

# ***Scientific Writing***

Nanjing Agricultural University

March 2018

Selected lecture notes and materials

Stephan von Cramon-Taubadel

University of Göttingen

# Schedule

- |                       |                |
|-----------------------|----------------|
| 1. Monday March 5     | 18:30 to 20:00 |
| 2. Tuesday March 6    | 18:30 to 20:00 |
| 3. Wednesday March 7  | 18:30 to 20:00 |
| 4. Thursday March 8   | 18:30 to 20:00 |
| 5. Friday March 9     | 18:30 to 20:00 |
| 6. Monday March 13    | 18:30 to 20:00 |
| 7. Tuesday March 14   | 18:30 to 20:00 |
| 8. Wednesday March 15 | 18:30 to 20:00 |
| 9. Thursday March 16  | 18:30 to 20:00 |
| 10. Friday March 17   | ?              |

# Outline

1. Introduction
  - a) My background – why am I teaching this course?
  - b) What we will not do in this course
  - c) Why a course on scientific writing?
  - d) A necessary but not sufficient condition: Have something new and interesting to say!
2. Peer review articles and other types of publication
  - a) Overview
  - b) On cumulative dissertations
  - c) On “predatory” journals
3. The peer-review publication process
  - a) Authoring: Submit, wait, revise, re-submit, ... , publish
  - b) Refereeing
4. Writing
  - a) Structure and narrative
  - b) The components of a typical paper
  - c) Various aspects of style and grammar for non-native speakers
5. Good scientific practice (GSP)
  - a) Why does GSP matter?
  - b) Key dimensions of GSP
  - c) Dealing with violations of GSP
6. The journal landscape in agricultural economics
  - a) What journals are there?
  - b) Journal citation reports and the “impact factor”

# Disclaimer

1. The material on these slides is subjective and incomplete
2. I hope that it is useful nonetheless
3. If you use these slides, please acknowledge the source (see Good Scientific Practice...)
4. If you find errors or would like to suggest improvements, please let me know ([scramon@gwdg.de](mailto:scramon@gwdg.de))

# Why am I teaching this course?

1. Experience as author, referee and editor  
(*Agricultural Economics* 2000-2006)
2. Native speaker
3. A fair amount of international experience  
(North America, Europe, Former Soviet Union, Latin America, China, India)

