Scientific writing & publication

- a YERAC workshop -

Led by :
Janet Drew &
Michael Barlow
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Points considered:

- Why we write journal papers?
- How papers are written
- How papers are read
- The frontline journals and the publication process
- Recent worldwide publishing trends
- On abstracts
- On the art of citing the literature

Why do we want to write papers for refereed journals?

…because this is how science has always been done?

…because supervisor/boss insists?

…to build a CV?

…?

How papers are (often) written

A scenario:

- The drafting starts as the work is done
    - → One or more figures may be developed early on
    - → The first text could well be about results
- The 'middle' of a paper is commonly completed before the 'wrapping'
- Discussion/conclusions come next
- Then, the introduction
- Finally, abstract and title.

'Closing the circle'

However a paper is conceived and developed:
the introduction and discussion/conclusions are best 'joining up'...

Question(s) posed/goals defined

methods/data + results

answers given/goals met
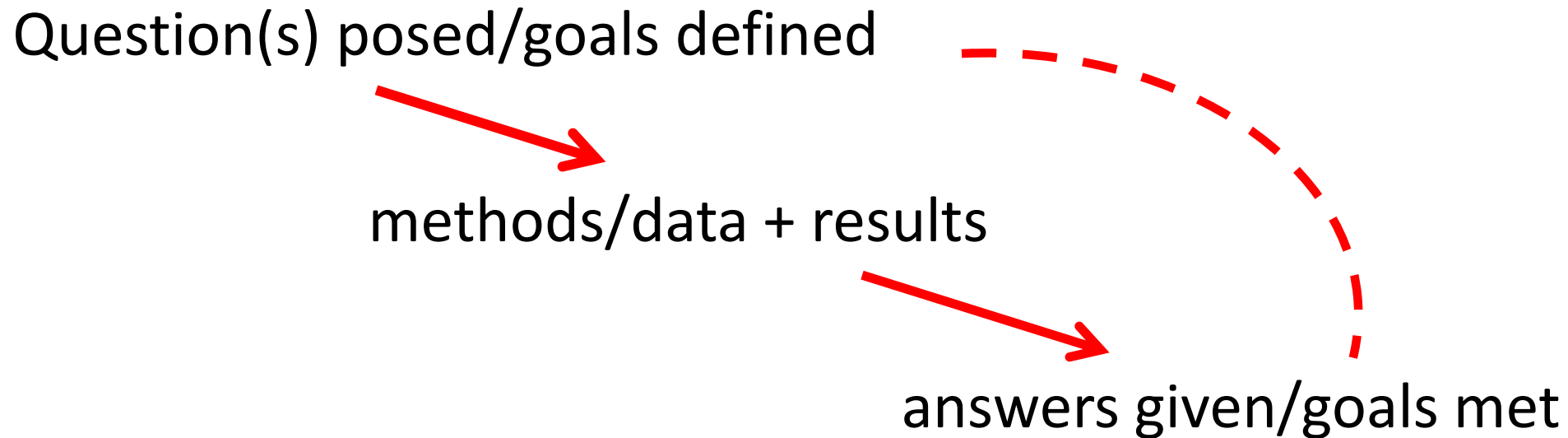
About language style:

- Write in paragraphs!

- Prefer plain language over complex.

- Be sensitive to sentence length and structure.

