

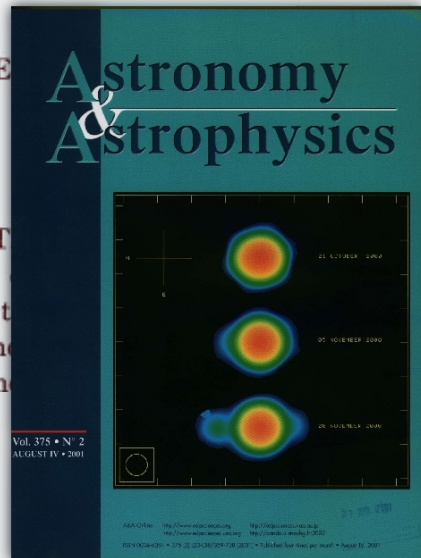
# Scientific Writing 6951

THE  
ASTROPHYSICAL JOURNAL  
AN INTERNATIONAL REVIEW OF SPECTROSCOPY  
AND ASTRONOMICAL PHYSICS

VOLUME XXXVII

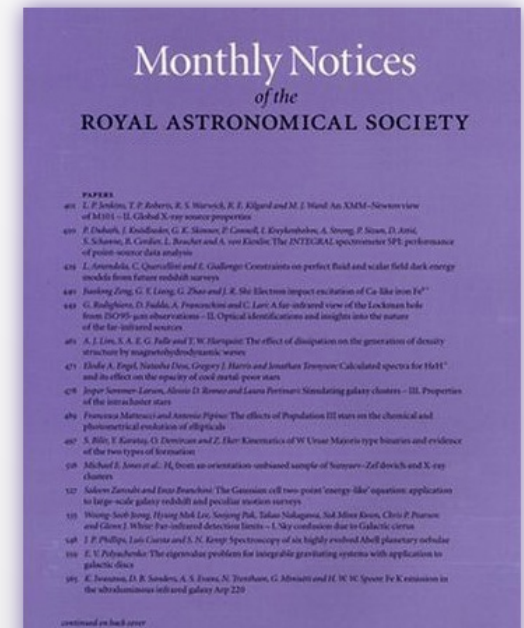
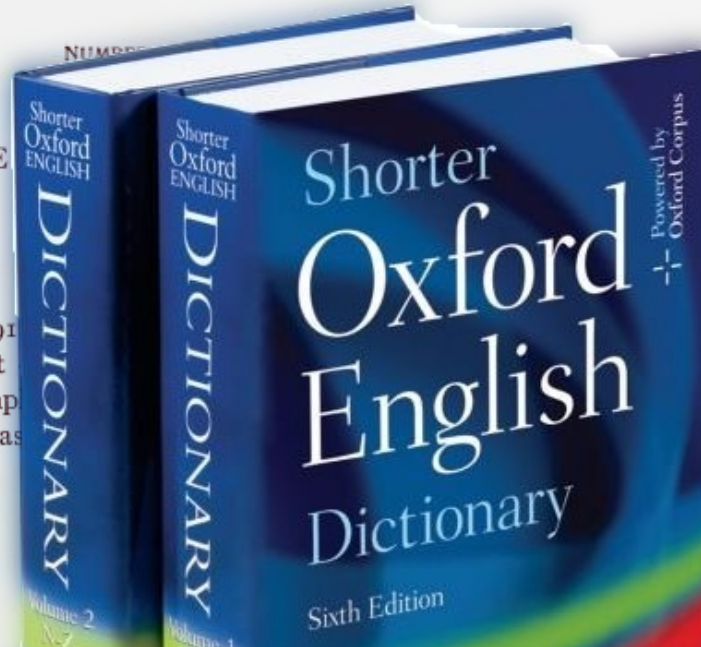
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<http://www.astro.uni-bonn.de/~izzard/writing.html>

# Previously on *Scientific Writing*

- Style part 1 of 3
- Errors and distraction
- Fragments, Sentences,  
Paragraphs, Clauses
- Openings
- Consistency
- Gender bias



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***English Style!***



# Today

- Part I : **Punctuation**
  - **Commas**, Clauses, Phrases, Lists
  - Hyphens, dashes
  - Numbers, units and counting
- Part II : **Verbs**
  - Verbose **Fluff**
  - Quotation, hyphens, dashes
  - Double negatives



# Punctuation Hell

- German/French/etc.



