **rule out** 排除
1 In these situations, it could greatly improve the algorithm's cost effectiveness if we had a way to **rule out**/*exclude* useless predictors early in the process.

Related: delete, exclude, omit, remove

1679 **run** 運轉, 進行 : 開動 (機器)
1 For example, running the maximum number of concurrent crawler processes **consumed**/*used* 70% of the first CPU.

1680 **run into** 偶遇
1 As mobility increases, a node tends to **run into**/*encounter/meet* other nodes more frequently and perform more handshakes with new neighbors.

1681 **run out of** 被用完, 被耗盡, 將(貯存的...)用完
1 The A buffer pool is kept separate from the normal pool and when a partition **runs out of**/*uses up/consumes all of the /exhausts all of the/fills the* space in its own buffer, it is allowed to draw from the A buffer pool.

1682 **safeguard** 保護, 防衛
1 One way to **safeguard**/*protect* the control points is to...

1683 said: is said to be

1 The estimate vector **is said to be**/*is regarded as* correct at a given time if...

Related: say

1684 sake: for the sake of 目的, 理由, 緣故, 利益

1 It is important to keep the cost of each tile low f**or the sake of** scalability.

Related: on behalf of

1685 same: the same 同一的

1 These two techniques are functionally identical in that fragments can contain representations of **the same** data objects in multiple media.

Related: alike, identical, like, same, similar,

1686 same: the same as 同一的

1 The task in Experiment 3 was **the same as**/*identical to/identical with* the task in Experiment 2.

1687 same: the same number of...

See as many... as

1688 satisfy 符合, 達到 (要求, 標準等)

We *satisfy assumption, condition, constraint, criterion/criteria, demand, need, speci-fication, standard, request, requirement*

1 A straightforward method for obtaining this is to count the number of grid points that fail to **satisfy** the coverage requirement.

Related: conform to, fulfil, meet

satisfactory 令人滿意的, 符合要求的, 良好的

1 In many cases, just one or two passes does not yield **a satisfactory**/*an acceptable* result and an iterative approach is required.

Related: reasonable

1689 say 比如說, 例如, 估計, 約莫

1 We then select now the 'best' q features (**say** q = 2 as in the previous example).

Related: said

1690 scarce 缺乏的, 不足的, 稀有的, 珍貴的

1 When bandwidth is **scarce**/there is **a scarcity/shortage of** bandwidth, even small increases in bandwidth resources produces both consider-able reductions in the average delay and increases in the ratio of off-loaded packets.

Related: abundant, adequate, ample, enough, lack of, plentiful, plenty

1691 **scarcely**

See barely, hardly, scarcely, only just

1692 **search vs search for** 搜查, 搜尋

It is common in computing to make no distinction between *search* e.g. a database and *search for* e.g., something particular inside a database.

> *1* In the final case, we only need to **search** the tree structure, and there is no need to...

the tree structure is the search space, not what is being sought.

> *2* We **searched for** words based on the criteria of semantic relevance and frequency.

words are being sought, not searched (*words* are not the search space, they are the object of the search). In everyday English, this difference in meaning is significant. There is a great difference between the police *searching* a suspect e.g., for a weapon and *searching for* a suspect (who is hiding). In computing, however, this difference may be of no consequence.

1693 **secondary** 次要的, 從屬的, 輔助的

Related: main, primary, principal

1694 **see as: be seen as** 將...看作, 認為

To *see something as* is a hedge. It suggests that we consider only one aspect of the possibly multi-faceted nature of some issue.

> *1* Merging and reduction can be **seen as** fundamental building blocks in the process of...

Related: consider, deem, regard as

1695 **see that** 看見, 看到

> *1* When we analysed the trace data, **we saw that**/*we found that/we discovered that* just a handful of queries were in fact the cause of the dramatic increase in query processing time.

1696 **see: as can be seen**

Related: Part 1: results-discussion: "we" phrases, results-discussion: figures and graphics: short themes vs long themes:

1697 **seek (sought)** 尋找, 探索, 追求

> *1* This is because during training the proposed technique **seeks**/*looks for/searches for* the optimal discriminant vectors one by one, which is time-consuming.

1698 **seek (sought) to** 企圖, 試圖
1 Cost-conscious learning **seeks to**/*aims to* <u>minimize or reduce</u> the number of high cost errors and the total cost of misclassification.

Alternative
2 *The goal/aim of* cost-conscious learning is to minimize or reduce the number of high cost errors and the total cost of misclassification.

Related: attempt, strive, try

1699 **seem** 看來好像, 似乎
1 Many of these systems **seemed**/*appeared* to have many advantages when demonstrated with toy programs but had problems when they were extended to programs of a more realistic size.

Related: hedging: variety of language

1700 **seem: there seems/appears** 似乎存在, 好像發生
1 Whether transactions are initially sorted or unsorted, **there seems to be**/*appears to be* a slight improvement in convergence.

2 Ultimately, **there seems to be**/*appears to be* a floor of about 45s, the average minimum time for all of the queries.

Related: apparent, apparently, obvious, obviously

1701 **seemingly** 表面上, 似乎是
1 In this paper, we discuss a number of unnoticed similarities between these **seemingly**/*apparently* different methods—in particular, the mathematical equivalence of a general weighted kernel k-means objective and a weighted graph clustering objective.

1702 **seldom** 不常, 很少, 難得
1 However, it is **seldom**/*hardly ever/not often/rarely* the case that the change documentation and scripts provided with a large framework are adequate for....

Related: frequent, frequently, often

1703 **sense: in the sense that/of** 意義, 意思
in (the sense of) provides further explanation of a term

1 The distance is robust **in the sense that** it is resistant to both the sampling frequency and a time shift.

2 The distance is robust **in (the sense of)** being resistant to both the sampling frequency and a time shift.

1704 **sense: make sense**
1 In general, <u>it **makes sense** to</u>/*it seems reasonable to* choose the partition with the largest L1 since that frees up the most L1 buffer pages.

1705 **sequence** 序列

1706 **serve as (function)** 適用, 有用, 足夠

serve as (53/mill) talks about function.

1 Data redundancy also **serves as**/*acts as/functions as/is/is used as* a form of quality control in any corpus of Web documents.

2 OWL-S **serves as** a representative example of a Web service specification language

1707 **serve to (purpose)** 適用, 有用, 足夠

serve to talks about purpose

Example 1
1 These mappings **(serve to)** link the outer and inner architectures.

In this example, *serve to* could be deleted without loss.

Alternative 1
2 **The purpose** of these mappings **is to** link the outer and inner architectures.

1708 **set aside**

1 In the third set of experiments, half of the samples in each class (i.e. 30 samples) are randomly chosen for training, and the other half are **set aside**/*put to one side/kept* for testing.

1709 **set up** 豎立, 建造

1 It is much easier to make such an arrangement if we can deploy an ad hoc network from scratch. However, we often have to **set up**/*establish* a routing system where an ad hoc network has already been deployed.

1710 **settle** 解決(問題等), 結束(爭端, 糾紛等)

1 As to which part should receive more attention in sample selection, to a certain extent these issues **must be settled** intuitively.

1711 **several** 幾個的, 數個的

1 In addition to the space usage of compressed containers itself, there are **several**/*a number of/various* other factors that impact the final compression ratio and the query performance.

Related: a number of, a variety of, various

1712 **shallow** 淺的

1 One way to capture the dynamics of the time series is to measure how much of the probability distribution is in the peaks, and how much is in the valleys. To do this, we can measure the curve of the time series, which is deep yet narrow in the peaks and wide and **shallow** below the median line, where values are low.

Related: broad

1713 **shortcoming** 缺點, 短處

1 Over the past few years, several alternatives have been proposed to deal with the **shortcomings** of/*overcome the difficulties associated with* the conventional chat room interface [Vronay et al. 1999, Erickson et al. 1999, Viegas and Donath 1999, Smith et al. 2000].

1714 **shortcut** 捷徑, 近路, 快捷辦法

1715 **shortage** 缺少, 不足, 匱乏

Related: insufficient, lack (n) (vb), scarce, scarcity

1716 **should**

The modal *verb should*—685/mill., refers to a hypothetical motivation (假設的) where the subject is the receiver. *should* is sometimes replaced with *ought to* without any change in meaning.

1 If the display exhibits overplotting, users **should** be/*ought to be* informed, otherwise they may not realize that some data is out of their view.

should is sometimes used in place of *if* and might be paraphrased as *in the case that/if (*萬一, 竟然)

2 Anycasting approaches permit dynamic route recovery **should**/*if/in the case that* any of the virtual MISO links fail.

3 control coding and interleaving are employed in SISO wireless systems to alleviate/mitigate/reduce the **effects of**/*impact of* Rayleigh fading.

Related: if and when: present tense hypotheticals: use of modal verbs

1717 **show (1)**

1 Figs. 5 and 6 **show** the influence of the R_{tx} parameter on system behavior.

2 The third triangle is pointing down, indicating that the user has already expanded the view to **show**/*display/exhibit/reveal* additional information about the form of this artifact.

Note that *reveal* would suggest the additional information was somehow unexpected.

Related: conceal, hide

1718 **show (2)** 證明, 表明

1 Experimental results have **shown/proven** this method **to be**/*demonstrated that this method is* robust to translation, uniform scaling, change in the sequences of objects, addition and deletion of vertices, and some additive noise and cropping.

1719 **show that**

show that signals a claim.

1 Figs. 5 and 6 **show that** the R_{tx} parameter influences system behaviour.

2 Experiments with landscape spatializations **showed that** 2D landscapes were usually perceived more quickly than 3D landscapes but that accuracy on some tasks was higher for 3D.

Related: conclude that, indicate that, mean (that), prove (that), suggest (that), tell us (that)

1720 **side-effect** 副作用

See: effect: side-effect

1721 **sign** 徵象, 前兆

1 These methods are applied automatically so that the only visual **sign**/*indication* that Makemark might be one of a spatially coincident set would be the presence of a couple of unused labels.

1722 **significant/significantly** 有意義的, 大的

The adjective *significant* is also often used non-mathematically, where it just means *a lot* or *a great deal.*

Example 1: adjective
1 When data from different modes is used, there is a **significant** drop in accuracy.

Alternative 1: adverb
2 When data from different modes is used, accuracy drops **significantly**.

1723 **significant: statistically**

The phrasing *statistically significant* is sometimes used to emphasize the meaning of *mathematical* significance

1 Although it appears that Diama outperforms Google when used alone, the differences are statistically **significant** on only a few of the metrics.

1724 **similar** 相像的, 相仿的, 類似的

1 It is also possible to establish **similar** relationships between arbitrary sets of optional elements.

Related: identical, like, same

1725 **similar to** 相像的, 相仿的, 類似的

1 Spearman's rank correlation is **similar to**/*like/resembles* the Pearson's correlation except Spearman's replaces the actual value of each variable with a rank, beginning with 1 for the largest value, 2 for the next largest value, and so on in descending order.

2 Their approach **is very similar to**/*is much like/greatly resembles* our proposed approach.

3 **Similar to**/*As in* the learning phase, the subjects maintained a log where they recorded the time and any special observations.

Related: in contrast, in contrast with, different from, unlike

1726 **similarly** 同樣地, 相仿地

1 In the same way, Similarly, the `decompose` command makes <u>the con-nected components of temporal data types</u> <u>available</u>.

1727 **simple (adj)** 簡單的

1728 **simplicity** 簡單, 簡易, 簡明

1 **For simplicity,** all three statement types are treated as branch state-ments.

1729 **simplify** 簡化, 精簡, 使單純, 使...平易

1 In order to **simplify** the explanation, we assume that <FORMULA>.

2 Software reuse **simplifies** the design of new systems/makes it simpler to design new systems...

Related: complicate

1730 **simplistic** 過分單純化的, 過分簡單化的

1 Despite its importance, the choice between crawl- and query-based ex-ecution plans is typically left to **simplistic**/*overly simple/overly simpli-fied* heuristics or even just plain intuition.

Related: complicated

1731 **simply** 純粹地, 完全地, 簡直

1 Then, to find the value that maximizes the income, we <u>simply/just</u> make this partial derivative equal to zero and solve the resulting expression.

2 Certainly node K seems to be closer to D but this is **simply**/*just/merely* because the Hop ID of K is farther from D than B for each dimension of the Hop ID.

1732 **simulation** 偽裝, 模仿

1 In the following **simulations**, we set the number of landmarks at 30, as we have found that using just a few landmarks suffices for a large range of network settings.

1733 **single: a single** 單一的, 單個的, 個別的

1 One important way that our model differs from earlier models is that we permit <u>only</u> **a single**/<u>just</u> *one/only one* contact between two nodes, which permits our protocol to take advantage of multiple interfaces.

1734 **slight** 輕微的, 微小的, 少量的

1 Whether transactions are initially sorted or unsorted, there appears to be a **slight** improvement in convergence.

Related: acceptable, considerable, dramatic, great, noticeable, observable, remarkable, significant, small

1735 **slow (down) (vb)** 使慢, 放慢

1 However, maintaining a secondary index would be expected to **slow (down)** update processing.

Related: impede

1736 **so** 這麼, 那麼,

so—870/mill introduces a result.

1 In the NSM and PAX models, there are the same number of records in a page or a logical block **so**/*and as a result* they have the same I/O time.

1737 **so as to** 以便

so as to is cause-effect conjunction. The relation is means-purpose (why we do it).

1 In partitionable and balanced networks, we can set the cutoff point **so as to** satisfy/*in order to* satisfy/*with the goal of* satisfying the partition condition:

2 Queries are organized into topic threads **so as to/in order to** maintain the context of each query.

1738 **so far**

1 **So far**/*(Up) to this point*, we have treated all sensors as being essentially the same but in fact sensors can be equipped with all kinds of instruments and…

Related: to date, until recently, up until now

1739 **so long as**

A cause-effect conjunction. The relation is condition-consequence.