- Don't let parentheses proliferate!
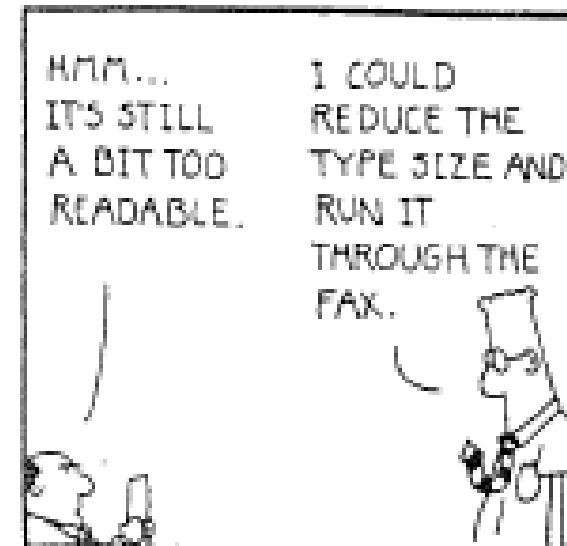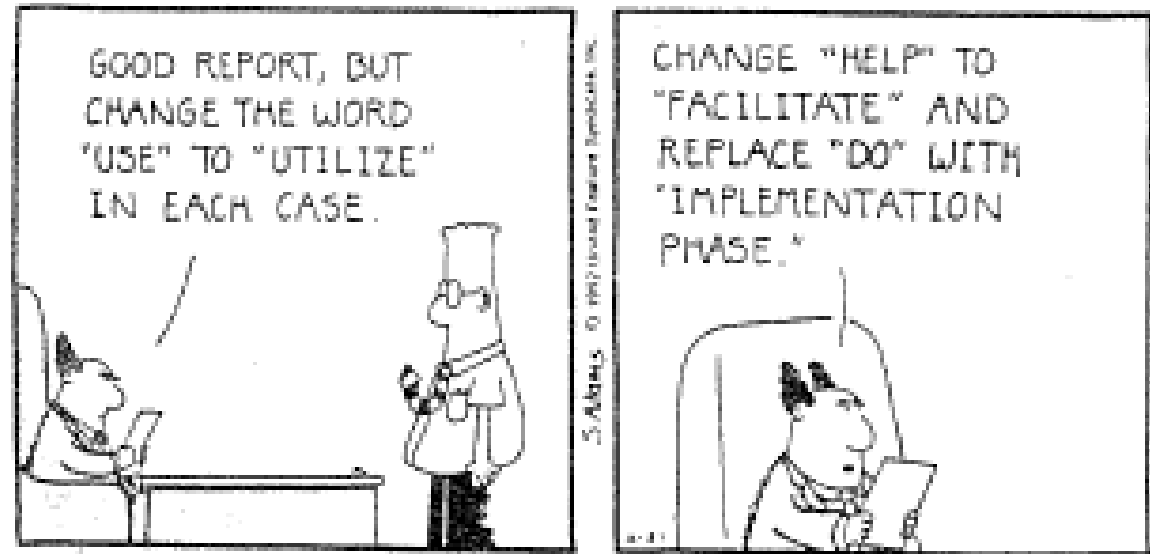
How papers are read

This is individual – but can expect

Most read/viewed: Abstract

Introduction, closing discussion

(selected) Figures

Text on results

Least read/viewed: Text on method

… an exception: immediate competitors, who will go through the method/results with a toothcomb and possibly attitude!

The frontline journals and the publication process

- The high-volume higher-impact journals – ApJ, MNRAS, A&A – all use ONE referee/paper
- The median time from manuscript submission to acceptance is 3+ months for ApJ and MNRAS main-journal papers
- Median time for the initial submission with the referee for MNRAS is 21 days – 14 days for revised versions
- Median time with authors for revision is 40+ days

  …there is a **lot** of variation, and luck plays a role.

  …some papers struggle to find a referee.

- The big three have similar standards – a paper rejected by one may well run into trouble with the others

The job of a journal editor

New submissions are passed to you, the editor, by the journal administration

The process:
- Editor checks the abstract of the paper – and some content – for suitability for the journal, according to certain basic criteria
- If refereeing in order …identify one or two potential competent/independent referees to be approached
- The editor oversees/adjudicates the iteration between authors and referee that improves the paper, making it ready for publication
- The editor decides when/if to accept the paper
- MNRAS practice: If an editor, with or without a referee's report, decides to reject – a consultation with a second editor takes place
- An academic editor usually works in a defined/'specialist' area