- Scientific English:



- Moral: use commas only in special cases

(*which have to be learned...*)



# Commas 1



*Separate introductory and dependent phrases from the rest of the sentence (unless the phrase is very short)*

Despite an attack of influenza, I gave the lecture.  
However large it is, the star is yellow.

*But not for infinitive (to ...) or gerund (...ing) phrases:*

**To obtain** the stellar colour a stellar atmosphere code was employed.

**Doing** the shopping was tiring because I was sick.

**Shopping** was tiring because I was sick.

# Commas 2



*Joining of (unrelated) **independent** clauses (with a conjunction)*

The stellar model does not resolve convection, **but** the SPH model does.

*Exception: short sentences, closely related clauses.*

I am alive and I am doing fine.

The code ran for five hundred timesteps and then crashed.

*Avoid comma splices (in sentences without conjunctions)*

It is late, we are tired.

It is late; we are tired.

It is late – we are tired.

*"So many highly respected writers observe the splice comma that a rather unfair rule emerges on this one: only do it if you're famous."*

**Lynne Truss (British author)**

# Commas 3



*Delimit non-restrictive (parenthetical) phrases (more later)*

The stellar model, which continues to run, does not resolve convective cells.

Eloquent Science (p346) gives an excellent example:

Critics of the war plan, now being executed by the U.S. Military, ...

*Place names*

**London, England.**  
**Bonn, Germany.**



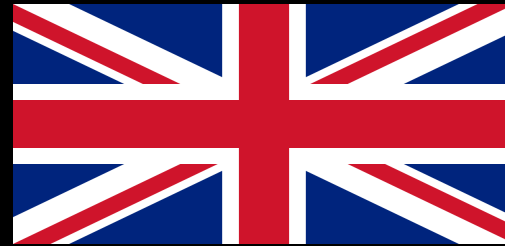


# Commas 4



*Lists of things*

The set includes  $x$ ,  $y$  and  $z$ .



The set includes  $x$ ,  $y$ , and  $z$ .



Oxford / Harvard comma

**BUT!** Use an Oxford comma to avoid ambiguity

# Oxford comma?



- Among those interviewed were his two ex-wives, Kris Kristofferson and Robert Duvall.
- Among those interviewed were his two ex-wives, Kris Kristofferson, and Robert Duvall.

[http://en.wikipedia.org/wiki/Serial\\_comma#Resolving\\_ambiguity](http://en.wikipedia.org/wiki/Serial_comma#Resolving_ambiguity)

# Oxford comma?



- *They went to Oregon with Betty, a maid, and a cook.*

How many people went to Oregon?

- *They went to Oregon with Betty, a maid and a cook.*

Is Betty a maid *and* a cook?

**The Oxford comma does not help here!**



[http://en.wikipedia.org/wiki/Serial\\_comma#Resolving\\_ambiguity](http://en.wikipedia.org/wiki/Serial_comma#Resolving_ambiguity)

# ... or rephrase for clarity!



- **1 person**

- They went to Oregon with Betty, who was a maid and a cook.
- They went to Oregon with Betty, both a maid and a cook.
- They went to Oregon with Betty, their maid and cook.

- **2 persons**

- They went to Oregon with Betty (a maid) and a cook.
- They went to Oregon with Betty—a maid—and a cook.
- They went to Oregon with Betty, a maid, and with a cook.
- They went to Oregon with the maid Betty and a cook.
- They went to Oregon with a cook and Betty, a maid.
- They went to Oregon with Betty, a maid; and a cook.

- **3 persons**

- They went to Oregon with Betty, as well as a maid and a cook.
- They went to Oregon with Betty and a maid and a cook.
- They went to Oregon with Betty, one maid and a cook.
- They went to Oregon with a maid, a cook, and Betty.
- They went with Betty to Oregon with a maid and a cook.

