

GUIDE TO THE ENGLISH EDITING AT ASTRONOMY & ASTROPHYSICS

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Abstract. This article contains the guide to the English editing at A&A.

1 Aims of this guide

The following language handbook can be used in different ways, which includes finding explanations behind some of the suggested changes. It was written based on the kinds of changes we recommend most often in A&A papers, so it does not pretend to be a full English language guide.

The most useful time to use this A&A handbook is while working through the changes we have suggested in your accepted article, whenever you are not able to understand why a change was suggested. It not only contains details, but also tries to give a sense of the spirit behind certain types of changes we ask for, from some simple conventions about details of spelling or punctuation, through causes of ambiguity, to changes for the sake of rhetorical effectiveness. At times, for instance, some of these paragraphs will have been inserted into the yellow note boxes in your corrected version, when it occurs often in a paper.

A second use might also be to take a look at it before submitting a paper so as to anticipate some of the changes we will suggest anyway, or alternatively as a 'style guide' to supplement any you might be using at present.

2 Consistency of style: UK/US spelling conventions

A basic principle of our editing is to ask for consistency within an article, whether in the punctuation, capitalization, spelling, or abbreviations. One example is found in words that have more than one proper spelling or form: **disc/disk, online/on-line/on line**. A good dictionary will tell you both versions of any word, and some tell you which is more common.

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This dictionary will also let you know which spellings are American and which are British, when there are differences. There is only a small difference between the two conventions, but you need to use the same one throughout a paper. Use the following guidelines when asked to revise the spelling for this reason, and of course your text processor (including L^AT_EX) can track this for you.

UK SPELLING CONVENTIONS	US SPELLING CONVENTIONS
-OUR endings: Behaviour, neighbour, favour, colour, harbour, vapour	-OR endings (pronounced /or/): Behavior, neighbor, favor, color, harbor, vapor (NB, but “contour”, pronounced /oor/)
-RE ending: centre, metre	-ER ending: center, meter
-SE ending on some verbs (less often for scientific terms) analyse, summarise, organise to practise (noun = practice)	Usually -ZE ending for the same verbs analyze, summarize, organize to practice
Doubled consonants on verb endings tend to be British, but are not strictly so: Modelled, labelled, targetting	US English tends to the single consonant for endings if the pronunciation does not change. Modeled, labeled, targeting
Expressions and others: of the order of, in the order of Brackets & square brackets Further (or farther if distance) Autumn Nought Ageing, speciality Catalogue, analogue, haloes, orientate Fulfil, sulphur	Expressions and others: on the order of (better: use the standard synonyms: roughly, approximately, about) Parentheses and brackets <i>Stricter on the difference</i> Fall Zero Aging, specialty Catalog, analog, halos, orient Fulfill, sulfur

3 Punctuation, abbreviation, and capitalization

As for all rules, some of the following are conventions chosen for stylistic consistency within the journal, which may be different from other journals. Most, however, are aiming to make the text clearer for readers, who are probably in a hurry, so anything that causes them to stop in order to understand or puzzle through a sentence may also make them stop reading altogether and go on to something else, which is neither the goal of the Journal nor the aim of any author.

How to write dates

In the text of your article, you may use either date formats common to regular prose (Day Month Year or Month Day Year) or the IAU recommended format (Year Month Day),

as long as you remain consistent. Please use letters for the month, rather than using its figure, to avoid ambiguity.

When the date is an integral part of the event's name, the use of the IAU format is recommended but not mandatory (for example, "the 2003 January 17 CME event"). Dates included in tables should be in IAU abridged format (for example, 2003 Jul 4).

Otherwise, you are free to choose from the following formats:

3 December 2005 / 3 Dec. 2005 /

Dec. 3, 2005 / December 3, 2005 / 2005 December 3 / 2005 Dec 3.

3.1 Punctuation

The serial COMMA in lists

In most technical and scientific writing, a comma precedes the 'and' before the final item in a list of 3 or more¹). In some cases, we may suggest a comma where it is inappropriate, but that probably shows that the list is ambiguously formulated, so it needs to clearly indicate which items are in the main list and which words modify those items.

The simple form is: **X, Y, and Z**. When any one of these is a compound, then the comma becomes essential: **W, X and Y and Z**. Should it be **W, X and Y, and Z**, where X and Y work as one element in the list? Or is it either an incorrectly punctuated list of 4 items (**W, X, Y, and Z**) or else only the last 2 work as a single unit: **W, X, and Y and Z**?

LISTS after colons

A colon is an appropriate way to introduce a long or a complicated list, and most authors do this correctly. No colon should follow the first one in a sentence and the sentence must end at the end of that list.