See: as long as

1740 **so (that)** 為了如此, …, 以至於…., 以便

A cause-effect conjunction. The relation is means-purpose (e.g., *in order to* and *in order that*) so intentions are involved. Note that the effect element following *so that* is in fact hypothetical, *"so that it will/might have"*.

1 To recognize a person dynamically requires that we first distinguish between the facial features and other elements in the image, then normalize and adjust the test image **so that**/*in order that* it has the same orientation as a candidate face in the database.

2 **So (that)**/*In order that* the context of each query is maintained, queries are organized into topic threads.

Related: such that

1741 **so-called, the** 所謂的

1 While LDA has been shown to be able to decorrelate data and extract more discriminable features, it still suffers from the **so-called**/*what is known as the/what is referred to as the* "small sample size" (SSS) problem where the number of samples is smaller than their dimensionality.

Related: called, so-called, termed, well-known

1742 **sole** 單獨的, 唯一的

1 One approach used the Web as a secondary source to validate answers extracted from a more authoritative primary corpus. Another approach, used the Web as the **sole**/*only* source of answers.

Related: lone, single

1743 **solely** 單獨地, 唯一地 僅僅, 完全

Example 1

1 The particular disadvantage of this method is that the visualization is **solely**/*only* determined by the object class.

Alternative 1a: different wording

2 The particular disadvantage of this method is that the visualization is determined by the object class **alone**.

Alternative 1b: different wording

3 The particular disadvantage of this method is that the visualization is determined **exclusively** by the object class.

1744 **solution (to)** 解答, 解決 (辦法), 解釋

1 In this paper we suggest a **solution to** server overload that provides stable performance without dropping requests.

Related: answer, remedy (n), response

1745 **somewhat** 有點, 稍微

somewhat—45/mill—is similar to *quite* and *rather*, in that it does not specify any exact quantity or degree.

1 The result in Table V suggest that this strategy is very accurate under normal conditions but these figures are **somewhat**/*a little/quite/rather*. misleading.

1746 **sort (vb)** 把...分類 **vs sort out** 挑選, 區分

sort is to put into categories. *sort out* is to remove wrongly classified items.

1 The interface provides the ability to **sort** classifications both alphabetically and chronologically and to find the first use of a name within a set of classifications.

2 This module first roughly sorts answers, letting many wrong answers through. These incorrect answers are further **sorted out**/*deleted/removed* by the downstream modules.

1747 **sought: seek** 的過去式和過去分詞

sought is the past participle of *seek*.

1748 **source: source of**

1 Inconclusive results can also provide valuable information about **the source of**/*the cause of/what causes* faults or about imprecision in the system model.

Related: arise from, lead to

1749 **space (vb)** 在...留出間隔, 隔開

1 One of our particular goals was to maintain sparsity by **spacing** nodes as far apart as possible.

1750 **space (n)** 空間

1 As the extracted metadata occupies/takes up much less **space** than the entire stream, storage costs are much lower.

1751 **space: for reasons of space**

1 **For reasons of space,** similar results, obtained with queries QD1, QD2, QD3, have been omitted.

2 Similar results, obtained with queries QD1, QD2, QD3, have been omitted **for reasons of space**.

1752 **specifically** 特別地, 明確地, 具體地

1 Since the proposed algorithm is **specifically** designed to handle a large, high dimensionality data set, its performance should be measured on that basis.

1753 **speculate that** 思索, 沈思, 推測

1 We **speculate that**/*It may be that* the increases in fault detection effectiveness that accompany such increases in the level of granularity can be at least partially attributed to the "observer effect".

Related: conjecture

1754 **speed up** 促進, 加快...的速度

1 The ultimate goal of our research is to **speed (up)**/*accelerate/quicken* the development of dependable mobile applications.

1755 **spend**

Related: consume, deplete, exhaust, expend, use up, waste

1756 **spend time** 花(時間, 精力)

1 The alternative option was to transfer a local manager overseas but then that manager would have to **spend time** acquiring/*need time to acquire* the relevant domain skills.

1757 **spend time on** 在…花(時間)

1 The implementation is more cost-effective in that there is no need to op-timize parameters whereas comparable techniques spend a lot of **time on** determining the best combinations of parameters.

1758 **spite: in spite of** 不管, 儘管, 任憑

1 However, **in spite of**/*despite/notwithstanding* the differences observed in the intensities, the error values for the refractive indices do not differ greatly.

1759 **split...into** 把…劃分

1 We first distribute coarse-level particles across the system and then **split**/*divided* each of these particles **into** eight evenly spaced particles.

1760 **spur** 鞭策, 鼓勵

1 The goal is to build a community and **spur**/*stimulate* discussion among users.

1761 **stand for** 代表, 象徵

Related: proxy for, represent

1762 **stand out (from)**

The idea of *stand out* is of being in a group yet distinctive 有特色的, 特殊的.

1 It is our hypothesis that the query dependence problem arises because the original query term weighting is poorly defined, with the result that the informative query terms do not **stand out from** the noninformative ones.

Related: differ, differ from, differentiate, distinct, distinctive, distinguish

1763 **startup (n)** 新的企業

1764 **state**

1 **Unless otherwise stated**/*indicated*, 95% of the triplets were sampled randomly and the remaining 5% were sampled using the...

1765 **state that** 1.陳述, 聲明, 說明

1 The Friedman test compares the mean ranks of schemes to decide whether to reject the null hypothesis, which **states that** all the schemes are equivalent and their ranks should thus be equal.

1766 **stay: not change** 繼續, 保持

1 When a state is selected, the controller is notified and the list goes to that state but if it is opened a second time it **stays**/*remains* in the cur-rent state.

1767 **stay the same**

1 Table II shows the situation clearly as the accuracy **stays the same**/*remains the same/is unchanged*, improves, or worsens with changes in the number of users.

1768 **stay: not leave/depart** 停留, 逗留
1 Residence is a similar process in which the node notifies the leader of its intention to **stay**/*remain/not leave*.

1769 **stem from** 起源於, 由...而造成
1 **[result]** Most of the problems of such recognition systems **stem from** / *are the result of* **[reason]** difficulties in segmenting characters or words...

1770 **steep** 急劇升降的, 大起大落的
1 Fig. 8 shows the impact of the speed of nodes. As the speed increases, we get a **steep**/*dramatic/sharp* rise in the delivery ratios of every approach except the simple flooding, while there is a slight fall in the delivery delays of every approach without exception.

Related: peak, trough, valley

1771 **stereotype** 鉛版印刷

Related: conventional, customary, normal, traditional, typical, usual

1772 **still** 儘管如此, 然而, (雖然...)還是
1 This constraint allows particles to get very close to singularities but it **still**/*even so/nonetheless* does not guarantee exact sampling of the critical point.

Related: remain, yet (still)

1773 **straightforward** 一直向前的, 徑直的 簡單的, 易懂的, 易做的
1 Although this method is **straightforward**/*direct/uncomplicated,* the need to repeat the procedure every time the membership functions change makes it time consuming when...

2 Ref. [12] gave the following **straightforward** definition of the cost function:

1774 **stress on (n)** 著重於...
1 If we were to design a programming language knowing what we do today, we might put/lay more **stress** on notions of concurrency in the language.

1775 **stress (vb)** 強調, 著重
1 We should **stress**/*emphasize*, however, this technique differs greatly from the techniques that we are proposing here.

Related: emphasize, focus on, highlight, underline

1776 **strict (adj)** 嚴謹的, 精確的
1 In this case we applied **strict** rules, classifying as classes only those entities declared as classes according to the C++ syntax.

1777 **strictly speaking** 嚴厲地

   1 Although our proposed schema mappings are not, **strictly-speaking/***actually/in fact*, functions, they do enjoy the advantages of being simpler and more flexible.

Related: generally speaking, roughly speaking

1778 **strive** 努力, 苦幹, 奮鬥

strive has the connotation of "try very hard". It is more emphatic than *attempt/seek/try*.

   1 The system must be efficient. It must not impose significant overheads on existing protocols and should **strive/***attempt/seek/try* to match the performance achieved by service replication.

Related: aim to

1779 **structure (n)** 結構, 構造, 組織

   1 The **structure** of a community within a social network is an important topological property.

Related: architecture, framework, model, taxonomy

1780 **study: well-studied, heavily-studied**

well studied means "has been the object of much study" or "has been *thoroughly studied.*

   1 The monitoring of frequency counts over a single data stream is a **heavily/well-studied/***heavily/well-researched* problem.

Note that *heavily studied* is stronger than *well-studied.* It may also have a slightly negative connotation, suggesting that everything of value in an area may already be known.

1781 **stumbling block (to)** 絆腳石, 困難, 阻礙物, 障礙

   1 A major **stumbling block to/***barrier to* the wider adoption of visual analysis is that few people have the fundamental training required to...

Related: bottleneck, hindrance, hurdle, pitfall, roadblock, stumbling block, trap

1782 **subjective** 主觀的, 主觀上的

   1 We use an affine transformation to combine the **subjective** forecasts of the two experts [17], [18]

Related: empirical, objective

1783 **subject (n)**

   1 The **subjects** for the first experiment were recruited from undergraduate and graduate classes at a major west coast university of the USA.

Related: people in a research paper, candidates, participants, object of study, respondent

1784 **subject to** 以...為條件的, 須經...的

1 Once the color matrix has been established, we can design D to maximize brightness, **subject to**/*depending on* feasibility constraints.

Related: liable to, prone to

1785 **subjected to** 使...隸屬, 使...服從

Things are *subjected to* stressful 緊張的, 壓力重的 change or challenge. To *undergo* change is also stressful, but not as stressful

1 The resource allocation schemes have been **subjected to**/have *undergone* rigorous analysis and many experiments.

1786 **subsequent** 後來的, 其後的, 隨後的

1 Section 4.2 considered the constrained-Multiple PDR problem, which restricts how many transformations can be applied to **subsequent**/*later* configurations.

1787 **subsequent work**

The heading "Subsequent work" refers to work that was done subsequent to the completion of the work in the present report.

1788 **substantial/ly** 相當多的/地, 大大的/地

1 However, in each case the goal of the analysis can be **substantially**/*considerably/significantly/very* different.

Related: considerable, significant

1789 **substitute...with...**

1 We next selectively **substitute**/*replace* certain lexical items **with**/*with* their syntactic classes so as to generate representative patterns and prevent overfitting.

Related: replace, substitute, instead of, rather than, take the place of

1790 **substitute (n/vb) vs replace/ment: opinion about functional performance**

replace/ment and *substitute* (n/vb) are alternatives which signal a writer's opinion as whether two items that are being exchanged are equivalent in performance or function. Specifically

* *replace* offers no opinion as to whether the items being swapped are functionally equivalent (perform equally well).

* *substitute* offers the opinion that the items being swapped are functionally equivalent.

This contrast is clearly represented in the following sentence.

1 You can always **replace** a husband but there is no **substitute for** love.

Thus, the writer is saying here that, as husbands, many men may be functionally equivalent but that there is nothing that is functionally equivalent to love. Obviously then, *replace* and *substitute* are <u>subjective</u>, they express opinions. Thus, readers may have their own opinions about the suitability of *substiture* and *replace* in the following sentences.

> 2 I **substituted** margarine **with** butter. **[Speaker suggesting margarine and butter are functionally equivalent]**
>
> *butter:* 黃油 *margarine:* 人造黃油
>
> 3 I **replaced** my Mercedes **with** a Lexus. **(Speaker making no suggestion about their relative performances]**

It is often only in context that we can see why one word has been chosen over the other. In the following example, *substitute* clearly being used to *stress* the idea of functional equivalence.

1 substitute x with y: my opinion: "these are equivalent"

> 1 These attributes mean that SPODEs have considerable potential as **substitutes for** naive Bayes classifiers in many real-world classification systems, including...
>
> 2 We **substituted** the naive Bayes classifiers **with** SPODEs.

In the following example, the author is not seeking to make any particular point about the benefits, quality, value of the exchange.

2 replace x (with y): "offer no opinion"

> 1 Alternative queries can also be used to specify <u>constraints and results/sorting specifications</u> that **replace** <u>existing constraints and specifications</u>.

Related: nouns: alternative, choice, option, replacement, substitute, verbs: exchange, replace, swap, switch, place: take the place of, prep: instead (of), rather (than)

1791 such (adj): kind, type 這樣的, 這類的

The adjective *such* is very common in computing research writing (leaving aside *such as*—869/*mill.*, *such* has a frequency of around 1100/*mill.*). More than a quarter of all of these uses are at sentence-intial.

such means *This kind of* or *These kinds of* and it refers backwards to repeat the meaning of an entire sentence or clause. It has only one form i.e., it has no singular or plural forms.

> 1 Attacking a coordinator involves jamming it with traffic so that data <u>packets are dropped and senders must enter the retransmission state while waiting for the next opportunity to transmit</u>. **Such attacks**/*These kinds of attacks* thus rely on overwhelming the victim with a load that constantly exceeds its capacity or that exploits...

2 For example, <u>the sample image of a piece of fabric in Figure 2a shows six color channels.</u> **Such** an image/An image *like this* is a combination of color pixels from different input color channels.

3 Although power can be supplied through power over Ethernet (POE), **such a**/*this kind of* solution requires a wired network connection, which is often very expensive.

4 The following describes <u>two **such** bindings</u>, a context dependency and a derivation.

1792 **such as** 如此...的, 使...那樣的, 例如

1 The solar panel and battery are connected to the AP through a charge controller, which is responsible for tasks such as battery over/undercharge protection.

Related: as such, such that, such: kind, type

1793 **such that**

A cause-effect conjunction, *such that* signals the semantic relation means-result (how we do it). *such that* should not be confused with *so that* (means-purpose)

1 The essential problem of network community mining is that of partitioning a fully connected graph into clusters **[means] such that**/*in such a way that* the intracluster links are positive, and the intercluster links are negative. **[result]**

Related essays: so that, semantic relations

1794 **such...that...** 如此的...(以致)

1 Therefore, a robust algorithm not only minimizes the impact of attacks but also requires **such** <u>a large attack</u> **that**/*an attack that is so large* <u>that</u> the goals of the attack become obvious.