Criteria for acceptance

Live/die criteria:
- Suitable for journal?
- Original?
- Significant?
- No obvious/important flaws?
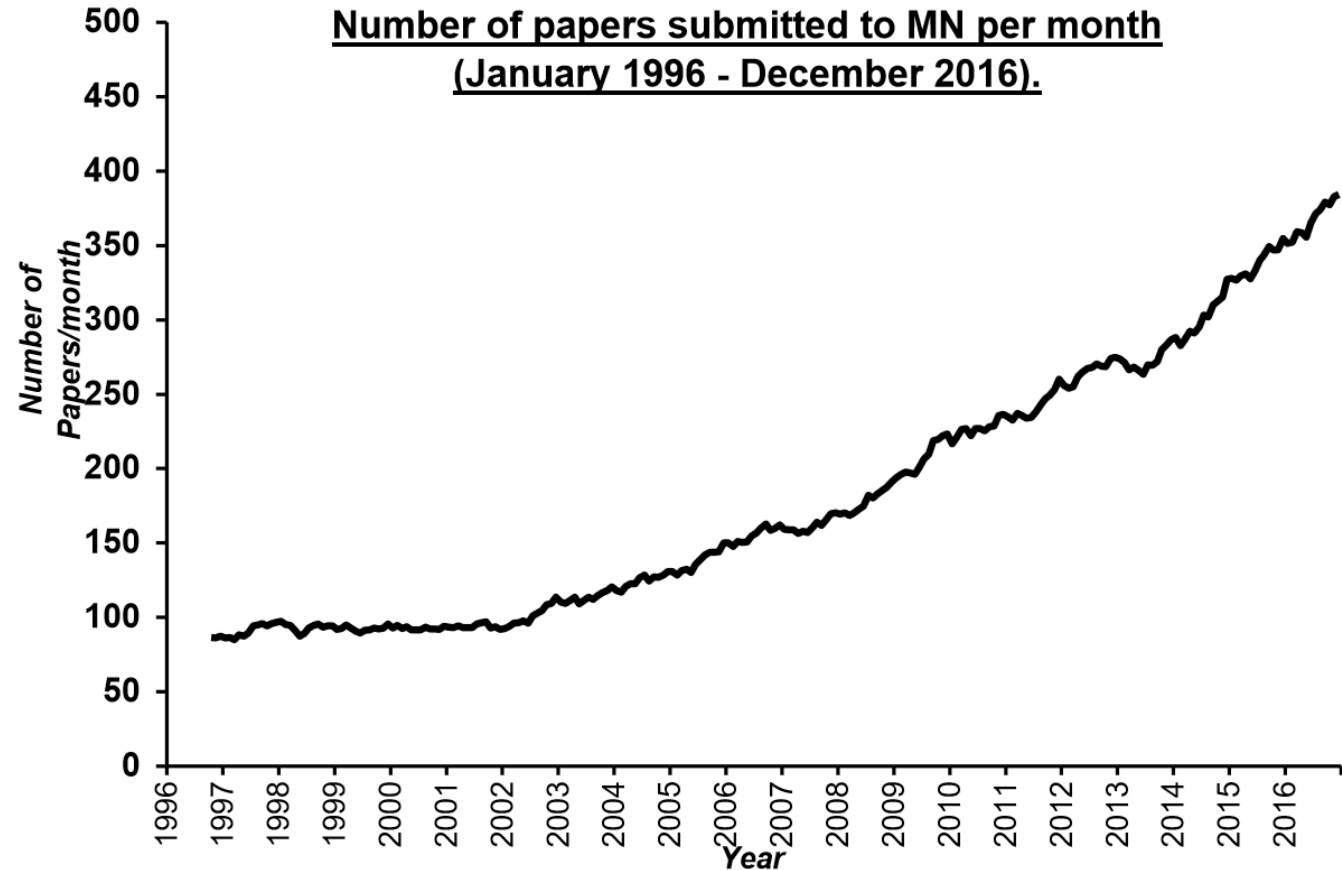
Other considerations – that revision might solve:
- Is the standard of English expression adequate?
- Enough detail for the results to be reproducible?

Trends in publishing:

The world-wide community writes more and more papers! →

Rejection rates have risen a bit:
MNRAS fraction was 17% in 2018.

Number of authors per paper rises and rises.

Number of papers submitted to MN per month (January 1996 - December 2016).