To separate the items in the list, **use commas when the items are simple and semi-colons for those that are complex**, i.e., one or more of the elements require a comma due to a list or dependent clauses. Also it is expected that you keep each item parallel to the others (same part of speech or similar syntax, which is called "Parallelism" in language guides).

¹The purpose is to avoid confusion, although many debate this convention (see Wikipedia at http://en.wikipedia.org/wiki/Wikipedia:Manual_of_Style#Serial_commas)

A simple example is

...as follows: the Earth, the Solar System, and the Galaxy

The complex formulations look more like:

...as follows: the Earth, but not the Moon; the Solar System and all its planets; and finally the Galaxy, which is part of the Universe.

Like the serial comma above, the combination of comma and semi-colon makes it clear which elements go in which part of the list. One place where colons are not needed is when introducing an equation that is separated in the layout but continues the syntax of the sentence, e.g., after a verb or a preposition, where no punctuation is needed. In fact, it would be incorrect in a normal sentence layout, so too here.

COLONS (or semi-colons) between 2 full sentences

That they are connected in the original shows that the author finds a relationship. In such a case it is preferred that you use the logical connector that the ambiguous punctuation replaces with a comma; most often, this word is a causal connector, such as “because”, “since”, etc. It is possible to use these sentence connectors once in a while when the relationship is obvious to all, but make sure that there are not too many in each paragraph, which indicates a need to replace them with the logical connectors to help the reader follow your thought.

Obviously connecting two sentences by only a comma (no logical connector) poses the same problem and is technically incorrect in English; but to be honest, there are very few authors who submit papers to A&A with this style error².

The preferred uses of the semi-colon between 2 sentences are either

(i) when one of the sentences, at least, is complex and contains one or more commas or

(ii) a connector that requires a comma after it (however, moreover, hence) is used.

The colon tends to be used mostly for introducing an example or a list.

COMMAS between two full sentences with a connector

The lack of a comma between two full sentences can be confusing at times, and it is needed for longer compound sentences, unless a semi-colon is more appropriate. Please consider that this is usually recommended in technical writing guides, except in very short sentences where there is no ambiguity as to their relationship.

COMMAS after introductory clauses

A comma is usually needed after a subordinate introductory phrase and the main clause, especially as it is often difficult to tell where the main clause begins, even for specialists.

²See ‘comma splice’ or ‘run-on sentence’ in English guidebooks.

When this occurs with figures, it requires a lot of attention by the reader (**In the interval** $10 \text{ K} < \text{Tex} < 30 \text{ K}$, **F(Tex) is ...**), but is often nearly impossible when following a long string of nouns used as modifiers, such that the final true noun and the first noun of the main clause become nearly undetectable.

Example: **As previously emerging radiation spectra are calculated for a radius of the scattering cloud equal to the Bondi radius.** Does the author mean **As previously, emerging spectra are calculated** or **As for previously emerging radiation, spectra are calculated**; or even, is this a fragment that introduces the next sentence?

If a specialist in this precise field might have to hesitate to decide between the two (or more) choices, one not a specialist will have to look much harder, will not understand, or will give up. A comma solves the problem for all cases and keeps your reader reading and following.

More often, authors invert the normal order of the English sentence, which is acceptable if not used constantly. There should be a reason for it, say for transition or rhetorical emphasis, rather than simply to vary the syntax.

COMMA before THAT/WHICH

“That” (not in phrases such as “enough ... that ...”) is never preceded by a comma, because it introduces a restrictive clause. If tempted to use a comma there, then check that “which” is not more appropriate (=non-restrictive). That “that” is already used for so many functions makes it all the more necessary to keep to the conventions. Even though standard English allows which’ to be used for the restrictive dependent clause, scientific articles prefer to keep the difference to the nonrestrictive even clearer by using only “that” without comma or “which” with a comma when nonrestrictive. Ex.: “Both metallicity components appear to have a common origin, which is different from that of the dark-matter halo.” VS “Both metallicity components appear to have a common origin that is different from that of the dark-matter halo.”

HYPHENS for two-word compounds when used together as an adjective

The rule is that the hyphen is used to connect the two words, e.g., adjective and its noun, when the second is used to modify another noun: **“a region where stars are forming” becomes “a star-forming region”**. However, it is not a hard-and-fast rule, but depends on whether there is a precedent for that spelling or else whether the hyphen helps to clarify relationships that are otherwise ambiguous. Also, notice that the modifying noun becomes singular³. The compound cardinal directions are not hyphenated: **northeast, southwest**.