# **What we will NOT do in this course**

1. This is not a course on writing in English

# Do not split infinitives!



# Split what?!

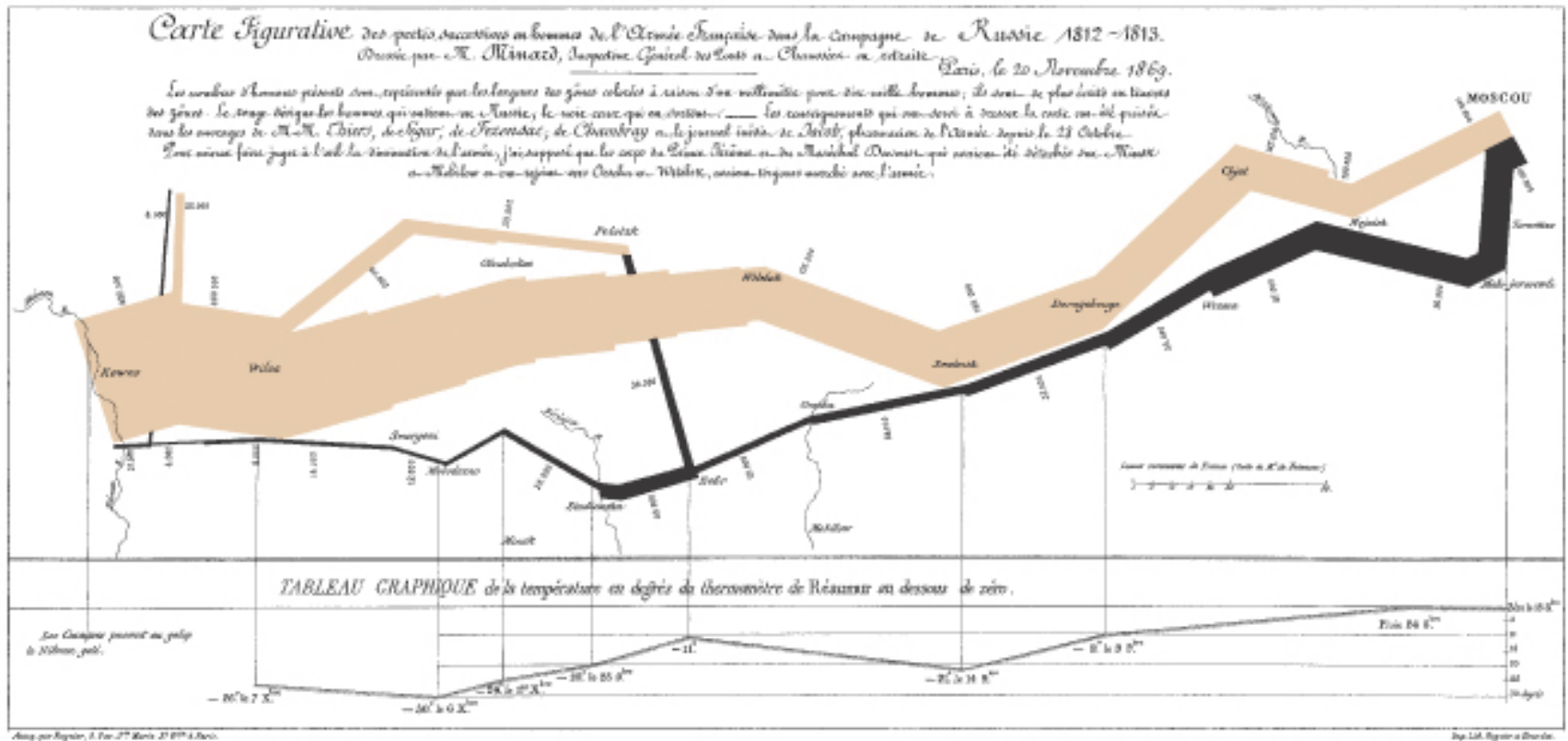




# What we will NOT do in this course

1. This is not a course on writing in English
2. We will not discuss the visual presentation of data (see e.g. Edward Tufte at <http://www.edwardtufte.com/>)

**“Probably the best statistical graph ever drawn...”  
(Tufte)**



## Napoleon's March to Moscow    The War of 1812

This classic of Charles Joseph Minard (1781-1870), the French engineer, shows the terrible fate of Napoleon's army in Russia. Described by E. J. Macey as seeming to defy the pea of the history by its brutal eloquence, this combination of data map and time-series, drawn in 1869, portrays the devastating losses suffered in Napoleon's Russian campaign of 1812. Beginning at the left on the Polish-Russian border near the Niemen River, the thick band shows the size of the army (422,000 men) as it invaded Russia in June 1812. The width of the band indicates the size of the army at each place on the map. In September, the army reached Moscow, which was by then sacked and deserted, with 100,000 men. The path of Napoleon's retreat from Moscow is depicted by the darker, lower band, which is linked to a temperature

scale and dates at the bottom of the chart. It was a bitterly cold winter, and many froze on the march out of Russia. As the graphic shows, the crossing of the Berezina River was a disaster, and the army finally struggled back into Poland with only 30,000 men remaining. Also shown are the movements of auxiliary troops, as they sought to protect the rear and the flank of the advancing army. Minsard's graphic tells a rich, coherent story with its multivariate data, far more enlightening than just a single number bouncing along over time. Six variables are plotted: the size of the army, its location on a two-dimensional surface, direction of the army's movement, and temperature on various dates during the retreat from Moscow. It may well be the best statistical graphic ever drawn.