1795 **suffer**

1 Fuzzy clustering enjoys the advantges of being stable and not overly sensitive to initialization, but its performance **suffers**/*deteriorates* in the presence of outliers.

Related: worsen

1796 **suffer from** 受損害, 受損失

1 While the contractive methods do succeed in eliminating false dismiss-als, they nonetheless **suffer from**/*incur* a great number of false hits, which lowers retrieval efficiency.

Related: worse: affect, aggravate, burden, damage, degrade, deteriorate, exacerbate, harm, interfere with, suffer from, undermine, worsen, better: alleviate, ameliorate, enhance, improve, mitigate

1797 **suffice** 足夠

1 In the following simulations, we fix the number of landmarks at 30, as we have found that using just a few landmarks **suffices**/*is sufficient/is adequate* for a large range of network settings.

Related: adequate vs enough, sufficient

1798 **sufficient**

The idea of *sufficient* is quantity (*enough*).

1 As can be seen in Fig. 10, just a few landmarks **is sufficient**/*is enough/ suffice* for a large ad hoc network.

Related: adequate vs enough/sufficient

1799 **sufficiently** 足夠地, 充分地
1 Illumination noise occurs if the illumination is **not sufficiently uniform**/ *not uniform enough* or is unpolarized.

Related: adequate, suffice

1800 **suggest (1): propose** 建議, 提議
1 Finally, Friedman and Henderson [2003] **suggested**/*proposed* a new protocol for use in Web servers called the fair sojourn protocol FSP).

1801 **suggest (2): imply** 暗示, 啟發, 使人想起, 使人聯想到
1 The difference between these exponents is small but significant in that it **suggests**/*implies* a theoretically sounder way to use linear regression to obtain exponents from power-law data.

1802 **suggest that: imply** 暗示, 啟發 使人想起, 使人聯想到]
1 This **suggests**/*implies/indicates* that we can detect viral propagations by profiling email behavior.

1803 **suggested (adj)** 建議, 提議
1 Owing to the very large volume of path data that is involved, **previously suggested**/*previously proposed* transitive closure or graph traversal algorithms [4, 5, 11] cannot be applied directly to this problem.

1804 **suitable for** 適當的, 合適的, 適宜的
1 Differential features are **more suitable for**/*better suited to* document images because they offer a good representation of the local image structure.

Related: appropriate, suit, suited to, ill-suited, well-suited

1805 **suited: suited to** 合適的, 相稱的
1 A domain-based parsing approach is particularly **suited to**/*suitable for/ appropriate for* the analysis of technical documents.

Related: match

1806 **suited: ill-suited** 不適合的
1 Option settings that maximize performance in one environment **may be ill-suited for**/*may not be suitable for/may not be appropriate for* another.

Related: inappropriate, unsuitable

1807 **suited: well-suited** 適當的, 便利的

   1 Thus, this model is **well-suited to**/*suitable for/appropriate for* sensor networks where power budgets are constrained at the node but...

Related: appropriate

1808 **superfluous** 適當的, 便利的

Related: adequate, enough, excess, excessive, more than needed, sufficient, surplus, unnecessary

1809 **superior to** 較高的

   1 The performance of this approach is in most cases *(far)* **superior to**/*(much) better than* that of parameter-driven algorithms.

Related: inferior, not as good as

1810 **supervise**

supervise—83/mill, appears in the corpus only in its technical sense, as represented in the following example.

   1 If the available data is unlabelled the problem is one of **unsupervised** classification.

Related: control, govern, manage

1811 **supplement (n) (to)** 增補, 補充

   1 Wi-Fi positioning may be a useful **supplement to** any of these other localization approaches.

Related: complement (n)

1812 **supplement with (vb)** 增補, 補充

See: complement vs supplement

Related: add, add to, augment, augment with, complement, enhance, improve

1813 **support (1)**

   1 The use of this database **supports**/*allows/permits* the direct identification of co-occurrence information, obviating the need to search the corpus.

   2 Although it does **support** groups, geodes, and static and dynamic transformation nodes, it does not currently handle advanced features such as animation, FX effects, and particles.

1814 **support (2)** 保持, 維持, 使...進行下去

This is by far the most common use of the word *support*.

   1 In this article, we use the term server proxy to refer to a network entity that **supports** a set of servers in the task of improving their services to the Internet.

1815 **support (3)** 保持, 維持, 使...進行下去

support makes a claim of *evidence*, not *proof:* 證據，不是證明

> 1 In both cases T-ur outperformed the other two methods in terms of both accuracy and ordering. These results **support**/*provide evidence for* our hypothesis that...

Related: evidence, indicate, proof, prove, show, support

1816 **suppose** 假定

> 1 **Suppose**/*Assume* **that** a user's motion patterns produces a result where...

1817 **supposed** 假定的, 想像上的, 被信以為真的

> 1 One of the **supposed**/*ostensible* weaknesses of matching pursuit is that, as a greedy algorithm, it cannot find an optimal representation for a given signal. **However**,...

1818 **supposedly** 據稱, 大概上

supposedly suggests some degree of doubt. Other similar words include *allegedly, arguably, apparently, conceivably, doubtless, likely, maybe, most likely, perhaps, possibly, purportedly, quite likely, reportedly, reputedly, seemingly, supposedly, very likely*

> 1 If those researchers are right, then the **supposedly** better static code attributes should perform no better than simple thresholds on lines of code. **But this is not true**, at least for the data sets used in this study.

1819 **supposing (that)** 假如, 如果

> 1 **Supposing (that)**/*Assuming (that)* n is the total number of parameters used to configure a cache, and that k is the number of levels, then N is equal to n k.

1820 **sure that** 確信的, 有把握的

> 1 Current empirical evidence indicates that pair programming does have an impact on duration, effort, and correctness and we are reasonably **sure that**/*certain that/confident that* these effects do not arise simply by chance.

1821 **sure: make sure (that)** 查明, 設法確保, 確定

> 1 Before the received data is used, its checked to **make sure**/*ensure/ guarantee/see* (that) all of it is available.

1822 **surpass** 勝過, 優於, 大於, 多於

Related: exceed, beyond: go beyond, surpass

1823 **surprise (n)** 驚奇, 詫異, 使人驚訝的事, 意外的事

> 1 The fact that it could model only one Poisson ratio **should perhaps not come as a surprise**/*should perhaps not surprise us/is perhaps not surprising*.

1824 **surprise (vb)** 使吃驚, 使感到意外
1 These findings **surprised** some of the developers, who had spent some time optimizing the code affected by these options.

1825 **surprising** 令人驚異的, 驚人的, 出人意外的
1 A **surprising**/*especially remarkable/unexpected* result of this work is the discovery that a square distribution produces a much more accurate localization than either of the alternatives.

1826 **surprisingly** 驚人地, 出人意外地
1 **(Not) surprisingly**, the "local" optimizer and the "global" optimizer have very similar behavior on low recall targets.

1827 **surround** 周圍的, 附近的
1 In this scheme, the index nodes are those forming the smallest perimeter **surrounding**/*around/enclosing* the identified location.

1828 **sustain** 持久的, 持續的

Example 1: written as a clause
1 A modern commodity disk can **sustain**/*maintain* a data transfer data of 40 MB per second.

Alternative 1: written as an adjective
2 A modern commodity disk can transfer data at a **sustained** rate of 40 MB per second.

Related: retain

1829 **swap** 交換, 交易
1 Hainaut et al. [1996] studied the concept of transformation sequences and in particular the conditions under which it is possible to **swap**/*change the order of* two sequenced transformations without altering the effect of this sequence.

Related: nouns: alternative, choice, option, replacement, substitute, verbs: exchange, replace, substitute, switch, place: take the place of, prep: instead (of), rather (than)

1830 **switch (vb)**
1 Collaborators may frequently **switch**/*swap/alternate/change* between loosely and closely coupled work styles when working over a single, large, information display such as maps or network graphs.

Related: nouns: alternative, choice, option, replacement, substitute, **verbs**: exchange, replace, substitute, swap, place: take the place of, **prep:** instead (of), rather (than)

1831 **symptom**

Related: sign, indicate, indication of, indicator, suggest

1832 **tailor to** 修改, 使合適
1 In finite-state verification, analysts typically write small specifications that allow the analysis to be **tailored to** each property.

Related: customize, custom-made

1833 **tackle** 著手對付(或處理)

tackle suggests that we are facing a very difficult, multi-faceted problem. Unlike *cope with, deal with,* and *handle*, it does not imply any potential outcome, good or bad.

multi-faceted problem 多方面的, 多才多藝的, 應付問題 : tackle a problem

   1 In Section 4, we will discuss how we tackle the coincident clustering problem in the context of...

   2 The fact that the scoring algorithm of a Web search engine is either a closely-guarded proprietary secret or changes unpredictably means that researchers are forced to **tackle**/*address/cope with/deal with* the enormous task of crawling and indexing the entire Web.

Related: address, problem (n): verb collocations

1834 **take** 拿

   1 Our technique t**akes**/*chooses/selects/begins with* a set of object instances and a specification of fields and then attempts to...

1835 **take** 需要, 花費, 佔用

   1 Note that the normalized cut **takes**/*requires* many more iterations to converge than ratio association and so results in slower computation.

1836 **take as: uses**

    Example 1
   1 It **takes as**/*uses as* input a node n and produces as output an exact copy.

    Alternative 1
   2 **As** input, **takes**/*uses* a node n and produces as output an exact copy.

1837 **take: as an example, for example** 以...為例

   1 **Take** the field of medical diagnostics **for example**,...

   2 **Take** run 1 **for instance**,...

   3 T**ake the case of**...

1838 **take from**

   1 The following summary of this procedure is **taken from**/*based on/derived from/drawn from* [48].

taken from may also suggest "taken without change/copied". Note that the alternatives offered here suggest that *[48]* was just a source.

1839 **take part (in)** 參加

   1 A total of 186 subjects **took part in**/*participated in* the experiment, 88 undergraduate and graduate students and 98 professional Java consultants.

1840 **take a photograph**

1 A standard technique in polarization vision is to **take digital photographs**/*acquire digital images* using a camera equipped with a linear polarizer rotated to various orientations.

1841 **take steps** 採取步驟(或措施)

1 In Section 3 we describe the main **steps that must be taken** in order to restructure the query results to the local schema.

1842 **take the place of** 代替

See place: take the place of

1843 **take place**

See carry out, conduct, happen, occur, take place

1844 **take + time + for + noun** 需要, 花費, 佔用

1 Let's suppose that it **takes/requires just one time unit for** a message to reach its destination.

1845 **take + time + to + verb** 需要, 花費, 佔用

1 It can **take some time to** add connections but this does not slow down the system response to user queries because...

2 Figure 11 shows **the time taken to**/*the time required/how long it takes to* incrementally propagate different data update operations through...

1846 **take turns** 輪流

Related: alternate, swap

1847 **take the view that**

1 We t**ook**/*adopted* th**e view that**/*position that/stance that*, in our analysis, the accuracy of a model did not reflect the quality of a study.

1848 **take (up): consume space**

1 Now suppose that C **takes (up)**/*occupies/consumes* too much space and so we decide to refine it.

1849 **take up: consume time**

1 Other tasks **take up**/*consume/fill/occupy* much of the rest of an analyst's typical day.

Related: exhaust, use up

1850 take up: a topic, a direction of discussion

Antonyms 反義字 of *take up* might include *abandon, give up, put aside* an *hypothesis, approach,* or a *line* or *direction of thinking, reasoning, or research.*

1 We **take up**/*consider* this hypothesis in the next section.

1851 target (adj) 目標

1 In reality, however, the usefulness of this kind of violation detection depends on how a virus obtains the **target** email addresses.

Related: destination, goal, objective

1852 target (n) 靶子, 攻擊的目標

1 In this paper, **the targets of our study**/ *the objects of study* are domain name and Web services.

2 A considerable amount of research has been put into attempting to predict the next hyperlink a user will click or the eventual **target** that users are hoping to *reach.*

Related: aim, goal, object, objective

1853 target (vb) 把...作為目標(或對象), 規定...的指標

1 The importance of this should not be underestimated on a site that **targets**/*aims at/is intended for* "average" internet users.

2 Unlike network-based attacks, host-based attacks **target**/*aim at* a specific machine and try to gain access to services or resources on that machine.

1854 targeted (adj)

1 This approach is faster and more personal as it makes only **targeted**/ *carefully chosen/narrowly focused* changes to widget behavior, but is harder to implement.

1855 targeted at 把...對準

1 Another feature that was **targeted specifically at**/*specifically intended to interest* bloggers is a "blog this" button that appears underneath each "personal" topic on the site.

1856 taxonomy (n) 分類法

Related: architecture, framework, model, structure

1857 teach us that

1 **Experience has taught us that**/ *Experience has shown us that/From experience we know that* it is better to keep the logical and the physical levels distinct.

1858 technique 技巧, 技術, 技法

1 The particular advantage of this **technique** is its linear computational complexity makes it ideal for data streams.

Related: approach, method, mechanism

1859 tedious 繁瑣

1860 tell us that, hard to tell

tell is a low frequency word (27/*mill*) in the corpus, but it is present in a few useful phrasings for which there is often no natural-sounding paraphrase. In particular, we can use *tell* to introduce inferences 推斷.

1 tells us that: how we know

tell us that signals the relation grounds-conclusion. Similar phrasings include *(we can) see from (this)*, and *(this) is how we know*.

The advantage of *this tells us that* over these other phrases is that provides another way to avoid *e/us/I* without using the passive.

> *1* A positive correlation using this correlation test **[grounds] tells us that** there is a relationship between the variables **[conclusion]** but it does not tell us how to predict one variable from the other.