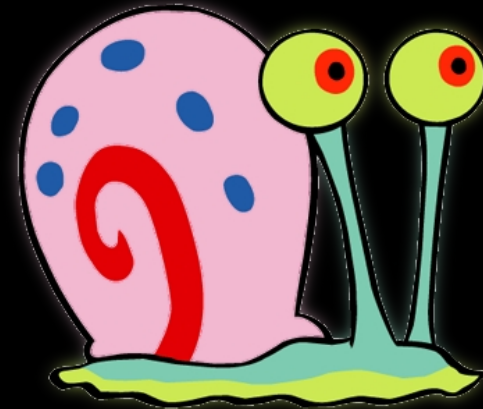
# Commas 5



## *Adjective lists*

The slow, fat snail.

The slow and fat snail.



# Commas 6: Misuse



*Restrictive clauses:*

cannot be removed and maintain meaning  
or be used alone

*I ate breakfast before I went to work.*

I ate breakfast

before I went to work

Independent clause

Dependent clause

# Commas 6: Misuse



*Restrictive clauses:*

cannot be removed and maintain meaning  
or be used alone

(1) The building company, **which erects very fine houses**,  
will make a large profit.

(non-restrictive)

(2) The building company **that/which erects very fine  
houses** will make a large profit.

(restrictive)

**No commas around restrictive clauses**

# Commas 7: Misuse



*Joining of two independent clauses without a conjunction*

*I ate breakfast, I drank tea.*

Independent clause

I ate breakfast. I drank tea.

I ate breakfast; I drank tea.

Good.



# Comma resources



<http://owl.english.purdue.edu/owl/resource/692/1/>

<http://johngarger.com/articles/writing/the-top-3-misused-commas-in-scholarly-writing>

<http://www.kentlaw.edu/academics/lrw/grinker/LwtaCommas.htm>

# Hyphens and dashes

## Hyphens

- Between number ranges:

**1-10, 62.3-102.4**

- Split words across a line (LaTeX does this for you)

***hyphenation***

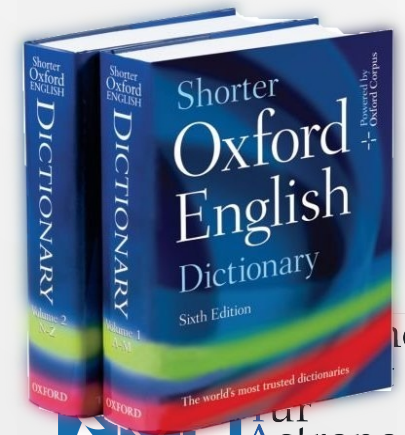
- Compound words ... sometimes! (next slide)

# Compound Words

... are a *nightmare*! Use hyphens in these cases:

- Numbers: *One-hundred-and-two*
- Modifiers (before a noun) “Star-to-star variation”
- Multiple modifiers: *The short- and long-period binary stars.*
- X-ray, T-bone, ex-worker
- NOT -ly adverbs: **Slowly** rotating star.
- Clarity: *I recount the votes vs I re-count the votes.*

Otherwise, it's seemingly random . . .  
Get a dictionary and check!



# En Dashes

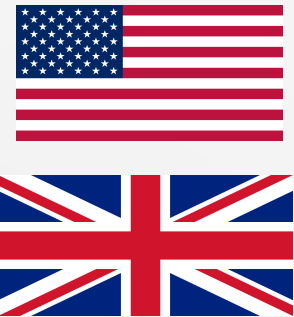
- En-dash — (width of an *n*)  
longer than a hyphen -
- Separates two words of **similar importance**
- 30%–100%, *Prize–winning* paper,  
pages 10–20, *x–y* plot, 1969–2011
- In open/libreoffice and *LaTeX*: --

# Em Dashes

- Em-dash — (width of an *m*)
- Used for emphasised parenthetical phrases  
*The star (which was red) exploded.*  
*The star, which was red, exploded.*  
*The star — which was red — exploded.*
- Do not use the em-dash often!
- LaTeX: ---