# What we will NOT do in this course

1. This is not a course on writing in English
2. We will not discuss the visual presentation of data (see e.g. Edward Tufte at <http://www.edwardtufte.com/>)
3. We will not go over special aspects of writing grant applications and research proposals

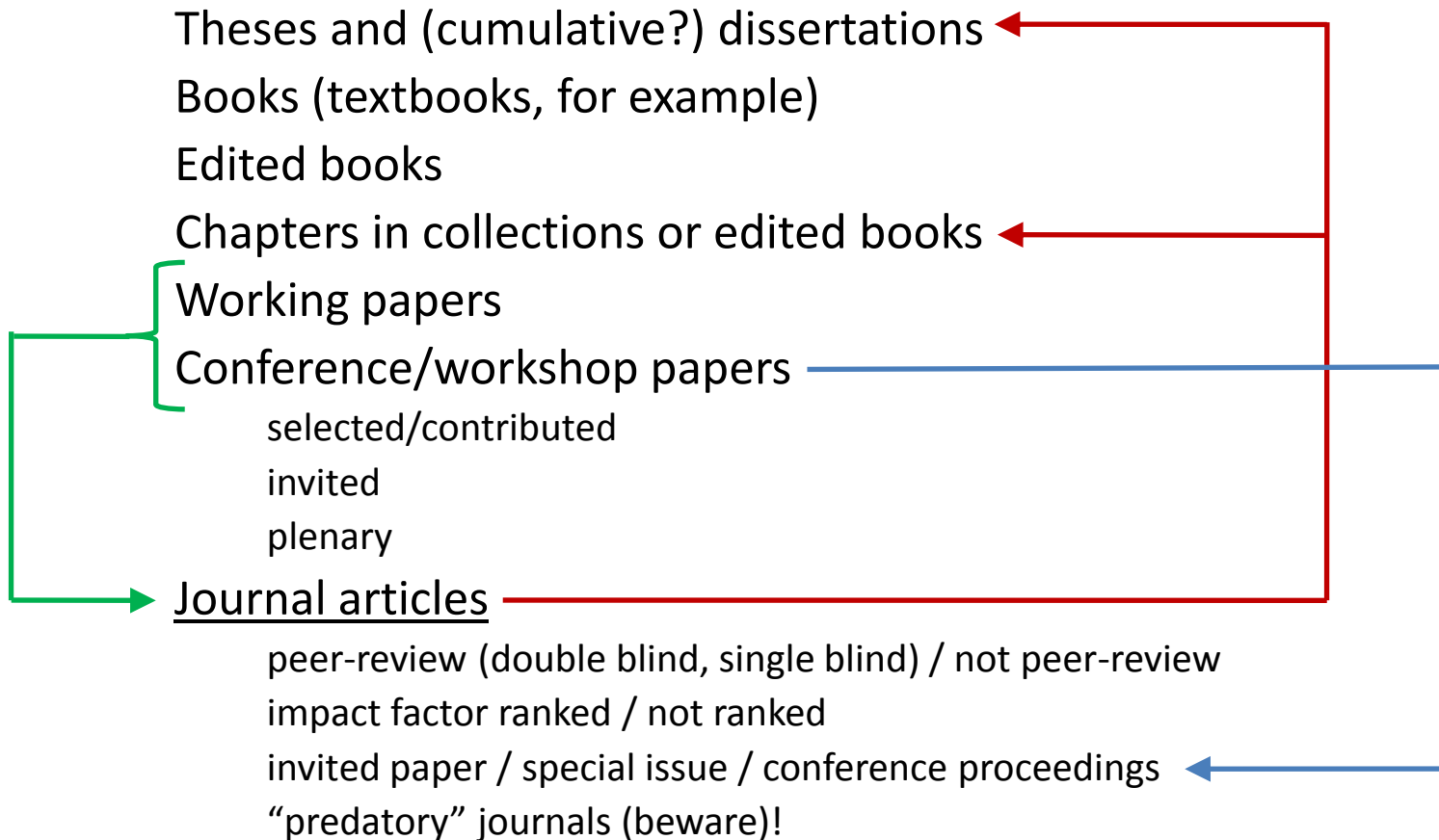
# Why scientific writing?