Related: conclude (that), find (that)

1861 adj + to tell....if/what/whether...

This pattern both introduces and comments on an inference.

> *1* Although it is hard **to tell**/*guess/know/say/see* **what**/*what* pattern will ultimately emerge, changes in the patterns of accuracy are likely to vary across different domains.

Related: find that, means that

1862 tend to (liable to, prone to) 傾向, 易於, 有...的傾向

tend—76/*mill* is treated in this book as a semi-modal verb, where it is found in the pattern *tend + to + verb*. In this pattern it indicates both a degree of probability and an attitude towards that probability.

Referring to *degrees of probability*, alternatives would include *to be liable to* (rare) and *to be prone to* (<10/*mill.*) and there is also the phrasal verb *bias towards*. Very roughly, but *tend to* indicates a likelihood greater than 50%, while *liable to* and *prone to* indicate a likelihood perhaps greater than 75%

> *1* Median-linkage clusters **tend to be**/*have a tendency to be* round or ellipsoid.

On the matter of the *attitude towards the probability*, the connotation of *tend to* is neutral. It does not indicate the writer's attitude toawards the tendency. In contrast, both *liable to* and *prone to* have neutral-negative connotations, in particular *prone,* which is always negative.

> *2* A prediction method that is somewhat **prone to** false alarms is still more useful than having no method at all.

The negative connotation of *prone* is also seen in the phrase error-prone

Related: bias, liable to, prone

1863 **tendency** 傾向, 癖性

1 A common problem when running standard batch kernel k-means is that the algorithm <u>has a</u> **tendency**/*is liable* <u>to</u> be trapped into qualitatively poor local minima.

1864 **tentative** 試驗性的, 嘗試的

1 These are firm requirements which must satisfied. The defeasible requirements, however, are merely **tentative** as they may not hold for every models.

Related: conclusive, confidence, definitive, inconclusive, uncertain

1865 **term (n)** 專門名詞, 術語, (一般的)詞, 名稱

1866 **term (vb)** 把...稱為, 把...叫做

1 In earlier work, these types of attacks were **termed**/*called/known as/referred to as* "shilling" attacks since they were primarily used to promote products.

1867 **terms: in terms of** 就...而論, 在...方面

This phrase introduces a relevant criterion or metric.

1 This is equal to the average length of the final routes in the network **in terms of** <u>the logical hop count</u>.

Related: criterion, metric

1868 **thank (vb)**

1 **We would like to thank** John Lim and Marie Buton for their generous help and support.

2 We sincerely **thank** the editor and all the reviewers for their constructive comments and suggestions. All the comments made by the reviewers have been carefully considered and the manuscript has been revised and improved accordingly. The following responds to each Reviewer's comments in turn.

Related: acknowledge, appreciate, due to: thanks, grateful, gratefully, like

1869 **thanks (n): gratitude**

1 **Thanks are also due to** Michael Belucci and Nicola Oti, who very generously provided their time to discussing a number of key issues on the relationship of annotations to hypertexts.

2 We would like to **express our sincere thanks to** all of the reviewers, who without exception provided very insightful and encouraging comments.

Related: acknowledge, appreciate, due to: thanks, grateful, gratefully, like

thanks to (prep) 幸虧, 由於:

See *due to, because of, owing to, thanks to*

Related: as a result of, on account of

1870 **that (pn): that of**

In the following, *that (of)* is a pronoun referring to *the performance (of)*.

> *1* In a scenario that **[relative pronoun]** takes into account only network traffic reduction, the performance of the dynamic programming algorithm is far superior to **that of**/*the performance of* both the greedy and random algorithms.

Related: this (these) and those: as pronouns

1871 **then: sequence** 然後, 接著

> *1* Basically, this involves passengers sending an SMS message to the sub-system with their flight number. The sub-system **then** sends back an SMA with the current flight information.

1872 **then: if...(then)...**

The word *then* in the *if...then* condition consequence pattern may be omitted.

> *1* For example, **if** the three templates have bit values at positions 1,'0, and '1', **(then)** the mean value is 1.

1873 **there is/are: introducing a new topic** 存在

In *there is/are* the verb agrees in number with the noun that follows it.

> *1* **There are** a number of **ways** to execute an SQL query.

there is/are may be used to introduce a new topic or a change of topic, for example in the topic statement of a paragraph where the topic is going to be part of a *hypertheme*.

1 **there is/there are introducing a topic at the beginning of a paragraph**

> Example 1: new topic in given position
> *1* Several research projects are currently in progress to define new models that can better describe and query in the biological sciences.

> Alternative 1: using there are to push the new topic out of given position
> *2* **There are** several research projects currently in progress to define new models that can better describe and query data in the biological sciences.

This is quite optional at the beginning of, say, an Abstract, Introduction or other section as we of course may expect them to begin with new topics.

2 **there is/there are introducing a change of topic later in a paragraph**

We can also use *there is/are* change topic or introduce a new theme later in a paragraph. In the following example, *interaction* is a new topic so it probably shouldn't be in given position (at the start of the clause). As it is, readers will find the change of topic abrupt and surprising and wonder whether they might

have missed an earlier mention of this topic.

Negative example 1
✗ When fuzzy production rules are used to approximate reasoning, **interaction exists** between rules with the same consequent. **This interaction** will cause the weighted average model to underperform on many real-world problems.

The rewrite fixes this with *there is*. This both signals that a new topic is being introduced and pushes it later into the clause, out of given position.

Rewrite 1: using there are to push the new topic out of given position
1 When fuzzy production rules are used to approximate reasoning, **there is interaction** between rules with the same consequent. **This interaction** will cause the weighted average model to underperform on many real-world problems.

A similar use of *there is* to (relevantly) change topic mid-paragraph is seen in Figure 2 and Figure 17 and Figure 40. As a similar strategy for launching a new topic, Figure 18, 30, Figure 38 and Figure 41 all begin with *There is/are.* And manyo ther such examples can be found throughout these notes.

1874 **thereafter** 之後, 以後
1 Once a patch has been assigned to a missing block of pixels, that block is **thereafter**/*from that time forward/from then on* permanently linked to that patch.

Related: hereafter

1875 **thereby** 因此, 由此, 從而
The semantic relation of *thereby* is means-result.

1 Peers with similar information needs become neighbors and subsequently forward relevant queries, **thereby**/*in this way* avoiding the expense of broadcasting.

1876 **thereof** 其
1 *One* implication of this is that signals of failure may ubiquitous in a program, rather than being associated with just a single predictor or small set **thereof**/*of the program*.

此的一種涵義是… one implication of this is...

1877 **think it** 認為, 以為
In this phrase, *it* is a preparatory object. It alerts readers to the upcoming object noun phrase beginning *that*.

1 The workers **thought it** very important that they have all the necessary tools even if they used them rarely.

This use of *it* as an introductory object avoids having the following kind of very long *that*-clause as a subject.

? **That** they have all the necessary tools even if they used them rarely is thought by the workers to be very important.

Related: find it, make it,

1878 think: think of as 把...看作

Example 1

1 Informational visualization systems have traditionally **been thought of as** tools for information workers.

Alternative order

2 We have traditionally **thought of** informational visualization systems **as** tools for information workers.

1879 this/these and it/they: pronouns

As pronouns, *this* (plural *these*)—6,800/*mill.*, and *it* (plural *they*)—3932/*mill.* can refer to three types of information in a preceding sentence:

1. *this/these:* the noun phrase in *new position* in a preceding sentence,

2. *this:* the *entire idea or situation* of a preceding sentence

3. *it/they:* the noun phrase in *given position* information in the preceding sentence

1 this (these) to refer to new information

In the following example, the pronoun *they* is referring to what is in given position in the preceding sentence, *RGGs*. In contrast, *this* is referring to the noun phrase that is new information, *the local confluence criterion.*

1 **RGGs** are used in the modeling of diagrammatic visual notations. **They** provide a polynomial parsing algorithm for grammars that satisfies the local confluence criterion. **This** is a restrictive constraint which...

In the following example, *these* again refers to the last noun phrase of the preceding sentence.

2 Some visual notations produce v-sentences that instantiate relations from more than one type of relation. **These** are classified as hybrid visual notations.

2 this: to refer to the idea of a preceding sentence or clause

The pronoun this at the start of a sentence may refer to the idea expressed in the preceding sentence. In the following example, *this* stands for "the fact that the background of the face is dark while the face itself is bright."

1 Fig.4 shows the eye extraction procedure. The background of the face is dark while the face itself is bright. **This** will disturb the extraction result so it is necessary to....

3 it/they: to refer to the noun phrase in given position in a preceding sentence or clause

it/they may refer to previously mentioned (given) information. In the following example, *it* refers to the noun phrase *Image C* in given position in the preceding sentence.

> 1 **Image C** is produced from both image A and image B using an AND (multiplication) operation. **It** is then dilated and segmented to get the location of eyes.

Related: it: preparatory object, it: preparatory subject, this, these, and those: as pronouns, this, these, and those: as adjectives

1880 this, these, and those: as adjectives

As adjectives, *this, these, those, such, some, both,* etc. may be used with a noun phrase to refer to an earlier use of the same noun or a noun phrase with a related meaning. All of these uses are very common. *those* occurs at 584/*mill.*

1 this, these (adj) 這, 這個, 這些的, 這**: new information**

As an adjective, *this* refers back to the noun phrase in new position in the preceding sentence, or to the idea of the preceding sentence.

> 1 Currently, Fairway Tools operates a manual, paper-based order and inventory system. **This system** is not only slow and inaccurate, leading to delivery delays both for suppliers and retailers, **it** is expensive as **it** requires large amounts of stock to be kept on hand.

2 those (adj) 那些的, 那**: given information**

As an adjective, *those* refers back to a noun phrase in given position in the preceding sentence.

> 1 **The projects investigated** in the replication study belong to the same domains (telecommunications) as **those** in the original study although the types of systems are different.

In the following example, *those* is an adjective but, as is common when the reference is clear, the noun phrase has been omitted (a practice called *ellipsis*).

> 2 Since the best overall results were achieved with the Leon query engine, in this section we report only **those [results].**

The following example contrasts the adjectives *those* and *these*. *these errors* refers to the meaning implied by the entire preceding sentence. In contrast, *those teams* points back to the specific *three teams in the Western tournament.*

> 3 Most of the teams were extracted correctly, except for three teams in the Western tournament. **These errors** were due to the fact that **those** teams played more intramural than extramural matches.

Related: such (adj): kind, type, that (pn): that of

1881 **thorough** 周密的, 完善的

1 If the prerelease testing of certain modules had been <u>sufficiently</u> **thorough**, they would not have contributed to postrelease faults.

2 A **thorough**/*complete*/*comprehensive* account of the effects of these boosting algorithms can be found in [2].

Related: adequate, detailed, in detail, exhaustive,

1882 **thoroughly** 徹底地, 認真仔細地

1 At each of these states, we **thoroughly** check the specification for problems.

1883 **those (pn)** 那些

See: this, these, and those: as pronouns

1884 **throughout** 遍及, 遍佈 貫穿, 從頭到尾

1 In the running example of Workload W1 used **throughout** this article, no incoming SYNs were dropped.

1885 **throw away** 扔掉

1 This tools allows us to quickly specify the logic, choose a layout, give it to the user, who verifies changes. Afterwards, the layout may be **thrown away**/*discarded* but the specifications remain.

Related: discard, get rid of, delete, remove

1886 **time: at a time**

Example 1

1 Figure 17 shows the time taken to incrementally propagate the various data update operations, comparing the cost of incremental propagation and full re-computation. In both cases, only one update was propagated **at a time/at once**.

Alternative 1

2 In both cases, each update was propagated **singly**.

1887 **time: at the same time**

See: same: at the same time

1888 **time consuming** 費時的, 曠日持久的

1 The alternative is to develop tools from scratch, a process that is difficult, **time-consuming**, and requires special skills.

1889 **time: by + time**

1 **By the mid-1970s**, both the software engineering and programming languages communities were much concerned with issues of software reliability.

1890 time: from time to time

1 Consequently, this scheme is highly effective for nodes that change their mobility patterns **from time to time**/*occasionally* and exhibit heterogenous session behavior.

1891 time: leave (enough) time

1 The user must **leave enough time**/*allow sufficient time* between requests for prefetch, otherwise...

1892 time: one at a time

Example 1

1 An Apache process can handle only **one** request **at a time**.

Alternative 1

2 An Apache process can handle only **a single** request **at a time**.

Alternative 2

3 An Apache process can handle requests only **singly**.

1893 time: over time

1 Finally, topic categorization of the query stream allows tracking of trends **over time**/*over a given period*.

軌道趨向: track trends

1894 time: take time

1 The connection pool starts with a default number of connections but dynamically modifies the size of the pool in response to demand. When it is necessary to add connections, they can **take** some **time** to establish but this does not slow down the system response to user queries because...

連接的預設數字 : a default number of connections

Related: spend, waste

1895 timely 及時的, 適時的

1 DSMSs require CPU load shedding in order to maintain high system throughput and **timely**/*prompt* responses.

1896 to + verb at sentence initial: when can we do it?

In computing research papers, there are only three occasions when it is good practice to place *to* + verb at the beginning of a sentence.

1 to + verb: to in a transitional phrase

This would include set phrases such as *to begin with, to illustrate, to our knowledge, to be precise, to be more specific, to sum up, to summarize*

2 to + verb: short form of "in order to" (intention)

To signal the relation means-purpose (intention) we can start a sentence with *(In order) to*.

1 **(In order) To test** the robustness of ATT on imbalanced data, we compared it with several popular classification techniques.

3 **to + verb: noun phrase as subject**

A *to*-clause can be the subject of a sentence but this is not common. Normally we replace *to*-clause subjects with preparatory subject *it*.

Example 1
1 **To distinguish keywords from different fields** would certainly be useful.