In a familiar example, we see the problem that could exist, that is, if it were not so familiar and if the first formulation weren’t redundant to start with (!):

³See “Comment” on this <http://grammar.ccc.commnet.edu/grammar/compounds.htm>

- **“long-time frame observation”** is an observation of frames over a long period of time (better without the second part of the hyphenated phrase, obviously); or **“long time-frame observation”** where the observation insists on being within a specific, defined frame. To be honest, in general English, there is no discernible difference between the two, as both would be understood as “a very long observation”, but as it is used so often in scientific articles, there must be a reason for the specific terms here: “time frame” for one.
- Another example of this might be: **“The local limb slope”**, where a non-expert might wonder if the limb is local (“local-limb slope”) or if it is a limb of a slope (“local limb slope”). According to the rule, it must only be the second choice, since there is no hyphen.

The hyphen is particularly useful in complicated compounded phrases that also have these compounded noun phrases: e.g., “Closer inspection of our direct mass and luminosity function determinations reveals...” Are we to inspect the direct mass more closely and also the luminosity-function determination? In these cases, as in so many, we may suggest the hyphen, which is a clue that there might be a reason for it in that situation. You are asked to consider its usefulness in that context; so when you feel it is clear for all astrophysicists, even those starting out in the specialty, then it need not be inserted in this case.

PARENTHESES/BRACKETS

We often suggest that long sections in parenthesis be placed in the running text, where they are more appropriate than in, say, a footnote, as it directly relates to the subject at hand. In many cases, it can be connected by a comma followed by “which” or another relative pronoun. This does what some authors seem to want from the parentheses, so should be used instead, especially when there are already a lot of other parenthetical phrases in a section of the paper. **If it is truly a side issue, then consider placing the information in a footnote.** Otherwise, punctuate as if it is a full separate sentence, if it is at the end: e.g.

Examples:

“We observed these stars for 24 hours (which did not include breaks to eat and sleep).” ⇒ “We observed these stars for 24 hours, which did not even include breaks for eating and sleeping.”

You may use the same sentence but as a second parenthesis, punctuated as “We observed these stars for 24 hours. (This did not even include a break for eating and sleeping.)”

Avoid parentheses within parentheses, except when it is part of a formula. This includes the year in a reference that is placed in parenthesis, where we also prefer no comma between the name and year, but do expect the full stop after “et al.”: (Johnson et al. 1999). When the name is in the text, then only the year is placed in parenthesis.

3.2 Capitalization and abbreviation

- A&A asks you to **capitalize only the first word of the title and subtitles**, with the exception of proper nouns. Abbreviations are to be avoided in titles, unless they are very common ones such as cardinal directions (NE), some star names, or chemical terms; when possible, please write them out.
- Like other journals, A&A asks you to remain in the formal register; that is, do not contract as in “don’t” or “can’t”, while the second is one word: “cannot”.
- Follow the Instructions to Authors about capitalizing and abbreviating numbered references in your sentences, such as Fig. 1, Sect. 2, Eq. 3, or even Col. 4. When possible, use the plural for multiple items: “Figs. 2-4” or “Eqs. 5 and 6”. “Table” is never abbreviated, although it is capitalized when followed by its designated number, while no word is abbreviated at the beginning of the sentence. Also, when any of these words are not followed by a number or letter indication, then it is treated as a normal noun that is not capitalized.

Example: “This argument can be found in the next section, where Eqs. 5 and 6 are explained.”

- **CAPITALIZE all adjectives and verbs formed from proper names**, such as Poissonian or Compton, no matter how familiar it has become: Newtonian. One of few exceptions to this is “cartesian”.
- **Use the LOWER CASE when introducing abbreviations and acronyms.** The words that make up the introduced acronym are not capitalized unless either (i) a word is a proper name or (ii) the acronym does not use the first letters.

Examples: star formation (SF), Atlantic Ocean (AO), the Galactic center (GC), High-Precision PARallax COLlecting Satellite (HIPPARCOS)

- Use the lower case for the full names of chemical elements and for the cardinal directions: **oxygen, southeast**.

4 Verb tenses, plural/singular nouns

4.1 Verb tenses

The present tense

The present tense is used for **statements of fact and general truths**, for a **set of steps in a method** (not for the steps in testing), and for **results, discussion, and conclusions** that are set out in the paper itself. We do accept the present perfect and present simple for the work of others when the paper is cited, which comes from etiquette learnt for this

situation. It must be consistent, however, and should avoid any time tags that contradict that tense choice.

To be consistent, avoid using the present for your work and then the past tense for others' work in their papers, because it may suggest theirs is wrong.