# Apostrophe and Quotation

- Used for possessive e.g. *Rob's beer*
- **Generally avoided in scientific writing!**
- But remember :
  - it's = *it is*
  - its thing = *the thing that belongs to it*
- Quotation in English “...” or '...'
  - He said “I am fine,” but then died.
  - He said “I am fine”, but then died.
- Use for *direct quotes* and *jargon*



i.e. **sparingly!**

# Numbers and counting

- For measurements, decimals and money use numerals e.g. **1 km**, **\$2.60**
- When counting small numbers or informal use words e.g. *I walked for one kilometre.*
- Check journal style for  $M_{\odot}$  vs  $M_{\odot}$  etc.
- Spacing: LaTeX `\,`   $1\text{km}$   
 $1\text{ km}$
- Beware:
  - The stick is 1.257135712 m long.
  - The stick is  $1.2\pm 0.352$  m long.

# Part II: Verbs and fluff

- Misuse of verbs and verbal “fluff” ruin a good paper
- Avoid this by learning to be two things:
  - **CLEAR**
  - **CONCISE**
- *Control the tone*
- Rule of thumb:  
*can you remove the phrase and  
the meaning is the same?*

If so **DO IT!**





# Strong verbs

- What do verbs like *get, use, do, affect* actually mean?
- Use “**strong**” verbs.
- E.g.

I went to *get* the shopping.

I went to *buy* the shopping.

The child got woken up.

The child was woken (up).

- Modal verbs are weak: *can, may, will*

# Concise phrasing

- E.g. Why use *utilize* when *use* is the same?
- Ditto for:
  - perform – do
  - Initiate – start
  - Facilitate – cause
  - Propagate – move
- Short (usually Anglo-Saxon origin) words



**Pretentious!**



# Concise phrasing

- It is known that the star is blue.
- It is clear that the star is blue.
- It has been noted that the star is blue.
- It is obvious that the star is blue.

What is *it*?

The above are sometimes *pretentious* and all *waste* a lot of space. What about this?

**The star is blue.**

# Concise phrasing

- The number  $\pi$  is approximately 3.1459.
- The number  $\pi$  is more or less 3.1459.
- The number  $\pi$  is in the vicinity of 3.1459.
- The number  $\pi$  is of the order of 3.1459.

The number  $\pi$  is about 3.1459.

- Use words: avoid “ $\pi \sim 3.1459$ ”

# Connotation I

- Verbs may have other meanings
- e.g. “Claim”

Jones (2010) *claims* that  $\pi = 22/7$ .

- This implies that Jones says  $\pi = 22/7$

and

- That ***we do not believe Jones !***
- This may be an ***unwise statement !***

# Connotation II

- e.g.

The abundance of nitrogen is significant in the star HD 012345.

- What does this *mean* ?
- Have you *really* calculated a *significance test*  
(in the statistical sense) ?

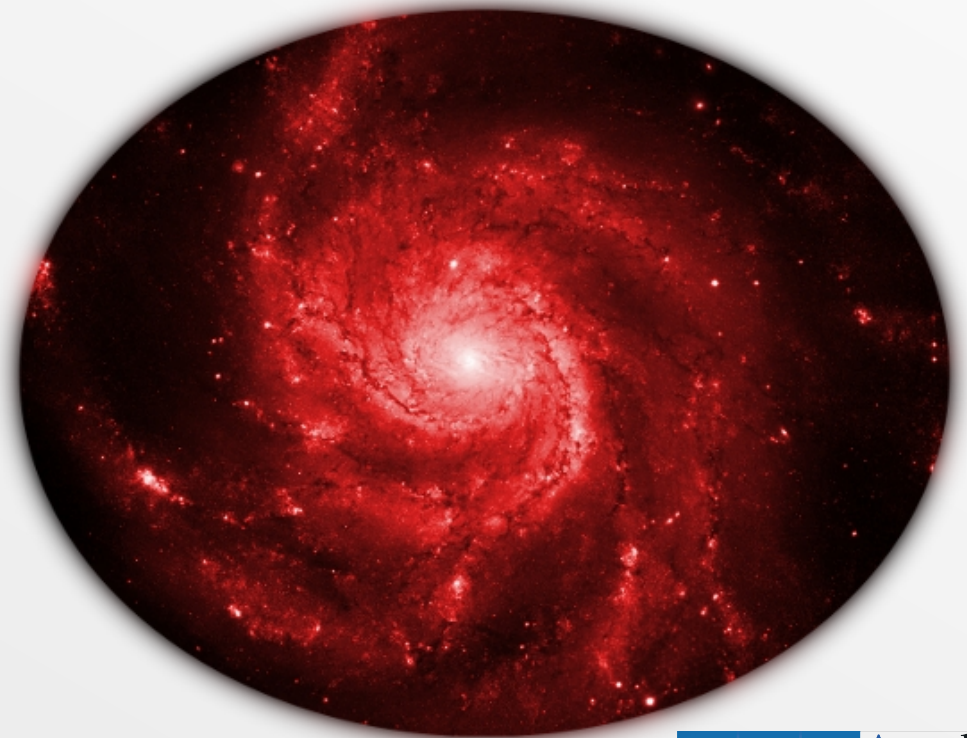
That is what it *really* means.