Alternative 1: replace with preparatory it
2 **It would certainly be useful to** distinguish keywords from different fields.

We can also replace such *to*-clause subjects with an *-ing* form.

Example 2
3 **To include** the case in which the auction closes at the 100 level requires that all bidders except one express valuations below 100.

Alternative 2: replace with verb + ing
4 **Including** the case in which the auction closes at the 100 level requires that all bidders except one express valuations below 100.

1897 **to be: future or intended action**

1 **Consider** a tuple *x* arriving on stream S_i that is to be compared against all of the tuples in windows other than W_i in the order defined in Oi.

2 The enhanced version of this search ranks the regions **(that are) to be searched**, so that the most promising regions are processed first.

1898 **together with** 連同, 和

1 This example, **together with** the busy-loop failure in Fig. 12, demonstrate the advantages of PCCA over CCA in failure detection tasks.

1899 **token: by the same token**

The idea of this expression is that the same assumptions allow the same result or conclusions.

1 The unit X is the amount of rotation that is required. A larger X signifies more deflection. **By the same token/***In the same way,* a smaller X means less less deflection.

1900 **tolerate** 有抗藥性

1 Keypoint methods are becoming increasingly popular because of their proven ability to **tolerate/***accept/cope with/deal with/handle/put up with* low image overlap and image scale changes.

Related: acceptable

1901 **too** 也, 還, 而且

Furthermore, as the connect operator no longer produces an output, it **too/***also* is marked for deletion.

1902 **total (adj)** 總計的, 總括的, 全體的

1 The matching cost is calculated for all and the combination that gives the lo**west total cost** is then taken as the patch correspondence.

Related: complete, sum, in total

1903 **track (n)** 行蹤, 軌道, 足跡

1904 **track (vb)** 跟蹤, 追蹤

1905 **trade-off between...and...** 交換, 交易

1 This is the best value for this data-set as it gives the best **trade-off be-tween** false positives **and** false negatives.

Related: balance, compromise

1906 **traditional** 傳統的, 慣例的, 因襲的

1 We first use a **traditional**/*conventional/popular/well-known/widely-used* statistical method, the canonical correlation analysis (CCA) [17] to identify highly correlated subspaces...

Related: common, customary, familiar, normal, popular, traditional, typical, usual, widely-used, widespread

1907 **trajectory**

path	行蹤, 軌道, 足跡	route	路, 路線, 路程, 航線
track	路線, 軌道	trajectory	軌道, 彈道 軌線, 常角軌道
way	路, 通路, 道路		

Related: path, route, track (n) (vb), traverse (vb), way

1908 **transaction** 交易

1909 **transform from...into...** 使...改變, 使...改觀, 將...改成

1 Transcoding is a promising technique for realizing content adaptation that **transforms** a data object **from** one version **into** another.

1910 **traverse** 橫渡, 橫越, 越過, 穿過

1 Breadth-first organisation also ensures that an index can be **traversed** using forward seeks.

1911 **treat...as...** 對待, 看待, 把...看作

treat as refers to how something is "handled" or "processed", i.e. what we *do* with it. In contrast, *regard as* refers to how we *think* about it.

1 Our supervised learning approach **treats** query classification exactly/in the same way/just as it would document classification.

Related: consider, deal with, handle, regard as

1912 **trend (n)** *趨勢, 傾向, 時尚*

The noun *trend* collocates with the following adjectives and verbs:

Adjs: *certain, changing, current, declining, downward, historical, recent, rising, similar,* and *upward.*

Verbs: a*nalyse, chart, continue, follow, illustrate, plot, track*

Classification of the query stream also allows tracking of **trends** over time.

1913 **trend (vb)** *趨向, 傾向*

Although *trend* can be used as a verb, no examples were found in the corpus. It is commonly used as a verb in financial publications.

> *1* Consumer confidence was at a five year peak in February. Since then it has been **trending** sharply downwards, hitting a calendar-year low in May.

1914 **trends: verbs for talking about change and trends**

lower, raise, reduce—decline, drop, fall, rise—decrease (as), increase (as), diminish (as)

These verbs all talk about change and trends. They fall into three groups.

1. The subject of the verb changes other things.
   - *lower, raise, reduce*
2. Only the subject changes.
   - *decline, drop, fall, rise*
3. The subject changes and it changes other things
   - *decrease, diminish, increase*

1 **subject changes other things: lower, raise, reduce**

lower, raise and *reduce* appear only in the subject + verb + object (SVO) clause pattern. They express a cause-effect relation. In the following, the subject brings about change in the object.

> Subject changes object
> *1* The dynamic programming algorithm **[subject] lowers/ raises/reduces** network traffic **[object]** far more than either the greedy or random algorithms. ——

2 **subject changes: decline, drop, fall, rise**

decline, drop, fall, rise use only the subject + verb (SV) clause pattern. In this case, as the verb has no object, it is the subject of the sentence that changes.

> Subject changes
> *1* While the average revenue per company **[subject]** actually **declined/ dropped/fell/rose** between 1999 and 2003, there was no change in the number of companies nor any change in the volume of...

3 subject changes both itself and other things: decrease (as), increase (as), diminish (as)

decrease (as), increase (as), diminish (as) can use both the subject + verb (SV) clause pattern and the subject + verb + object (SVO) pattern. This means that these verbs can be used both when it is the subject that changes and when the subject changes the object.

> Subject changes
> 1 While the RSs of MTS remained at all times close to 0, <u>the RSs of the other methods</u> **[subject] decreased** as <u>the class imbalance of the training sets</u> **[subject] increased**.

> Subject changes object
> 2 <u>The range</u> **[subject]** is designed to maximally **increase/decrease** <u>the values in the global vector</u> **[object]**.

The verb *diminish* can also be used both without and with an object. Note however, that *diminish* is not a synonym for *decrease* but rather has a particular negative connotation of "reduction in importance or status" Thus its meaning is more like *deteriorate*, 惡化 than *decrease*.

In the SVO pattern, the neutral *reduce* is thus almost always preferable. In the SV pattern (no object), the neutral *decline, decrease, drop,* and *fall* are all also preferred to *diminish*.

The following example, from a news item, illustrates how *diminish* is typically used with its negative connotation.

4 diminish: a negative connotation
> 1 University of Illinois (2011, January 3). Study shows brain's ability to selectively focus and pay attention **diminishes**/*deteriorates* with age.– ScienceReport.

1915 trigger 觸發, 引起
> 1 An external request does not necessarily **trigger/***launch* a service.

1916 trouble 煩惱, 憂慮

The noun *trouble* collocates with these verbs: *encounter, give, have, meet, run into*

> 1 Web application servers may have had **trouble**/*difficulties/problems* completing some actions, such as redirecting to other Web pages.

1917 trough: 低谷

Related: peak, steep, valley

1918 try to 試圖, 努力
> 1 For example, we **tried using**/*tried to use* a barrier method but it was very slow.

Related: aim to, attempt, strive, try

1919 **turn + adjective** 變得, 成為

The idea is of change or becoming.

1 Upon receiving the END message, a RED leaf node will **turn blue** under the following conditions:

1920 **turn: in turn** 依次, 輪到

in turn introduces a step or outcome in a chain of causation. Note how in the following example, *in turn* introduces the second outcome in the chain.

1 The virtual MISO links extend the range **[impetus]**, which enables us to establish shorter paths **[outcome 1]**, which **in turn**/*then* increases throughput and reduces latency. **[outcome 2]**

推動 : impetus

1921 **turn into/turn...into...: become** 使....變成

turn into is both transitive and intransitive, i.e, it take both a direct and an indirect object. It has three patterns.

Subject + verb + complement
1 That is, the metric can **turn into**/*become* a semi-metric.

Subject + verb + direct object
2 That is, the metric can be **turned into**/*changed into/transformed into* a semimetric.

Subject + verb + direct object + indirect object
3 That is, the metric **[subject] turns**/*changes/transforms* nontriangular triplets **[direct object] into** triangular triplets. **[indirect object]**

Related: clauses: four basic patterns

1922 **turn out** 結果是, 證明是

The verb *turn out* focusses our attention on the result rather than the process and suggests some surprise at the way events developed.

1 This step requires computing pair-wise mappings between the expansions of all rewritings and it **turns out** to dominate/ultimately dominates the final reaction times since there are many such rewritings.

2 An initial difficulty was the huge cost of massive ontology-building but, **as it turned out,**/*ultimately* data redundancy and the enormous amounts of text that are freely available on the Web provided a partial solution.

Related: in the end, ultimately

1923 **typical** 代表性, 作為特色, 典型

Related: common, conventional, customary, familiar, normal, popular, traditional, usual, well-known, widely-used, widespread

1924 **typicall/y** 代表的/性地, 典型的/地

1 An exact calculation is **typically**/*normally/usually* performed only for nodes in the same partition.

2 **Typically**/*generally speaking,* it is computationally expensive to use hierarchical clustering analysis based on a dynamically growing self-organizing tree. However,...

1925 **ubiquitous** 到處存在的, 普遍存在的

1 Text data is **ubiquitous**/*everywhere/all around* and, not surprisingly, many everyday applications rely on textual data for a variety of tasks.

1926 **ultimate** 最後的, 最終的

1 The **ultimate** goal of our research is to speed the development of dependable mobile applications.

1927 **ultimately** 最後, 終極地

1 Beyond offering general guidelines, it is difficult to strictly define the best way to integrate any particular feature. **Ultimately**/*in the end,* only experience can tell us how well a particular feature was integrated.

Related: turn out

1928 **unable to** 不能的, 不會的

See able to, can, could, unable to

1929 **uncertain** 不明確的, 含糊的, 不確定的

1 By definition, both the LSI-based and the SPR-based techniques offer **uncertain** conclusions.

Related: ambiguous, inconclusive, tentative

1930 **under**

See: below, less than, lower than, under

1931 **underestimate**

The phrasing *we cannot underestimate/ignore/overlook the importance of* is essentially a set phrase.

1 Traditional testing techniques may be costly and inadequate for complex GUI, yet **the importance of** verification and validation **cannot be underestimated**, since the majority of software applications in any domain have a complex GUI. GIANT

Related: assess, estimate, evaluate, overestimate

1932 **undergo** 經歷, 經受, 忍受 接受(治療, 檢查等)

undergo usually involves (sometimes stressful 緊張的, 壓力重的) "change".

1 Queries are entered via the simple interface and then **undergo**/*go through/are put through/pass through* two further processing steps, as described in the following.

Note that to *experience* change is neutral.

2 The observable variables are those that **undergo**/*experience* no further transformations.

Related: going on, go through, ongoing, subjected to

1933 **underline** 1. 在...的下面劃線 2. 強調, 使突出

1 This **underlines** the importance of studying the actual properties of specific attack models rather than designing...

Related: emphasize, highlight, indicate, illustrate, point to, stress

1934 **undermine** 暗中破壞, 逐漸損害

1 This disconnection between system development and HCI issues can lead to failure of compliance to system operability and undermine the safety and usability of the system.

Related: worse: affect, aggravate, burden, damage, degrade, deteriorate, exacerbate, harm, interfere with, suffer from, undermine, weaken, worsen, **better:** alleviate, ameliorate, enhance, improve, mitigate

1935 **undertake: carry out** 試圖, 著手做, 進行, 從事

1 One of the most common activities that developers **undertake** is to identify the parts of the source code that correspond to a particular functionality.

1936 **undertaking (n)** 事業

1 Finally, the development of software and hardware for crawling and indexing the Web is a time-intensive **undertaking**.

Related: task, enterprise

1937 **underwent** 的過去式

Past participle of *undergo*.

1 The API Proposals view shows the broken API and the change it **underwent**/*how it changed*.

1938 **undeniably** 不可否認地, 確鑿無疑地

Expresses a conviction that the statement is true.

1 The present generation of computer-aided design (CAD) and computer-aided engineering (CAE) tools has **undeniably**/*without a doubt* revolutionized the product development process.

Related: , admittedly, certainly, definitiely, indeed, no doubt, surely, undeniably, undoubtedly, unquestionaly, clearly, evidetnly, mnifestly, obvioulsy, patently

1939 **undoubtedly** 毫無疑問地, 肯定地

Expresses a conviction that the statement is true.

> 1 Although this technology undoubtedly play an important role in question answering technology, bcuse their appraoch makes us of...ME

Related: , admittedly, certainly, clearly, definitely, indeed, no doubt, obviously, patently, surely, undeniably, undoubtedly

1940 **unexpected** 想不到的, 意外的, 突如其來的

Related: anticipate, expect, foresee, predict

1941 **unforeseen** 未預見到的, 預料之外的

1942 **unfortunately** . 不幸地 , 遺憾地, 可惜

> 1 **Unfortunately**, some of the changes to UML have increased the expressiveness of the language at the cost of introducing new ambiguities.

1943 **universally** 普遍地, 一般地

> 1 There is, of course, no **universally** agreed/accepted definition of what constitutes a theory.

1944 **unless** 如果不, 除非 , 除...外

Signals the semantic relation condition-consequence.

> 1 In this data set, a sample is labeled as negative **[consequence] unless** there is proof that it is positive.**[condition]**

> 2 **Unless** otherwise specified, this discussion assumes that the PE file stores multi-attribute records ordered according to a single numerical attribute.

Related: if, depending on, otherwise

1945 **unlike** 不像, 和...不同

> 1 **Unlike**/*Different from* traditional ad hoc network routing protocols [5], [6], [11], an always-available HDR uplink and downlink permits the design of simple solutions to a number of common problems.

Related: not alike, dissimilar

1946 **unlikely** 不太可能的, 靠不住的

1 Of course, insertion into a real database is <u>highly **unlikely** to be</u> uniform over time, so these two datasets represent fairly realistic insertion workloads.

2 Of course, it is highly **unlikely** that/*it is not at all likely that* insertion into a real database would be uniform over time, so these two datasets represent fairly realistic insertion workloads.