The present perfect

Using the present perfect implies that the situation, even the action, is still going on, so not completed. It can also be used to put strong emphasis on how the situation has changed just this instant, usually with the negative: "I've never read such a fine article as this one." This problem occurs because of interference from other languages that use it for a finished, completed action, so we usually take this use as intending the simple past in English. However, we can obviously be mistaken in some cases. It is, however, true that **most English style moves quickly out of the present perfect and avoids using it throughout a full paragraph in sentence after sentence, unlike in other languages. It is perceived as wordy.**

The future

The future is expressed in English with either the present simple or the verb "will" and the infinite. **When referring to work that follows in the same paper, use the present simple as appropriate to the immediate and certain future**, while the classical form with "will" is used for future work after this article or for predicted events; it is used for events that are relatively certain, otherwise one of the conditional forms might be needed. "We explain our method in Sect. 2." vs "Once these stars have been observed, they will be analyzed using the new method."

Active vs. passive voice

Scientific language tends to use the passive, especially when talking of work done in a team; however, this has changed with time, so that **A&A encourages authors to use the more personal and active forms when possible**. Best for style is to vary the two and to use the active when the passive requires many more words.

Example: "The fact that such observations can lead to accurate results is demonstrated by our analysis."
 ⇒ "Our analysis demonstrates that such observations lead to accurate results."

4.2 Nouns: plural or singular

Some nouns can be either singular or plural depending on their context, although each has a preferred number.

NUMBER

When you are referring to a lot of individual things, use the plural form, e.g., "A number of stars **were** found in our last observing run."

But you must say “The total number of stars **is** . . .” The sense in the second example is clearly singular with ‘total’ emphasized, and here the normal meaning of ‘number’ comes into play (=a sum total of things) as opposed to the rule above. You choose the number by your meaning, in other words. When “a large number of” means exactly the same as “many”, then it must be plural.

MAJORITY

‘Majority’ and ‘variety’ follow the same rule as ‘number’, although the sense of the word is the determining factor: do you mean it as a single entity or as a group of individuals?

PLURAL: “The majority of scientists hope the agency will raise the number and amount of grants.”

SINGULAR: “The overwhelming majority still votes for amnesty.”

STATISTICS

Statistics is usually plural with some exceptions: “The statistics for our sample of stars are found in Table 1.” If you want to make it singular in this meaning, then use “set of statistics”.

When referring to the study of statistics, then it is singular, but this is a rare use in astrophysics.

DATA

Like other scientific publications, A&A remains ‘purist’ by asking for the plural usage⁴. If you mean a single one, use “data point” instead of “datum”.

5 Sentence structure and word order

5.1 Paragraphing

We do not usually have time to deal with the most effective way to develop an idea in sentences and paragraphs, being more concerned with more basic English problems related to clarity, but it is a concern and will be addressed when it is clearly a problem in any article. However, there are times we will make suggestions for paragraph breaks or ask an author to combine a single sentence that is swimming alone with one of the neighboring paragraphs.

Otherwise, the best choice for paragraphs, as for sentences, is to aim for variety in length, if possible. Too many of the terse 2 to 3 sentence paragraphs in a row leads to monotony and a lack of transition or logical movement within a section, which is just as true for a series of short simple sentences in a paragraph. Paragraphs that are either too long or too short can be a problem for different reasons, with different solutions⁵.

⁴For more examples of where the sense of the noun and intent determine number of the verb after an apparently singular noun, see Fowler at <http://www.bartleby.com/116/202.html>

⁵See the short Wikipedia comment on both at http://en.wikipedia.org/wiki/Wikipedia:Guide_to_writing_better_articles/#Paragraphs. And see advice on the expository paragraph on “Commnet” or in any style guide you may have.

Each paragraph should have its own focus that is introduced in the first sentence and that includes some brief transition phrase from the preceding paragraph or else a clear connection to the topic of the whole section. This topic sentence should then be followed by two or more other sentences that develop and prove that idea, i.e., the standard expository paragraph.

5.2 *The English default structure*

The English declarative sentence has its main (“default”) structure of subject, predicate (verb phrase), and objects of the action. It can be varied, if there’s a reason, but should be used as often as possible. Other elements, such as adverbs, have a recommended order that you probably learned in early English classes, as for most of all this. Here, though, we mention those kinds of errors that we see often and that lead to either ambiguity or else to awkwardness, at least in the native-speaker’s experience. Avoid separating the subject from its predicate (the main action/verb of the sentence): e.g. “The author, after revising the English, submitted his article.” becomes “After revising the English, the author submitted . . .”.