1. Altruistic motives: to improve the communication of new ideas and results and thus to make the best possible contribution to the accumulation of knowledge and the advancement of science
2. Pragmatic motives: peer-review publication is the currency of scientific success. Publish or perish – “wer schreibt, bleibt“
3. You need the credits 😊

# Have something new and interesting to say!

1. In science, something is interesting if it makes a contribution by telling us something new; if it pushes or fills gaps in the frontier (theory, methods, facts, or some combination of these)
2. 'New' is a necessary but not a sufficient condition for 'interesting' (just because something has not been done before does not mean that it is worth doing)
3. To identify 'new', you must know where the frontier is – read the literature (e.g. AgEcon Search)!
4. New and interesting will motivate not only your readers, but also you!

# Types of publication: Overview



# On cumulative dissertations (I)

- Advantages – you get a PhD and you get some journal publications
- For this reason, many supervisors and departments now prefer in this option
- Disadvantages
  - you lose control of the timing if you must wait for papers to be accepted
  - most peer-review journals are in English

# On cumulative dissertations (II)

- Acquaint yourself well with the relevant study regulations
- Discuss the options thoroughly with your supervisor – what does he/she expect?
- For me:
  - A cumulative dissertation = introduction/summary + papers + a good synthesis (looking back to look forward)
  - In the case of co-authored papers discuss and document who contributed what



# On “predatory” journals (I)

- Predatory journals falsely claim to conduct peer review, and charge authors for quick publication in reputable-sounding journals
- Nature article on predatory journals  
<http://www.nature.com/news/predatory-publishers-are-corrupting-open-access-1.11385>
- John Bohannon’s “Sting”  
<http://www.sciencemag.org/content/342/6154/60.full>
- Beall’s lists (recently taken off-line?!)

# On “predatory” journals (II)

- Publishing in a predatory journal can damage your scientific reputation
- Even if your research is of high quality, readers will be uncertain: did it get published because it passed peer review, or because you paid?
- Some journal editors and conference organisers will reject a paper out of hand if it cites sources published in predatory journals

# Very suspicious\*

International Education and Research Journal (IERJ)

**A Multi-Disciplinary Research Journal (ISSN : 2454-9916 ) ( IMPACT FACTOR : 1.8992 )**

Dear Authors/Researchers/Academicians,

We have delight to inform you that we are introducing a multi-disciplinary research journal “International Education and Research Journal (IERJ)”. It is an open-access, international indexed, peer-reviewed, scholar journal, dedicated to serve the scholars by quality research work.

The perception of the journal is to bequeath with academic podium to researchers across the global to publish their original, innovative, pragmatic and high quality research work.

The journal aims at promoting interdisciplinary research in Arts, Medical Science, Business, Commerce, Corporate Governance, Designing, Medical, Sociology, Economics, Education, Engineering, Information technology, Management, Corporate, Human Resources, Geography, History, Laws, etc

Manuscript Submission

Research paper should be prepared in MS word with double - column in single spaced typed pages can be submitted electronically as attachment on Email id of the Journal mentioned below or [sumbit on our website online](#). The manuscripts can be in all the subject areas which are mentioned above. Moreover, submitted manuscript must not be previously accepted for publication elsewhere. Authors are requested to send their papers on

Journal Email Id : [submission.ierj@gmail.com](mailto:submission.ierj@gmail.com)