Related: certain, certainty, chance, impossible, likelihood, likely, possible, probability, probable,

1947 **unsure (of)** 缺乏信心的, 無把握的
1 Too often, application developers who are attempting to reuse a changed API are **unsure (of)** how to make progress on a migration problem.

1948 **until (conj)** 直到...時, 到...為止
1 Repeat this process **until** all of the loops are removed.

2 The brute force strategy considers each template in the database one by one **until** it finds the most similar template.

1949 **until + time** 直到...時, 到...為止
1 The four agents remain in state S1 **until** <u>time t5 and t6</u>, when the convergence of the algorithm...

2 **Until recently**, much of the work in these kinds of simulations has been concerned with linear elements.

Related: so far, to date, up until now, recent

1950 **up to + extent**
1 An RTT of the order of 20-50 ms might be expected for a WLAN but 3G cellular networks currently offer values **up to**/*as high as* 150-250 ms.

Related: as many as, reach + number/amount/range/limit

1951 **up to the limits of**
1 As can be seen in Figure 8, our crawler scaled close to linearly **up to** <u>the limits of</u> the CPU.

1952 **up to/until now** 到目前為止
1 As explained in the Introduction, **up until now**/*to date/so far*, exemplar-based methods have been mainly used in texture synthesis.

Related: until recently, formerly, hitherto, previously

499

1953 **update (n) (vb)**

We can *update a file/data/details* 更新索檔 or *perform an update*. The files will then have been *updated*.

> 1 The problem of local caching of data, however, is that the quality of cached data (*i.e.* its freshness) is heavily dependent on the frequency with which **updates are performed on the source data**/*source data is updated*.

1954 **up-to-date (adj)** 最新的, 包含最新信息的

If something is *up-to-date* its details are current. A file may be *updated* but that does not necessarily mean the information in the file is *up-to-date*.

> 1 Web crawlers must regularly or at leaat periodically download pages to ensure that they are **up-to-date**/*current/not out-118/millof-date*.

> 2 This process is repeated regularly to identify the most ~~updated~~ **up-to-date** user preferences.

Related: fresh, obsolete, update

1955 **upon**

upon—118/*mill* has three common uses, a spatial use *(on/on top of)* which is not found in the corpus, a *temporal* meaning which is quite common. This use is synonymous with *once* or *immediately that*. It usually occurs at sentence intial.

> 1 **Upon receiving**/*Once it has received/Immediately that it receives* the global vector, each node performs a randomized algorithm and passes its output to its successor node.

Third, it is often used as a complementizer to a verb as a more formal way of saying *on*.

> 2 The performance results vary **depending upon**/*on* settings but in general approach a level of 99% true positive (TP). Of these, 95%...

1956 **uptake** 舉起, 拿起

Related: adoption

1957 **use: the use-family verbs and phrases** 用, 使用

The word *use* is very important in engineering research writing, as reflected in the fact that *use, uses, used* and *using* alone appear almost 10,000 times in the 2.2 million-word corpus for this book.

This is an enormously high frequency yet even that number does not consider the entire group of common verbs and phrases that have at their core the idea of *direct use* and which this books refers to as the *use-family verbs and phrases*, i.e., *adopt, apply, employ, exploit, leverage, make use of, by means of, utilize,* and *resort to*.

All of these verbs express direct use and are essentially synonyms of *use*. In

the following example, *apply* and *adopt could* could both be replaced with *use*.

> 1 Before tiling, we have to parameterize the surface. There are a number of techniques to choose from [4], [12], [15] including the shell map structure [16], [39] which **has been applied to/used on** various 3D models and the Cube-Map method [49] which provides an efficient texture mapping. For this implementation, **we adopt/use** the Cube-Map method but we should emphasize that any low-distortion surface parameterization **could be used** in this framework.

Nonetheless, each of these verbs has some feature of meaning or function, connotation, impact on information order, or grammar—that makes it a better choice in certain circumstances. The following articles briefly explain and illustrate the uses of each of these *use*-verbs and phrases.

Related: based on: indirect use, aid, assist, function as, help. implement, depend on, rely on, serve as

1958 **use: adopt** 採取, 採納, 吸收

adopt–58/mill., implies that a tool or method is being chosen from a selection of already-existing or available tools.

> 1 Several other models [4], [5], [6] have also **adopted** a cross-layer design approach for *use* in sensor networks.

> 2 For this implementation, we **adopt** the Cube-Map method but we should emphasize that any low-distortion surface parameterization could be *used* on our framework.

Related: employ, exploit, follow from, inspire, make use of, use, utilize,

1959 **use: apply (to/on)** 應用, 實施

apply–771/mill. is used to talk about tool use. It may be used either with a direct object alone (SVO^D) or with both a direct and indirect object in combination (SVO^{D}O^I).

The direct object is the particular tool, method, rule, or principle that is applied. This tool is *applied to* or *on* the indirect object.

> Direct object alone
> 1 Ardet **applies** three types of filters: neutral, specific, and open-class **[direct object}**.

> Direct and indirect object in combination
> 2 Before tiling we have to parameterize the geometry surface. There are a number of techniques to choose from [2], [4] including the shell map structure [7], which **[direct object]** has been **applied to** various 3D models **[indirect object]**, and the Cube-Map method [32], which provides an efficient texture mapping.

> 3 Finally, this mapping allows us to encode the identical symbol in different ways according to its position in the stream by **applying** a compression algorithm *to* the stream.

The distinction between *to* and *on* as complementizer is subtle—*to* may suggest a direct object, which would be is changed by the action. In contrast *on* only suggests the area or domain or application in which the tool applied.

> 4 Both level-of-detail and zoom in/out **can be applied on/to** the timeline of the animation, which controls the display time of each frame.

This small ambiguity can avoided by using *employ* if necessary, as it does not take an indirect object.

Related: applicable, apply**,** hold, implement

1960 use: employ 使用, 利用

employ –215/mill. Like *apply, employ* is for talking about using something, the direct object, as a tool. However, unlike *apply*, *employ* does not take an indirect object

> 1 We did not **employ/use** spherical integration **[direct object]** to obtain the double JH projection because the AHFs are normally sampled only over the upper hemisphere. Instead, we **adopted** the least square fitting as in [32].

This limitation is in fact an advantage in some ways. *employ* is very commonly followed by prepositional phrases (using *in, on, to,* etc). These are not indirect objects. They are adverbials stating circumstances or conditions.

> 2 In level-of-detail (LOD) management, levels of detail are rendered using synthetic representations which can be *employed* **in combination.**

> 3 Thus our IDN server proxy architecture stores the IDNs in domain name servers. In particular it can use conventional domain name servers without modification while an IDN server proxy *is employed* **on the domain name server side**.

> 4 Although the grouping procedures that *we employed* **to obtain the coarser granularity test suites provide controls**, they are nonetheless....

In contrast, when *use* and *apply* are followed by prepositional phrases, —*used on/to* and *apply on/to*—the phrases are indirect objects.

Thus, the choice of *employ* rather than *apply* in any particular sentence may be motivated by the desire to clarify the role of the following prepositional phrase, to signal that it is adverbial—a circumstance, not an object.

1961 use: exploit

exploit–175/mill, is not used to talk about a tool or method. That is, we do not exploit a tool or method. Rather, we use *exploit* to talk about making use of <u>already-existing</u> *qualities,* (i.e., conditions, attributes, behaviours, conditions, or circumstances) which, crucially, may be under-utilized or previously-unnoticed resources or opportunities.

1 When used in multiway windowed stream joins, tuple dropping can reduce the join output rate because it fails to **exploit***/make use of* the time correlations between interrelated streams.

2 Current visualization applications kernels cannot **exploit** the power of new GPU architectures and more powerful, inexpensive GPUs.

3 The main drawback of such an approach, leaving aside high prices and proprietary software, is that they fail to **exploit***/make use of* the flexibility of Web-based hypertexts.

1962 use: leverage (vb)

leverage–29/mill, is not a frequent verb. It is essentially a word from the world of finance where it refers to the ratio of capital to borrowings.

Thus the use of *leverage* should suggest that using a particular tool or method tool will allow a given effort to produce magnified outcomes. However one never actually finds it used with that meaning, Better choices—usually *make use of*— from among the other *use*-family verbs and phrases.

1 The Microteam Research, AskMTR system **leveraged***/exploited/made use of* the substantial data redundancy that is characteristic of the web and has thus come to be known as the redundancy-based approach.

1963 use: make use of 利用

make use of–46/mill, is often a good paraphrase of *exploit*, but has a wider meaning. The main difference is that whereas *exploit* cannot be followed by a tool or method, *make use of* can, as well as meaning *use* in general.

1 Because it is an effective way to find a T-modifier which has the required properties, we **make use of** T-base—a T-modifier that has been additionally parameterized with a concavity/convexity weight **[tool]**.

As an alternative to *use, make use of* has the occasional advantage of being wordier. As with the use of full forms of relative clauses, or saying *make a decision* instead of *decide*, *have an effect on* for *affec*t or *make a contribution to* for *contribute*, sometimes we want to use more low-content words as a way to make what follows more visible in an otherwise crowded sentence.

In the example above, *make use of* reduces the density of the sentence and makes it easier to see *T-base* and its definition.

1964 use: means: by means of

by means of–61/mill, is a preposition (not a verb) but is included here with the *use* verbs as it is a very frequent way to express the idea of *use*, is a frequent alternative to a *use* verb, and impacts sentence organisation.

In day-to-day English *by means of* would introduce a method, not a tool. That is, we would not say *by means of a hammer*. Thus *by means of* signals a means in a means-result relation (*how* we did it).

> 1 The probability that an intersection of a query region and a data region contains indexed objects <u>can be predicted</u> **[result] by means of**/*using* region proximity **[means (method)]**, which is found using the dataset's distance distribution.

In computer science and IT the difference between a tool (what we use) and a method (how we do it) are often blurred but the use of *by means of* in the preceding example nonetheless leads us to assume that *region proximity* is a method and not a tool.

As with *make use of*, the phrase *by means of* reduces the density of the words in a text (uses more low-content grammatical words) and thus may helps the reader to notice what immediately follows.

> 2 In particular, our goal is to allow seamless continuity of service across networks **by means of**/*using* a cross-layer, end-to-end approach compatible with the XNT framework.

We should avoid *by means of* at the start of a sentence if it creates a long and unfocused theme.

Related: through the use of, with the aid of

1965 use: resort to 依靠, 求助於 訴諸, 憑藉, 求助

resort to–21/mill We may *resort to* either a tool or a method but the connotation is that the particular tool is the researcher's only choice and may not be optimal. Sometimes this is expressed as "*resort to using*".

> 1 Since it is not possible to vary the distance between each pair of templates and we have already used the "best" template as the root node, to achieve further reductions we must **resort to**/*resort to using/use* a "virtual" template.

1966 **use: utilize** 利用

utilize–126/mill utilize may suggest that an already-existing tool or method is being used in a way which extends, even if only slightly, its usual application. It has the slight connotation of "somewhat novel use".

> *1* The fmin level control points are important and their replication calls for special attention. One strategy we plan to **utilize** to preserve the integrity of these control points is to...

1967 **use: the use of: nominalization: as subject and object**

the use of is very frequent in the corpus at 310/*mill*. (31/*mill*. at sentence-initial). This frequency is explained by the fact that it creates a useful nominalization that allows us to express the activities of using various tools and methods as grammatical subjects or objects in clauses. These nominalizations can then be involved in abstract relations expressed using cause-effect verbs, causatives, and stative verbs (especially relational) verbs. As nouns they can also follow prepositions and can thus be indirect objects as well.

1 **subject or object in clauses**

In the following examples, the relation is cause-effect through the cause-effect verb *contribute*.

> *1* **The use of different granularities and test input groupings [subject]** may also have contributed to the reductions in test execution and validation times.

In the following, *the use of* helps us to form a subject for *permit*.

> *2* In the standard setting for simultaneous training, **the use of a large enough number of redundant views** permits the learners to be different.

In this last example, *the use of* is part of the object of the very common relational verb *involve*.

> *3* In English, these kinds of queries typically involve **the use of** the word "how many" **[object].**

2 **object of a preposition**

As a noun phrase, *the use of* can also be the object of a preposition. It commonly follows after *through*, where it talks about tools or methods participating in means-result relations.

> *1* We deal with the former problem **by using** window shredding and with the latter **through the use of** sampling and per-stream histograms.

In this example *by using* and *through the use of* have the same meaning.

Related: causatives, semi-causative verbs, relational verbs, elegant variation, with the aid of

1968 use: "to use" as a subject: alternatives

The following example uses a to-clause, *To use...,* as the subject of the sentence. But sentences that start with *To* + verb are not common in the corpus for this book. This may be because they make long themes or it may be because *To* + verb may be momentarily confused with (*In order) to use.... To + use* as a sentence initial noun phrase can be easily rewritten.

Example 1

1 **To use** a set formula to identify the skin color cluster may cause errors because the distribution of face colors is both irregular and varies over time.

Alternative 1a

2 **The use of** a set formula to identify the skin color cluster may cause errors because the distribution of face colors is both irregular and varies over time.

Alternative 1b

3 **It** may cause errors **to use a set formula to identify the skin colour cluster** because the distribution of face colors is irregular and may change on different sets of persons.

1969 use: by using: means-result

1 We were able to keep costs low and achieve scalability in hardware **[result] by using**/*by the use of* low-end PCs on commodity Ethernet. **[means]**

Related: by: using vs by using: which one after a noun? cause-effect, semantic relations

1970 users: the user 使用者, 用戶

We can use *users/they/their/them* to avoid the clumsy and impersonal phrasings *he or she, he/she*, etc.

1 In short, ~~a user~~ **users** must judge 5.02 documents until ~~he or she~~ **they** find the first relevant document.

2 The highlighting of virtual signposts and the associated path suggestions make **users** more efficient at locating and navigating to resources.