5.3 *Inverting this word order*

Word order is often awkward in papers we see and must follow certain rules. Mostly, there must be a good reason for it, the least of which is variety, because there are many other ways to begin with something besides the subject, due to all the subordinate clauses available or adverbial phrases to introduce the sentence. If for some reason the complement to the verb comes first with the subject last, then there should be no punctuation to interrupt it for all are part of the main sentence, and it is even more confusing when this inverted sentence is interrupted by a subordinate clause.

EXAMPLE: **“Especially appealing is the study of its stellar winds.”** ⇒ **“Study of its winds is especially appealing”**. Unless this comes at the end of a rhetorical list we seldom see in scientific writing, then there is no reason for this inversion and the only improvement needed to the second version is to perhaps get rid of the ‘of’ phrasing: “Studying its winds is . . .”

5.4 *The direct object*

It goes immediately after its verb with rare exceptions, and should not be separated without a very clear reason: **“The star’s image shows clearly the alignment.”** ⇒ Use either **“clearly shows”** or **“shows the alignment clearly.”** Avoid interjecting long subordinate phrases as adverbials between the transitive verb and its direct object or in the middle of any clause, for that matter.

And of course the transitive verbs should always have a direct object, with the most familiar problems “to allow”, “to enable”, and “to permit”.

“This program allows to analyze the data” can be solved in 3 ways:

- (i) “This program allows us to analyze the data”,
- (ii) “This program allows the data to be analyzed”, or
- (iii) “This program allows analysis of the data”.

Several adverbs go before the verb: “only” and “also” are 2 familiar examples. But **there are many preferred places for different grammatical forms, as in all languages, so if one has been corrected, please check a more basic grammar guide.** If you felt that there was a reason for moving from the normal order, then perhaps something else in the sentence kept this emphasis from being clear as we were reading.

5.5 *Parallel structure*

Parallel structure is essential for avoiding ambiguity in compounded phrasing, whether in a list or between two longer sections of a sentence (See ‘Parallelism’ in style guides). The compounded (or listed) items should share the same part of speech or syntax and all have the same grammatical status.

EXAMPLES

“The data were prepared analytically and by the Smith method (2001).” ⇒
 “The data were prepared with an analytical method and by the Smith method (2001)” (or even better, if true, “The data were analyzed by the Smith method (2001).”)

“It is best to use alternative methods because of the obscured point of view and because this is always a good idea in astronomy.” (mixing a noun with a full clause)

⇒ “It is best to use alternative methods because the point of view is obscured and because this is always a good idea in astronomy.”

Many elements are often combined in lists in the very long sections with details of scientific work and results. **The rule is to make sure that the related items in the list maintain the same part of speech and syntax, as said, which includes repeating the preposition or obviously reusing the structure of the first in the others.** When faced with several lists in one sentence (even compounding within lists), the logic becomes clear, for otherwise the reader cannot sort out which goes with which.

5.6 *Unambiguous reference*

Although it happens to the best of us, it is rare that we need to remind writers in A&A to check that an antecedent is clear in normal sentences. It does occur, however, in more complicated constructions, so the following rules were set up to avoid creating ambiguity and awkwardness in reference.

5.6.1 Subordinate clause: THAT vs WHICH

In scientific journals, we prefer that the relative pronoun form of *THAT* is used for all restrictive connections and always without a comma, while *WHICH* is used only when the information following is added and not essential (non-restrictive) to the main idea of a sentence, something many are tempted to put into parenthesis, for instance, and is therefore always introduced with a comma after the preceding word⁶. See also page 65.

5.6.2 Subject of a subordinate clause: Dangling modifiers

And of course **make certain that the subject of a subordinate phrase is really the same as the subject of the sentence** to avoid the “dangling modifier” that can be amusing at times: “Having studied the spectra, the 2 galaxies were approaching each other” ⇒ “Our study of the spectra showed that the 2 galaxies were approaching each other.”

Any other form is ambiguous. Avoid gerunds unless used as a noun phrase alone or in a prepositional phrase: e.g. “Studying stars is my hobby”; “After having read the . . . , I . . .”.