or

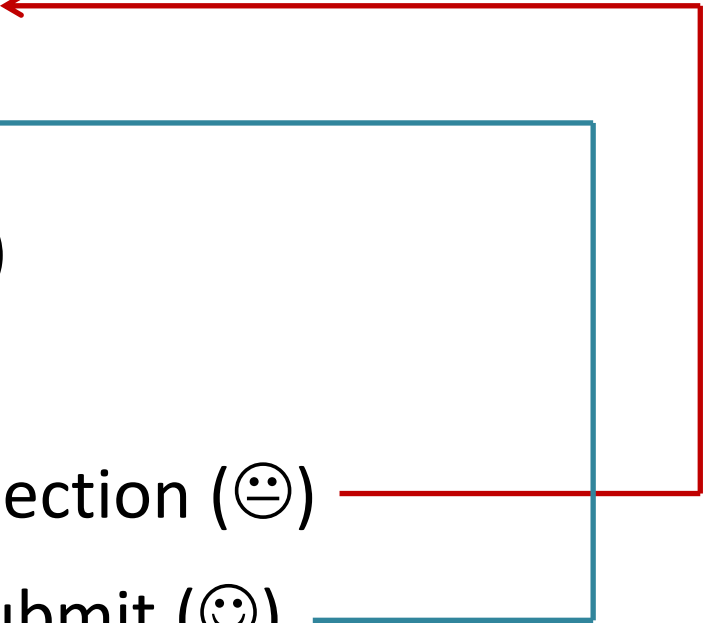
[Upload Your Article Online](#)

You may refer our [Author Guidelines](#) for more details.

I take this favourable time to request you to kindly circulate the journal amongst the members of your faculty and students of yours esteemed institute for their reference and valuable contribution for the forthcoming issues.

\* Received by email Nov. 3, 2015.

# The peer-review publication process

1. Choose a journal
  2. Submit
  3. Wait ( $\approx$  4 months)
  4. Response
    - a. Coping with rejection (😐)
    - b. Revise and resubmit (😊)
    - c. Accept 🎉
- 
- ```
graph TD; 1[1. Choose a journal] -- red --> 2[2. Submit]; 2 -- blue --> 3[3. Wait (~ 4 months)]; 3 -- blue --> 4a[a. Coping with rejection (😐)]; 3 -- blue --> 4b[b. Revise and resubmit (😊)]; 4a -- red --> 1; 4b -- blue --> 2;
```
- The diagram illustrates the flow of the peer-review process. A red line connects '1. Choose a journal' to 'a. Coping with rejection (😐)', representing a rejection path. A blue line connects '2. Submit' to '3. Wait (~ 4 months)', then splits to 'b. Revise and resubmit (😊)' and 'c. Accept 🎉'. Another blue line connects 'b. Revise and resubmit (😊)' back to '2. Submit', representing a resubmission path.

# Fundamentals (I)

- Never forget that you are writing not to demonstrate how clever you are, but to communicate something to the reader!
- You are competing for the reader's precious time – you need him/her more than he/she needs you!
- Two things you should be very clear about before you write and submit a paper
  1. What is your paper about?
  2. Who is the reader?

# Fundamentals (II)

- Your first reader will be the editor of the journal to which you submit your paper
- Editors receive far more papers than they can publish – papers are in surplus
- Referees, in contrast, are in deficit – editors never have enough good (= expert + constructive + punctual) referees
- Hence, editors will use any reasonable excuse to quickly reduce the number of papers that enter the full review process (i.e. papers that use precious referees)
- Thus, an editor will ‘desk reject’ papers that do not fit the focus of his/her journal, or that appear careless or sloppy
- Do not make it ‘easy’ for the editor to ‘desk reject’ your paper!

# Choosing a journal

- Be sure that you know what your paper is about!
- Think about:
  - The reputation / ranking of a journal – develop a ‘publication strategy’
  - Technical sophistication (does the journal emphasise methods or applications?)
  - Who are the editors?
  - Has the journal published papers on this topic before (is there a ‘handle’ for your paper)?
  - Regional focus
  - Beware of predatory journals (see above)!

# Submission (I)

- Never submit the same paper to more than one journal at the same time! Once you have submitted, that paper ‘belongs’ to that journal unless it is rejected or you formally withdraw it
- In practice, most review processes these days are only single blind; nevertheless blind your manuscript
  - Do not include acknowledgements / thanks until the paper has been accepted
  - Cite yourself as “Author”



# Submission (II)

- Read the guidelines for authors carefully and adhere to them rigorously
- Check the basics very thoroughly: spelling, format and strict coherence between list of references and references cited in text
  - Edit, edit, edit!
  - Coherence between list of references and text
  - Numbering of figures and tables
  - Maths and symbols – logic and consistency
  - Use abbreviations sparingly and consistently
  - Especially the title and abstract should contain no errors