Related: personal pronouns, text types: instructions: allow, can, let, you, and user manuals

1971 use up: process and result 用完, 耗盡

use up can be used with both the more neutral *process* connotation of *consume*—the end of our resources may or may not be in sight—and the negative *result* connotation of *exhaust*—where our resources are considered from the perspective of being all eaten up.

1 Nodes that are close to the sink shoulder a larger forwarding burden and consume more energy than nodes that are further away [23]. Consequently, nodes **use up**/*consume* battery resources at different rates.

Related: deplete, exhaust, expend, spend, waste

1972 **usual/ly** 通常的, 平常的, 慣常的

Related: common, conventional, customary, normal, popular, traditional, typical, well-known, widely-used

1973 **utilize** 利用

See use: the use-family verbs and phrases

1974 **vague** 模糊不清的, 朦朧的

1　Although some of the systems may start with keyword search or **vague** query expressions, in their handling of followup queries they are all nonetheless essentially visual query systems.

Related: ambiguous, unclear

1975 **valid** 有根據的, 確鑿的, 令人信服的

1976 **validate** 承認...為正當, 確認, 證實

1　We test a theory by attempting to **validate** its predictions in terms of a cause-effect relationship.

Related: confirm, prove, show, support, test, verify

1977 **validity** 正當, 正確, 確實

1　The main threats to the **validity** of our technique are that we studied only a single system, tested for only two possible outcomes, used only a few sets of test cases, and considered only versions with rates of failure higher than 6 percent.

2　Having no knowledge of the relationships in a specific system, we first construct all hypotheses of invariants and then test **the validity of** each hypotheses in operation.

Related: hypothesis

1978 **valley** 山谷

Related: peak, steep, trough

1979 **valuable** 有用的, 有價值的, 值錢的, 貴重的

1980 **value** 重要性, 益處

1　The clusters that are generated are added to the partition only if their contribution really **has some value**/*is valuable*.

Related: worth

1981 **variety: a variety of** 種種: 其中一種

See various

1982 **various** 不同的, 各種各樣的, 形形色色的

1 Large amounts of data can now be collected using **various**/*a variety of* system and application tools.

1983 **vary** 使不同, 變更, 修改 使多樣化

1 Each of these simulations were conducted in identical network scenarios and, except for the one **to be varied/that will be varied,** routing configurations.

Related: alter, become, change, modify

1984 **vary over**

1 The characteristics of spam mail often **vary over** time so it may be necessary to monitor features in order to determine if some become more or less prominent.

1985 **vary with** 隨...而變化

1 The courtesy pause **varies with/varies according to** the size and bandwidth of each site.

1986 **vary between....and.... /from ...to...**

1 The total of number of data dependences covered at this step **varies between/from** less than 2% **and/to** more than 25%.

1987 **venture** 冒險, 冒險事業, 投機活動

joint venture: 風險資本 — *venture capital*: 冒險資本

1988 **verify that** 證明, 證實, 証實,檢驗

To *verify* something is not the same as to *test* 試驗 it. We *verify* claims of knowledge. When we *verify* a claim, whether experimentally or theoretically, we determine whether it is true. To say that a claim has been *verified* is the strongest possible claim, equivalent to saying it is *proven.*

1 These experiments **verify** our claim **that** Markov models are overly sensitive to the training data and...

2 To verify the robustness of MTS for imbalanced data, this study compares MTS with several popular classification techniques.

3 The results indicate that MTS is the most robust technique to deal with the classification problem on imbalanced data.

4 In addition, this study develops a "probabilistic thresholding method" to determine the classification threshold for MTS, and it obtains a good performance.

5 Finally, MTS is employed to analyze the radio frequency (RF) inspection process of mobile phone manufacturing.

6 The data collected from the RF inspection process is typically an imbalanced type.

7 Implementation results show that the inspection attributes are significantly reduced and that the RF inspection process can also maintain high inspection accuracy.

Related: prove, support, test, valid, validate

1989 **version**

1 In that earlier **version** of this work, this goal could not be achieved_because an optimal algorithm had not been developed.

1990 **via: route, way, use** 經由, 取道

The preposition *via* has a concrete meaning and a cause-effect meaning. First, *via* refers to a *road* or *route* that is taken.

1 Fortunately, when the next hop is blocked because the buffer is full, it can attempt **delivery via an alternative route**.

From *route,* the use of *via* is sometimes extended to talk about doing something *through (by means of) a tool.*

2 Then, the scheduler disseminates the returned data object to its clients **via the broadcast channel**.

via is sometimes used as a substitute for *use*-family verbs that are followed by tools and to replace *with* where it can mean *using*.

3 The distance between the rear of one car and the front of the next is measured **via**/*using/with* **infrared**.

Related: use: the use-family verbs and phrases

1991 **vice versa** 反之亦然

1 We will now explore how document relevance influences clicking decisions and **vice versa**.

Without vice versa

1 We will now explore how document relevance influences clicking decisions **and how clicking decisions influence document relevance.**

Related: conversely

1992 **vicinity: in the vicinity of** 附近地區, 近處, 近鄰...

1 Because node-link diagrams_become unreadable in dense communities and **in the vicinity of**/*when near/when close to* high-degree hub nodes, they are not suitable for community analysis.

Related: nearby, proximity

1993 **view...as...** 看待, 考慮, 將...看成是

1 One way to **vi**ew our approach is as a matching pursuit strategy that has been put to a new and unusual use.

1994 **virtually** 實際上, 事實上, 差不多

1 The mobility management algorithm that we propose here imposes **virtually no**/*almost no/next to no/very little* communication overhead.GI-ANT

1995 **virtue** 優點, 長處

1 **The virtue of**/*The advantage of/The benefit of* FEC **is that** it makes it possible to quickly extract one patch from an entire image without having to find every segment.

Related: abstract nouns: signalling nouns

1996 **vital** 極其重要的, 必不可少的

Related: basic, critical, crucial, essential, fundamental, important, necessary

1997 **violate** 違犯, 違背, 違反

1 **One way to** guarantee that an application SLA is not violated is to adopt a resource overprovision policy...

1998 **vulnerable to** 易受傷的

1 The intrinsic characteristics of a mobile ad hoc network, such as node mobility and open wireless transmissions, make it highly **vulnerable to** security threats.

Related: block, defend, prevent, protect, thwart

1999 **warrant (vb)** 授權給, 批准, 使有(正當)理由, 成為...的根據

1 Combinations of techniques and benefits that have special areas of application or otherwise **warrant**/*deserve* special mention are marked in Table 5 with a plus sign (+).

Related: deserve, justify, prove, support

2000 **waste (n)** 浪費, 濫用

1 The drawback of a high degree of parallelism is that while it enables very fast processing of the entire database in a short time, it also involves a significant **waste** of <u>resources</u>.

2001 **waste (vb)** 浪費, 濫用, 未充分利用

1 Current implementations of generic algorithms [7], [13] can **waste**/*use up* some execution **time** generating non-feasible solutions.

Related: consume, deplete, exhaust, expend, use up, waste

2002 **wasteful (adj)** 浪費的, 揮霍的, 耗費的

1 It would be **wasteful** to keep every SH coefficient for every tile.

2003 **way**

way—668/mill. has a variety of meanngs.

1 **means-result**

As a signalling noun, *way* can introduce means-result in a procedure or recount.

> Example 1: as a procedure (how it is done)
> 1 **The simplest way of** monitoring this data **[result]** is to compare the relevant values against their assigned thresholds. **[means]**

> Alternative 1: as a recount (how it was done)
> 2 We monitored this data **[result]** by comparing the relevant values against their assigned thresholds. **[means]**

2 **method** 方法, 辦法

> 1 This is largely because additional nodes or edges can be mapped to the output graph **in various ways**.

3 **distance/route** 路程, 距離 / 路, 通路, 道路

> 1 The evolution of storage has brought us **a long way from** floppy disks to the now widely-used 2TB hard drive, the storage equivalent of 1,422,222 floppies.

Related: abstract nouns: signalling nouns, path, trajectory

2004 **we: personal pronouns in research writing**

See Part 1: personal pronouns

2005 **weak** (能力等)弱的, 差的

> 1 A **weak** constraint is used in removing particles so as to preserve each individual particle as long as possible.

Related: strong, strength, weakness

2006 **weakly**

> 1 The terms are displayed along, respectively, the x and y axes according to how **strongly** or **weakly** they correspond to each principal component.

2007 **weaken** 削弱, 減弱, 減少, 使...變弱, 使...變淡 變弱, 變衰弱

This verb (like *strengthen*) can refer to change occurring either in the subject or in the object.

> Change in subject
> 1 The impact of basic window size on the output rate of the join certainly lessens as **[subject]** the time correlations **weaken**/*grow weaker/become weaker*.

> Change in object
> 2 The results show that class imbalance does indeed cause a training bias and that the learned classifiers did **weaken**/*undermine* **[object]** the ability to predict the minority class.

Related: strengthen, undermine

2008 **weakness** 弱點, 缺點

1 Table 2 provides a concise summary of the different **strengths and weaknesses** of the organisations we tested.

Related: advantage, benefit, failing, negative, positive, strength,

2009 **were: hypothetical**

1 **If we were** dealing with a very large graph, such as the West highway system, **we would** choose the pruning algorithm using x-hop sketch graphs because it is faster and more space-efficient.

2010 **were: if: inversion**

Related: inversion

2011 **when**

See if and when

2012 **whenever** 無論什麼時候, 每當

whenever refers to events that recur, that is, happen more than once.

1 **Whenever** software changes occur thereafter, screening can use a much smaller quantity of computing resources to assess system performance.

2013 **where: relative pronoun**

1 where is common in computing research papers as a relative pronoun. It may appear in formulas, where it introduces more information about the notation In these cases, the relative clause talks about an entire clause, not just a noun phrase. Thus, <EQUATION> **where** i is an indicator function having the same definition as in Eq 1.

where also commonly introduces descriptions of conditions, circumstances, or procedures.

2 We have applied out approach in a 3D virtual world application **where** users can update their worlds without central administration.

3 However, in many practical situations it would not be valid to assume such a distribution, especially in cases **where** the standard deviation is small.

4 Incremental learning is a process **where**/*in which/wherein/whereby* an application learns users' sketching habits as they sketch.

Related: relative clauses

2014 **whereas: simple contrast**

See while: simple contrast

2015 **whereby** #靠那個, 藉以

See where

2016 **wherein** 在那時, 在那方面, 在那裡

See where

2017 **whether: complement of verb** (引導名詞子句)是否

1 Unfortunately, it has proven very difficult to <u>predict **whether** such reduc-</u> <u>tions will be effective for a given system</u>.

2018 **whether: (conj)** (與or連用, 引導副詞子句)不管是...(或是)

Example 1
1 There appears to be a slight improvement in convergence **whether** transactions are initially sorted or unsorted.

Alternative 1: different order
2 **Whether** transactions are initially sorted or unsorted, there appears to be a slight improvement in convergence.

2019 **while** 當...的時候, 和...同時, 而, 然而, 雖然, 儘管

while can signal three different semantic relations: concession-contraexpectation, temporal overlap, and simple contrast.

2020 **while: concession-contraexpectation** 雖然, 儘管雖然, 儘管

1 Note that **while**/*although* changing the number of levels does affect their value, it does not affect the distribution in the plot.

2021 **while: temporal overlap** 當...的時候, 和...同時

1 Legacy applications are maintained **while**/*at the same time that* new applications can be developed through a safe interface.

2022 **while: simple contrast** 而, 然而

In cases where *while* signals simple contrast, it can be replaced with the unambiguous *whereas*.

Example 1
1 For example, we might decide that in the case of a public annotation every user may hold read only access rights **whereas**/*while* the author has read-and write-access rights.

Alternative 1
2 For example, we might decide that in the case of a public annotation every user may hold read only access rights. **In contrast,** the author has read-and write-access rights.

while/whereas (simple contrast) can be followed with a subordinate conjunction.

Example 2
3 When searching with a probability below 50%, the number of hops is inversely proportional to the popularity of the topic, **whereas when/while when** it is above 50%, the number of hops is proportional to popularity.

Alternative 2
4 When searching with a probability below 50%, the number of hops is inversely proportional to the popularity of the topic. **In contrast,** *when/if* it is above 50%, the number of hops is proportional to popularity.

2023 **whole: the whole** 全部的, 全體的, 所有的

1 Instead of modeling **the whole**/*the entire/all of the* system, we simply characterize a sample of local properties of the system's components.

2024 **whole: as a whole** 作為一個整體, 整個看來

as a whole indicates to readers how something is being viewed in terms of the current discussion. We might even emphasize this element of perspective by saying "*seen/viewed as a whole*"

1 There is no doubt that while it is simple enough to judge the performance off a search engine on a page-by-page basis, it is much harder to judge the response set of a search engine **as a whole**.

Related: complete, entire, enititrety, part, partial, total

2025 **whole: on the whole** 一般說來, 就全(整)體而論

on the whole introduces the authors' summary opinion but implies that they have reservations. The relation is concession-contraexpectation but the second half of the relation is not always provided in the same sentence.

1 **On the whole,** the proposed models do reduce noise in the standard classifiers when properly applied,(but there remains room for improvement.)

Related: although, however, nonetheless, yet

2026 **wide** 廣闊的, 廣泛的

1 As our ontology language, we use (OWL) [Bechhofer et al., both because it has a solid theoretical foundation and is associated with a **wide variety of**/*many different* tools and applications.

Related: broad, narrow

2027 **widely** 範圍廣地, 廣泛地 遠, 大大地

1 This were important issues in the context of C++ libraries, which at the time were just becoming **widely-used**/*popular*.

Related: common, conventional, customary, familiar, normal, popular, traditional, typical, usual, well-known, widely-used, widespread

2028 **widespread** 普遍的, 廣泛的

> *1* **The widespread** adoption of UNIX and C as the operating system and programming language for all workstations revolutionized both the commerical and development environment for independent software vendors.