6 Clarity and precision

In English, it is a stylistic virtue to be concise and to use the precise phrasing for an idea, while in science anything that is precise and clear is a necessary virtue, so that on this they coincide. In scientific writing, however, many wordy constructions have developed for various reasons and can be tolerated until too many of them combine to cloud the meaning. Likewise, poetic language and puns that work so well in other disciplines should be avoided in scientific articles as much as possible, especially when so many non-native speakers cannot appreciate them. On the other hand, some metaphors have entered into the terms of some specialities and other expressions are so common that they have become clear to close colleagues, perhaps even to the whole community. As language editors, we consider the astronomer from other specialities and other languages as much as possible in our suggestions⁷

Active phrasing

One way to do this is to aim for ACTIVE PHRASING as often as possible for several reasons, such as clarity, lively style, avoidance of too many ‘of’ preposition phrases and “-tion” nouns. We look for any overuse of abstract nouns where the original verb form is more appropriate: “the estimation of x is . . .” should be “**estimating x is . . .**” “We observe the planet by the detection of the stellar light it reflects” ⇒ “**We observe the planet by detecting the stellar light it reflects**” or even better ⇒ “We detect the planet

⁶Fowler calls this difference “defining and non-defining clauses” in *The King’s English* at <http://www.bartleby.com/116/204.html>.

⁷References include “Commnet” at <http://grammar.ccc.commnet.edu/grammar/concise.htm>.

by the stellar light it reflects.” Considering that science requires these nouns, using more than is required means that it quickly becomes too abstract and wordy.

6.1 Indirect introductory phrasing

Indirect introductory phrasing should be used sparingly by the same token, as in the following examples.

- Please avoid “It is worth stating that” or “We want to stress that” most of the time, if not always. In most cases it takes away from the strength of the assertion that follows, and is understood at any rate.
- Avoid “we hope”, “we wish”, “we believe”, etc. Even “We can see that ...” or “We think that ...” are already assumed by the reader, so are not useful.
- Do not start a sentence with “concerning” or “with regard to”: e.g., “Concerning the value of the frequency, we have investigated whether stars release ...” should be “We have investigated the value of the frequency at which stars release ...”

6.2 Avoiding ambiguity

Avoid ambiguous wording whenever possible. One notorious example is the connector “and”, which in English is used too often for the more precise connector that is meant: “Divide and conquer” for “Divide, then conquer”. **The most obvious source of ambiguity comes from words that have more than one meaning or use**, especially for connectors that are also used as adverbs, prepositions, and adjectives:

- **Like** do you mean ‘such as’? or ‘similar to’?
- **As** do you mean ‘because’ or ‘while’ or ‘during’?
- **Since** do you mean ‘because’ or ‘after which’?
- **While** do you mean ‘whereas’ or ‘during’?
- **So** do you mean ‘therefore’ or ‘meanwhile’ or ?
- **Quite** do you mean ‘very’? or ‘somewhat’?
- **Rather** do you mean ‘instead’? ‘very’? ‘somewhat’?
- **Further** do you mean ‘more’? ‘another’? ‘again’? ‘an extended’?
- **Such** do you mean ‘this sort of’? ‘very much’? ‘these’? etc.
- **Few** do you mean ‘very few’ or ‘a few’ or ?

Or from words that are close in sound, and often in meaning:

- insure/assure/ensure
- than/then
- affect/effect/impact
- relative to/compared to/with respect to
- comprise/consist of/be composed of
- In contrast to/contrary to/opposed to/compared to

Another major source of ambiguity is reference confusion (see Sect. 5.6), but also simply the use of too many words where a simpler phrasing is more appropriate because clearer. Likewise, non-native writers in English are not able to sense when a longer phrasing is appropriate or not, not that all native English writers do it well all the time either. Some areas where problems arise regularly in our experience follow.

The first and easiest is to avoid any sexist or hemispheric phrasings such as “Summer 2005” (give the months rather), and if you do not know the referee’s name then please acknowledge “her/his” or “the” useful comments, not merely “his”. This occurs less in astrophysical writing, but please try to avoid using “American” alone when you mean “North American” or from the “United States of America”,

In general, **try to use the fewest number of words possible, which often makes your ideas clearer**, as long as the reader has a better chance of understanding your text. **However, too much compactness can also cause confusion, as the connecting words, especially prepositions, have been removed.** This happens a lot in scientific compositions of nouns modifying other nouns to avoid using the prepositional phrase with ‘of’: “a theory of how stars are formed” becomes “a star-formation theory”.

As an example of compacting too far, writers often leave off the ‘that is’ in modifying phrases and do so quite correctly, but it can also go too far, so we may suggest putting it back in to avoid ambiguity or for clearer style: “a theory more interesting than the facts” \Rightarrow “a theory that is more interesting than the facts”.

6.3 Avoiding redundancies

These are examples of using two words that both mean, or at least imply, the same thing. They are wordy, though many have entered colloquial language (e.g., ‘slim and trim’). Ones that we have found during our editing include:

- coupled together \Rightarrow coupled
- In the obtained results \Rightarrow results
- Determine the point of onset of... \Rightarrow determine the onset of
- Decreases down \Rightarrow decreases

6.4 Avoiding vague qualitative descriptions

- A good example here is “**rather small**”. In this case, compare it with something larger.
- In English, if not most languages, “**very important**” means the same thing as “important”, and even less when “very” is overused.
- Likewise, watch out for undermining absolutes: if only “**partly true**”, then which part is true and which not (?); “**somewhat consistent**” (“consistent” is absolute, so it cannot be partly so).