# Dealing with rejection

- Do not take it personally; your paper has been rejected, not you!
- A desk reject is not such a bad thing (unless it is because your paper is bad)
- A reject with reviews can help you improve the paper
- In both cases, revise and move on, soon!
- A paper that is sitting on your desk will never get published
- Before you resubmit somewhere else, take a look at the referees' comments and make at least the most important suggested changes – you might get the same referee again
- Poorly justified rejects happen and are discouraging – remember this when you are asked to review
- Be extremely selective about appealing decisions to editors

# Revise and resubmit (I)

- Congratulations, your chances of getting published have climbed considerably (from statistically <20% to >50%?)
- Take advantage of this opportunity, soon!
- You are getting free advice from experts, and this is the one situation in science in which you are allowed to 'plagiarize'
- Read referees' comments and editor's letter carefully, put them away for a few days and then read again
- The editor's letter is especially important if referees appear to disagree on some point(s)
- Show referees' comments and editor's letter to an experience colleague and ask for advice

## Revise and resubmit (II)

- No need to be obsequious, but be polite, even if referees are not
- Prepare a point-by-point list of your responses to each of the referees' comments and suggestions
- You do not need to do everything the referees ask, but if you do not follow a suggestion, explain why
- If a 'stupid referee' does not get the point, then perhaps you are not making the point well
- If several 'stupid referees' do not get the point, it's time to look in the mirror 😊

# Acceptance!

- Congratulations 😊
- Usually accompanied by a few suggestions for minor revision (probably a good idea to say yes...)
- Update acknowledgements (anonymous referees, colleagues who helped, and financial support)
- Proofs – read very carefully for mistakes, but this is not an opportunity to revise!
- Questions:
  - Make your data available, on-line appendices?
  - Open Access?

# Refereeing (I)

- Valuable experience that can help you become a better author
- A signal that you are recognized as an expert; an opportunity to build your reputation in the field
- Perhaps ask your supervisor whether you could help out with a review to collect experience
- If asked, carefully consider whether you are qualified (topic, expertise, conflict of interest)
- Be polite and constructive: if you think that a paper contains a good idea that is worth publishing, help the authors get there

## Refereeing (II)

- If you do not think that a paper has potential, recommend rejection
- In other words, try to make a clear decision
- If you need more time, inform the editor. But meet the deadline that you have committed to
- Inform the editor if you have already reviewed the paper for another journal
- Do not 'shift the goalposts' mid-review. If you notice something crucial that you missed earlier, inform editor

# Structure and types of journal articles

|       |                                         | Audience                                                                                                                                                                                                                                                                 |                                                                                                                                                  |
|-------|-----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
|       |                                         | Technical                                                                                                                                                                                                                                                                | Non-technical                                                                                                                                    |
| Focus | Proposing or demonstrating a new method | <ul style="list-style-type: none"><li>What has been done to date?</li><li>What are the weaknesses?</li><li>Propose and explain an alternative method</li><li>Apply the alternative (illustrative example)</li><li>Conclusions, implications (research, policy)</li></ul> | <ul style="list-style-type: none"><li>Introduction</li><li>Framework/methods</li><li>Data</li><li>Results</li><li>Conclusions</li></ul>          |
|       | Applying an existing method             | <ul style="list-style-type: none"><li>What has been studied so far?</li><li>What application(s) is missing?</li><li>Explain the setting for this application</li><li>Application</li><li>Conclusions, implications (policy, research)</li></ul>                          | <ul style="list-style-type: none"><li>Introduction</li><li>Framework/setting</li><li>Methods, data</li><li>Results</li><li>Conclusions</li></ul> |

Can assume that the reader is familiar with formal background and notation, focus on innovation

Need to provide intuitive explanations and avoid specialist notation (or limit it to appendices)