Related: common, conventional, customary, familiar, normal, popular, traditional, typical, usual, well-known, widely-used

2029 **wild cards** 百搭卡

2030 **will**

*will—1363/*mill.

See Part 1: modal verbs: future and conditional outcomes: will, would, shall

2031 **willing** 願意的, 樂意的

The adjectives *willing* and *unwilling,* and the noun *willingness* are low-frequency items (2/*mill*) but there is no paraphrase for them.

> *1* The disadvantage of this approach is that it requires users to examine each link individually and it is highly unlikely that they would be **willing** to make that extra effort.

2032 **with: as a complementizer**

with may be used as a complementizer to link an adjective, noun, or verb group that completes it meaning.

1 **After a verb**

> *1* Their research showed that the metrics were strongly **associated with** fault-proneness prior to being controlled for class size but that this correlation disappeared after they were controlled.

> *2* In particular, the school boards tried to economize by **replacing** face-to-face teaching **with** e-Learning and IT applications.

2 **After a noun**

> *1* The distortion from confounding could lead to overestimation or underestimation of an association, depending on the direction and magnitude of the **relations** that the confounder has **with** the independent and dependent variables [28].

3 **After an adjective**

> *1* This conclusion is **consistent with** the analyses of Spearman's correlations.

2033 with: reducing a defining relative clause

with is sometimes used in a relative clause in place of a various relative pronouns + verbs, broadly referring to (broadly) having and using.

1 with and having

with often replaces stative and relational verbs that refer to showing or containing attributes e.g., *have, display, exhibit, contain, involve.*

> Example 1
> 1 We applied our approach to 160 pulses **with** different rhythms.

Here the meaning of *with* is obvious because we know that pulses *have* rhythms. So we could also have written

> Alternative 1
> 2 We applied our approach to 160 pulses **that each had/each having** a different rhythm.

This use of *with* under-specifies meaning and so depends on greater reader knowledge in deciding what verb has been omitted.

> 3 However, the Gaussian mixture model makes unsupported assumptions about the low dimensionality of data and does not work well for data **with/***that display* hundreds of attributes.

Obviously, there is potential for ambiguity. For example, in the following example, *with* could belong to *procedure* (as its complementizer) or it could belong to *residual error* (as a kind of relative clause).

> Example 1
> 4 We designed a system **with**/*that had* a bandwidth ranging from 0.05Hz to 100Hz and **with**/*that had* an almost linear response.

> Alternative 1
> 5 We designed and tested a two-step procedure for the selective filtering of ECG and for removing residual error **with** minimal distortion of cardiac complexes.

> Alternative 1
> 6 We designed and tested a two-step procedure for the selective filtering of ECG and for removing residual error **that produced** minimal distortion of cardiac complexes.

2 with and using

with often replaces relative pronoun + verb where the verb refers to *using.*

> Example 1
> 1 The TM model has performed well in classification tasks **with** few features and a large training set [27, 28].

Often, it can be hard to know—except at a general level—what *with* means in the context, what verb could replace it.

> Rewrite
> 2 The TM model has performed well in classification tasks **that use/that are made up of** few features and a large training set [27, 28].

The next example is more ambiguous because it is unclear whether *with* is 1) an alternative to a relative pronoun + verb or 2) a complement of *identify* i.e., *identify with* in an <u>instrumental</u> use of *with*, introducing a tool.

> 3 Their method constructs a network and identifies stocks **with**/*that make use of/ that are identified using* a percolation approach based on an unfiltered stock correlation matrix.

Related: with: instrumental uses

2034 with: instrumental with and use/using

In relative clauses. the preposition *with* sometimes replaces verbs that refer to *use/using*. One problem with this is that we can confuse this use of *with* in relative clauses with the use of *with* in what is called its *instrumental* meaning. i.e., where *with* complements the verb and points to something that was used. Whether such a use is ambiguous depends on the context and reader knowledge. Consider the following simple example.

> 1 I saw a dog <u>with a long tail</u>.

This is certainly a very normal way to say this. In fact, it would be unusual if we wrote it in some supposedly "full" form.

> 2 I saw a dog <u>that had a long tail</u>.

The same is more or less true of the following examples.

> 3 I was robbed by a man <u>with a hat</u>.

> 4 I was robbed by a man <u>who was wearing a hat</u>.

But, as noted, the word *with* also has an *instrumental* use where it points to a tool, so—to stretch the imagination—the use of *with* would also allow us to interpret both of the preceding examples quite differently.

> 5 I <u>saw</u> a dog <u>with a long tail</u>. (silly interpretation: I used a long tail to see the dog!)

> 6 I was <u>robbed</u> by a man <u>with a hat</u>. (silly interpretation: The man used a hat to rob me!)

Our everyday knowledge tells us that these are silly interpretations but they nonetheless do illustrate some of the meaning potential of *with*.

Perhaps with this potential in mind, writers may try to do too much with *with*. For example in the following, we must wonder hard exactly what relative pronoun + verb has *with may have* replaced.

Example 1

? The TM model has performed well in classification tasks **with** few features and a large training set [27, 28].

It is hard to guess and we are left with two different interpretations.

Rewrite

7 The TM model has performed well in *classification* tasks **that use/that are made up of** few features and a large training set [27, 28].

The next example is even more ambiguous because it is unclear whether *with* is 1) an alternative to a relative pronoun + verb or 2) a complement of *identify*, i.e., *identify with* in an instrumental use of *with*, introducing a tool.

8 Their method <u>constructs</u> a network and identifies stocks **with***/that make use of/ that are identified using* a percolation approach based on an unfiltered stock correlation matrix.

But this is not the end of potential ambiguities with *with*. Consider the following example.

9 Using the distributed EigenValue algorithm, all peers in the network can update and store <u>the global value vector</u> **with minimal overhead**.

The phrase *with minimal overhead* might look like a relative clause describing *the global value vector* or even like an instrumental use of *with*, (meaning *minimal overhead* is a method/tool) but in fact it is an adverb of manner describing the *way* in which the vector is is stored. That is to say, the phrase *with minimal overhead* could be rewritten to be less ambiguous, as follows.

Alternative

10 Using the distributed EigenValue algorithm, all peers in the network can update and store the global value vector **at minimal overhead/cost**.

But the point of this discussion is not to illustrate the subtle meanings of the various English particles. Rather, it is to illustrate the point that *with* is a perfectly good word, but that it is open to ambiguity and should not be our first choice for all relative clauses.

The following examples show how *with* meaning *use* can commonly be rewritten.

Using **with** 1

11 In the first scenario, **we test** the false-positive rates of the PCCA-based detector **with different values**.

Alternatives 1

12 In the first scenario, **we use different values to** test the false-positive rates of the PCCA-based detector.

13 In the first scenario, **we test** the false-positive rates of the PCCA-based detector **using different values**.

Using **with** 2

14 It is possible to <u>test</u> web applications <u>with/using</u> automated performance testing tools [2][3].

Alternative 2

15 It is possible **to use** automated performance testing tools **to test web applications**.

And as in this case the *with* clause is in fact a subordinate (not relative) clause, we can also front it, but we would require some motivation for doing that.

16 **With** automated performance testing tools [2][3], it is possible to test web applications

And at this point, we arrive at the source of a very common pre-publication error: the indiscriminate use of *with* for *use* and, inappropriately, for many different subordinate conjunctions.

2035 with: introducing a marked theme

With may appear at the beginning of a clause or sentence as a marked theme, whether as a fronted complement, as a way to introduce a topic, or as a non-finite clause.

1 with: fronted complement

Example 1

1 The renovation work for the lab will soon be completed **with the support of the Campus Development Office.**

Alternative 1

2 **With the support of the Campus Development Office,** the renovation work for the lab will soon be completed.

The alternative fronts the verbal complement (*With the support...*)as a marked theme.

2 with: introducing a topic

With sometimes operates to introduce a new topic, especially if the topic is rather general. It would not introduce a specific topic (See Negative example 1).

1 **With** the availability of fast computers, broadband Internet, and cheap, high capacity storage, the size of data sets is increasing at a very fast pace.

As usual, such a phrasing is to be avoided if it creates a long theme and short, uninformative rheme.

Negative example 1: unjustified long theme

✗ **With** RFID-based tracking service, many location-based information services can also be provided.

Rewrite 1

2 **RFID-based tracking also provides** many location-based information services.

3 with: non-finite clause

With can appear at sentence initial at the beginning of a non-finite subordinate clause where it provides a broad introduction to accompanying circumstances and reasons.

> Example 1
> 1 **With or without** controlling for SLOC, **[reason]** the magnitude of the standardized regression coefficient changes dramatically.

> Alternative 1
> 2 **Whether or not** SLOC is controlled for, the magnitude of the standardized regression coefficient changes dramatically.

> Alternative 1a
> 3 **Whether or not** we control for SLOC, the magnitude of the standardized regression coefficient changes dramatically.

2036 with: accompanying circumstance

With is commonly used as an adverbial either late in the sentence or at the beginning of a sentence, where it normally talks about "circumstances" or "reasons". In this role, it is similar to *Because there is/was…*

Note, however, that such a use of *with* makes readers do a lot of interpretive work and so, as a way to begin a sentence *with* is usually too vague. The following use is simple and understandable.

> 1 **With all this homework to do**/*because I must do a lot of homework,* I won't have time for football.

But it would certainly not be reader-friendly to front the *with*-clause in the following example.

> 2 The emulator produces a large number of concurrent client connections, **with each client simulating a session derived from a common scenario such as a request to create new accounts or search by keyword**s.

2037 with the goal of + verb + ing

This phrase signals the purpose element in a means-purpose relation (i.e., *why* we did it, highlighting intentions).

> 1 In particular, we intend to collect data streams from both component-based and service-oriented systems **with the goal of detecting** problems associated with specific components.

2038 without: unless they have

> Example 1
> 1 **Without**/*unless they have* firewall protection, computers on the Internet are vulnerable to malicious hosts.

> Alternative 1
> 2 Computers on the Internet **that do not have** firewall protection are vulnerable to malicious hosts.

2039 **withstand** 抵擋, 反抗, 禁得起

1 These properties ensure that the watermark can **withstand**/*resist/tolerate* large amounts of rotation, translation, and noise.

Related: bear, put up with

2040 **work (n)** 成果, 產品

1 **In this work**, we use the terms antagonist and agonist.

2 If **earlier work** had focused on attribute subsets rather than on the learning methods, good predictors would not have been found.

2041 **work on (vb)** 起作用, 行得通

1 In contrast, the proposed method works well on both convex and concave regions.

2 We will also **work on** the hardware implementation to further speedup the computation for surfaces and volumes.

2042 **worsen** 使)更壞, (使)惡化

1 However, this problem **worsens**/*becomes worse/gets worse/deteriorates* as query vocabulary changes over time\

Related: worse: affect, aggravate, burden, damage, degrade, deteriorate, exacerbate, harm, interfere with, suffer from, undermine, worsen, **better:** alleviate, ameliorate, enhance, improve, mitigate

2043 **worst case** 最糟情況的, 作最壞打算的

1 Notice that, **in the ~~worse~~ worst case scenario**, both M and the data set contain a similar number of data points.

2044 **worth + verb + ing** 值得(做...) 1. 有(...的)價值,

worth noting, worth the effort, worth/worthy of further research

1 It is also **worth** comparing our performance with that of systems that use asynchronous adaptation, such as...

2 If the variable registers a gain, it is deemed **worth** keeping, otherwise, it is deleted.

2045 **worthwhile: make...worthwhile** 值得花費時間, 值得做的

What is *worthwhile* is first considered from the point of view of its negatives. These negatives are weighted against benefits. If there are more benefits, something is *worth doing (this way)"*or is *worthwhile* or certain circumstances *make (something) worthwhile*. It is not correct to say ~~It is worth to~~.

1 Even considering the costs of pre-computation and storage, the reduction in calculation time and I/O activities **makes** these pruning algorithms **worthwhile**/*makes it worthwhile to apply these pruning algorithms.*

Related: advantageous, beneficial, worth + verb + ing

2046 would

would—794/*mill.* is used in research writing as either a hypothetical, conditional form of *will* or as a past form.

See Part 1: modal verbs: future and conditional outcomes: will, would, shall

2047 yet, although, however, while

See although, while, however, nonetheless, yet

2048 yet another (this list is long)

yet another is an emphatic way to say *and another*, but the suggestion is that list of items is becoming long.

1 **Yet another**/*still another/And another* emerging area of information visualization work are systems that are works of data-driven art.

2049 yet: remains, still (與比較級連用)更, 益發

1 For emerging areas such as P2P resource sharing, however, **much work has yet to be done**/*much work remains to be done/there is still much work to do*, in particular, on wildcard search.

2 A minimum of two observations were required and they had to be both original and **not yet** commented upon.

The meaning here is that up to this point in time, there had been no comments on the observation.

2050 yet: concession-contraexpectation 而, 然而

The relation expressed in the following examples is concession-contraexpectation, i.e., a concession element invites an inference but the validity of that inference is, "unexpectedly", denied.

1 This transformation language is simple **[concession], yet** powerful enough to express all linear transformations on first-order graphs.**[contraexpectation]**

For alternatives with *although, but, however, nonetheless,* and *while* see Related.

Related: semantic relations: truth and validity: concession-contraexpectation

2051 yield (vb) 出產, 結出(果實), 產生(效果, 收益...

yield most typically introduces something as either neutral or positive. So we would say *yield (good/bad) results* but would not normally say *yields difficulties/problems.*

1 An analysis of network traffic in terms of some absolute measure (e.g., number of connections or bytes transferred) does not always **yield**/*give/provide* insights into variations in the data over time.

2 Steepest Descent is certainly the most straightforward method of numerical minimization but other methods are more theoretically sophisticated and may **yield**/*produce* better results.

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