- Or else **“in fact”** or “the fact that” need to be avoided as often as possible; make certain it is a fact.
- **“In any case”** and some other familiar filler expressions cloud scientific writing, so use them when you actually mean it. This example does not mean “Oh well!” in writing, unlike in discourse, or the more recent Americanism “Whatever!” If there are two possible cases being discussed, use “in either case”.

6.5 *Avoiding wordy constructions that mean the same as the direct one*

“In order to” can usually be shortened to the infinitive alone “to” plus the verb.

“On/of the order of” in the sense of “approximately, about, roughly” is sometimes the only form used, and it is used often, so that it becomes awkward. It also sounds so much like “order of magnitude” that it gets confused in the writing and, probably, understanding of either. Try to use the other forms of approximate measurements as often as possible.

- X is of particular importance \Rightarrow X is particularly important
- X is only of an approximate nature \Rightarrow X is only approximate
- To detect the presence of an atmosphere \Rightarrow to detect an atmosphere
- To perform an identification \Rightarrow to identify
- Concerning the explosion, its effect is ... \Rightarrow The effect of the explosion is ...
- The intersection of x and y occurs \Rightarrow x intersects y
- We aim at estimating (If not in the abstract) \Rightarrow We estimate
- Make a comparison with \Rightarrow to compare ... (Likewise other noun versions of active verbs, when not needed for meaning)
- Show strong indications of something \Rightarrow to indicate something strongly
- Is in contradiction with \Rightarrow contradicts
- Is in agreement \Rightarrow agrees with
- Before proceeding further, it is worth commenting at this point that we have studied the ... \Rightarrow We have studied the ...

And finally, stay away from the double negative in favor of a direct, affirmative statement: “This result is not unlikely” can be either “This result is likely” or “This result is possible”. Notice that the “litotes” format is slightly ambiguous, because it does not indicate the degree precisely, except for what it is not.

6.6 Transitional phrases

are useful, but when they only add words or repeat themselves, they need to be avoided: **Avoid “actually”, “in fact”, “moreover”, “indeed”, etc., or use only when they help clarify relations** rather than muddle them. Likewise, “hence” can be very useful in the right context, but when overused becomes useless and loses its rhetorical power. Once or twice a paper makes sense, but not once or twice a page or more often. Even if tempted to place one of its synonyms, be aware that overuse of several of these in a row begins to seem odd, too; just as using a string of sentences all containing indicators of contrast (but, however, in contrast, etc) seems like the writer is arguing with her/himself.

7 Some frequent corrections

- Overuse of “SUCH” for “THIS”

E.g., “such stars” after already referring to specific ones ⇒ “these stars”

“SUCH” is not the normal demonstrative article, and it is not used like this in most contexts in the non-English-speakers’ papers. When this meaning of “such” is used more than 1/3 as often as the equivalent “this”, then it needs changing except for the case of “this sort of” or “this kind of” only. Also, watch out!-“such a” can be insulting in some contexts when the author maybe meant only “this”: e.g., “... (Jones 1994). Such an article is ...” It is also ambiguous in several instances, and the author will be asked to choose either “this” or “this kind of” to eliminate the confusion for both English native and non native readers.

- Overuse of “FURTHER”

“Further” being used exclusively instead of the standard “more” or “another/other” or “earlier/former” or even “then” in a sequence (!), e.g., “further studies” for “more studies”. Each of these means something slightly different from the others, and sometimes means something truly different, and “further” does not always mean what they usually mean.

Examples:

- adds a further layer to ⇒ adds another layer to ...
- We did further research ⇒ We did more research

It means “more extended” not simply “a greater number of” as so often seen.

- Use of “THESE/THIS LATTER”

“these/this latter X” ⇒ Either “these/this X” or “the latter X”, though the first is preferred. “The latter” only for 2, ‘last’ is for more than 2, even when you mean the last 2 of only 3.

- Overuse of “TOGETHER WITH” and “AS WELL AS”

which are otherwise very useful structures in English. Note that only “and” is used after “both”, and never “as well as”, as in: “Both X as well as Y are ...” ⇒ “Both X and Y are ...”