Number of Papers/month vs *Year*

MNRAS paper number pressure by nation

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Origin/Year	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
USA	347	375	420	509	509	559	674	709	777	744
UK	646	642	649	652	608	722	711	723	721	709
China	136	149	169	146	180	225	258	263	260	321
Germany	164	188	242	236	268	243	275	296	334	309
India	139	123	112	142	122	165	190	226	207	258
Italy	187	185	230	239	220	230	247	269	247	245
Australia	104	114	152	141	194	191	214	210	190	225
France	96	83	101	105	112	125	140	159	157	149
Russian Fed	66	53	56	79	67	98	111	116	112	142
Spain	82	90	95	111	152	168	143	159	138	141
TOTAL	2614	2766	3048	3196	3371	3789	4159	4491	4600	4700

Table 1. Origin of papers showing the annual number of papers received from the ten largest contributors 2009-2018.

Number of papers has almost doubled in 10 years:
...driven by strong growth in papers from China (x 2.4), USA (x 2.1), India (x 1.9), continental EU (x1.6).

The (unloved-but-indispensable) abstract

…written last, often with a sense of pain

…not always given much referee attention

…BUT the most read part of any published paper!

Editorial

Introducing structured abstracts for A&A articles*

Claude Bertout[1] and Peter Schneider[2]

[1] Editor-in-Chief, Astronomy & Astrophysics, Observatoire de Paris, 61 Avenue de l'Observatoire, 75014 Paris, France

[2] Letters Editor, Astronomy & Astrophysics, Institut für Astrophysik und extraterrestrische Forschung der Universität Bonn, Auf dem Hügel 71, 53121 Bonn, Germany

ABSTRACT

Context. Due to their wide availability, abstracts have become the most important part of any astrophysical paper.

Aims. Having noticed that abstracts published in astronomical journals are not always optimal, we introduce the concept of structured abstracts for A&A articles.

Methods. We explain what structured abstracts are and where they come from, provide examples showing how to structure an abstract, and discuss the advantages and drawbacks of this novel concept. In an on-line appendix, we show what some published abstracts look like once they are structured.

Results. We demonstrate the improvements in information content, readability, and style that can be made when writing structured abstracts instead of traditional ones.

Conclusions. A new version 6.0 of the A&A LaTeX macro is now available for structuring the abstracts of articles, and A&A authors are kindly invited to use it for their new submissions.

Key words. Editorials

- 2 examples for discussion – deleted for web version

On citing the literature

- To earn professional respect, you **must** get this right
- To justify the contribution you want to publish, it has to be placed clearly, in the attributed context of earlier work.
  - No sly omissions – a good referee will expose you
  - Careful selection to set the scene efficiently is OK
- The highest density of citations is likely to be in the introduction
- A decent sprinkling in the closing discussion is good too – helps 'close the circle'
- Refer as needed in method description (and results)
- Don't go mad …some editors **really despise** references piled high!

Where are references needed?

A paragraph from the introduction of a paper with the removable references removed:

Like Westerlund 2, NGC 3603 is in the Carina region of the Galactic Plane. It is one of a small number of very dense and massive clusters in the Milky Way. Indeed, the extreme stellar density in the core has prompted comparisons with the extragalactic starburst phenomenon. The mass of the cluster is among the highest measured in the Milky Way: Harayama et al. (2008) placed it in the range from 10 000 up to 16 000 $M_\odot$, while Rochau et al. (2010) obtained ~18 000 $M_\odot$. The age often cited for NGC 3603, based on the stellar content of its inner core of diameter ~ 20 arcsec is 1 to 2 Myr. This core is sometimes referred to as the HD 97950 cluster. Measurements over a wider sky area out to a radius of an arcminute or so, have indicated that an older, lower density population may be present as well.

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…with all references reinstated

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The 10 anti-commandments of paper writing

1 Refuse to read the previous literature published in your field

2 Take the lazy route and plagiarize

3 Omit key article components

4 Disrespect previous publications

5 Overestimate your contribution

6 Excel in ambiguity and inconsistency

7 Apply incorrect referencing of statements

8 Prefer subjective over objective statements

9 Give little care to grammar, spelling, figures and tables

10 Ignore editor and reviewer comments

(by Bert Blocken PhD, an editor for an Elsevier engineering journal)

See https://www.elsevier.com/authors-update/story/publishing-tips/10-tips-for-writing-a-truly-terrible-journal-article