- Be careful!

(this is related to jargon – see next class)

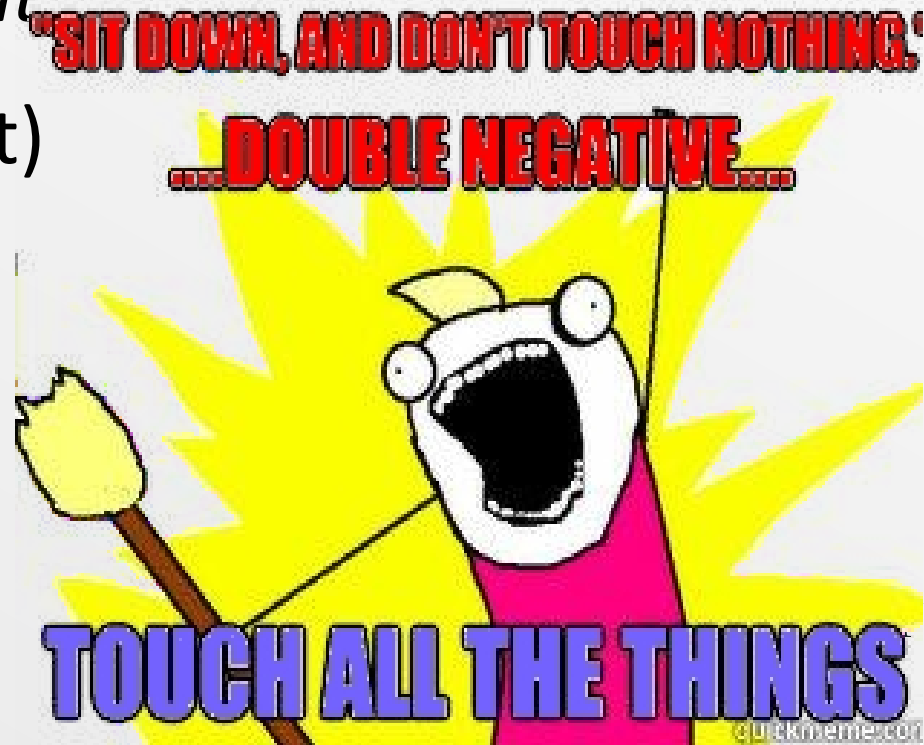
# Confusing pronouns

- *Such stars lead to rapid evolution of the galaxy and systematic reddening of its dust. This is critical to the formation of planets.*
- What is *this* ?
- Reddening?
- The galaxy?
- The stars?
- Who knows...



# Double negatives

- It is **not not** good. *Clearly wrong.*
- “*It is not unlikely*” (It is likely)
- “*The effect was not unimpressive*”  
(The effect was impressive)
- “*At no time was the signal absent*”  
(The signal was always present)





# Recent Example!

- Bonn-Cologne Graduate School *H2* admissions
- Selection criteria:
- Page 1: **“They (students) can apply after having finished the first PhD year”**
- Page 2: **“Work on the PhD thesis began no sooner than 18 months before the date of the review”**
- So when can a student apply?
- Deadlines are: 1 September, 10 January, 1 May

# Exercises

- Pronouns
- Commas and restrictive clauses
- Commas and lists
- Commas and clauses
- Improve me!