- Overuse of “BEST”

rather than the precise word for what is meant. This tends to be younger authors, and not just French ones. We offer them a choice of synonyms of “best”, all except “favorite”: **precise, useful, clear, most likely, etc.**

High/low vs. large/small

The high/low vs. large/small or strong/weak problem: the lefthand column gives the attribute, the righthand one the words that use them. NB, some show up in two places.

- **High or low:** Most words that are typically indicated by up/down graphs: Value, rate, redshift, degree, temperature, metallicity, luminosity, speed, velocity, contrast, energy, frequency, level, density, shear, extinction, pressure, eccentricity, inclination, proportion, abundance, fractionation, flux, background (or strong?)
- **Big/large or small:** Scale, correlation (?), broadening (?), opacity, amplitude, mass, momentum, uncertainties, diffusivity
- **Can be either high/low or large/small:** It depends on the emphasis: number, frequency, dispersion (both?), coefficients (or only large?)
- **Short or long:** Time, length, timescale
- **Strong or weak:** Pulse, current, correlation, gradient, flow, shear, dependence, velocity field, asymmetry, contrast, constraint, turbulence, instability, acceleration, anisotropy
- **Tight or loose:** Often the same as “strong/weak”: relationship, correlation
- Other frequent corrections
 - “Like for example” ⇒ “Such as”
 - “Non negligible” ⇒ “Significant” or “of low significance” (avoid litotes)
 - **Both “more metal-poorer” and “metal-poorer”** are found in ApJ and MNRAS, so both are correct but the second is better when it modifies a plural noun so is ambiguous. However, in many cases it is better to rephrase to “is richer/poorer in metal(s)”.

Appendix A: References

Some of the available guides for scientific and technical writing that offer a wealth of examples and references along with clear explanations are

- Academic writing: Scientific reports <http://www.wisc.edu/writing/Handbook/ScienceReport.html>
- The ACS style guide: http://www.oup-usa.org/sc/0841234620/0841234620_1.html
- The Online Technical Writing Textbook, which exists in hardback as *Power Tools for Technical Communication* <http://www.io.com/~hcexres/textbook>, by David A. McMurrey <http://www.io.com/~hcexres/dmcvita.html> (Heinle Publishers, ISBN 0-15-506898-0)

Other useful sources are

1. the latest edition of *The Chicago Manual of Style* (use their online search tools that give personal commentary by the editors on different points with lots of examples. <http://www.press.uchicago.edu/Misc/Chicago/cmosfaq/tools.html>)
2. <http://dictionary.cambridge.org> Cambridge dictionaries on the web
3. Merriam-Webster at either <http://dictionary.cambridge.org> or <http://www.websters-online-dictionary.org/definition/>.
4. Online encyclopaedias such as: (i) Wikipedia, especially its collection of pages under the headings of Natural Sciences, Mathematics, Technology, <http://en.wikipedia.org/wiki/Wikipedia:Browse> or (ii) Answers.com <http://www.answers.com/topic/accretion-disk> with 'accretion disk' as the example here. This one uses several dictionaries and encyclopaedia articles, so may use several spellings of any words with a choice.
5. William Strunk & E.B. White *The Elements of Style* on 'Bartleby.com', especially their sections of common usage errors at: <http://www.bartleby.com/141/strunk3.html> or else useful general English guides from Hartford Community College/ Webster with a user-friendly portal at <http://grammar.ccc.commnet.edu/grammar>. Another resource could also be Fowler's *The King's English* also on Bartleby.com, but watch out for his irony and more complicated explanations compared to Strunk & White.
6. Mary K. McCaskill. "Grammar, Punctuation, and Capitalisation: A Handbook for Technical Writers and Editors". Langley Research Center (NASA SP-7084) at: <http://www.sti.nasa.gov/sp7084/contents.html>.

Additional references on UK/US Spelling Conventions

If interested in less scientific differences, take a look at: Tripod.com's "US2UK"⁸ or Krysstal's page of the differences⁹. Meanwhile, if you consider you are writing in another English dialect than either UK or US variants, then please let us know. If we cannot set our own spell checks on your file, however, then please include a list of what you consider the differences to be, which we can check if we feel it necessary: for instance, see Wikipedia's pages (gateway at http://en.wikipedia.org/wiki/Wikipedia:Manual_of_Style#National_varieties_of_English) on this concern, including the following statement on Australian English: "Both -ise and -ize are accepted, as in British English, but '-ise' is the preferred form in Australian English by a ratio of about 3:1 according to the Australian Corpus of English" (on http://en.wikipedia.org/wiki/Australian_English).

⁸<http://us2uk.tripod.com/dictionary.htm>

⁹<http://www.krysstal.com/ukandusa.html>