# Other types of journal articles

- Reviews and surveys (the literature to date, lines of future research)
- Notes (brief exposition on a narrow question)
- Comments and replies (pointing out errors and omissions in others' work, responding to comments by others on one's own work – careful!)
- Introductions (e.g. of a special issue or proceedings issue)
- Opinion pieces (e.g. 'For' and 'Against' on some issue)

# Writing

- 1) You are writing for the reader, and you are competing with countless other papers for his/her precious time!
- 2) If you don't capture and hold the reader's attention, he/she will move on to another paper
- 3) People like to hear stories. You can capture and hold the reader's attention if you tell a story, develop a plot

# Writing: A suggestion

- **S**ituation – description of the point of departure for your paper, the research frontier
- **P**roblem – what is sub-optimal about the situation, a question, a contradiction, a gap in the literature
- **Q**uestion – the problem gives rise to the following question(s) that need(s) to be answered
- **R**esponse – we do X and find answers Y and Z

# SPQR

- Senatus Populusque Romanus (The Senate and the People of Rome)
- Sono Pazzi Questi Romani!
- 这些罗马人都疯了 (?)



# SPQR and what reviewers will ask

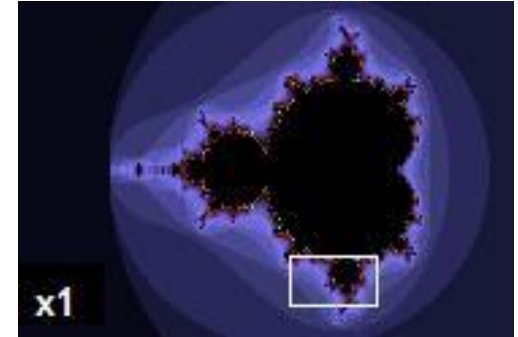
- **S**ituation – does the paper describe the frontier, the state-of-the-art?
- **P**roblem – do the authors identify a relevant problem, is the paper sufficiently motivated?
- **Q**uestion – do the authors ask the right question, the answer to which will (partly) resolve the problem?
- **R**esponse – do the authors use appropriate methods and data, draw appropriate conclusions?

# Writing: Structure and SPQR

- 1) After reading the title, some readers will consider the abstract, then perhaps the introduction and conclusions. Very few (e.g. the referees) will ever read the whole paper
- 2) Especially the abstract is extremely important – write it last!
- 3) The basic plot will be repeated several times at different scales and in differing degrees of detail in your paper
- 4) Consequence: your paper will display a fractal structure as its core narrative structure is repeated at different nested scales
- 5) This may seem repetitive, but it ensures that each reader can get the message at whatever level he/she is looking for

# Writing: Components of a typical paper

- Title
- Abstract *(SPQR)*
  1. Introduction *(SPQR)*
  2. Theory / Conceptual framework
  3. Data and methods
  4. Results
  5. Discussion and conclusions *(SPQR)*
- Tables and figures
- References
- Appendices



*(SPQR)*



Do not depart from this structure without a very good reason – keep your reader in his/her comfort zone as much as possible

# Assignment

- 1) Write an abstract/summary based on a research project that you are involved in or planning
- 2) Think about the type of paper/research you have in mind, and the audience
- 3) Use the structural elements that we have discussed in class: what is the situation, what is the problem, what question does this problem give rise to, and how do you (propose to) answer this question?
- 4) Maximum 400 words!
- 5) Please submit in MS-Word by email ([scramon@gwdg.de](mailto:scramon@gwdg.de)) by midnight Friday March 10 at the latest



# Other components of a paper

- Footnotes: keep to a minimum. If it is necessary, perhaps in the text, otherwise delete?
- Tables and figures: Every table or figure
  - should be mentioned in the text (e.g. “Figure 1 shows...”, “Table 1 presents...”)
  - should have titles/captions that enable them to stand alone, do not put any explanation in separate footnotes
  - avoid spurious precision
- Appendices: increasingly an option as on-line supplements
- Maths and notations: be consistent and name variables and parameters logically

# Writing – some suggestions (I)

- Always start with a good outline (half the battle!)
- Use spell checks (with care)
- Use the active rather than the passive voice
- “We...” is acceptable in measure; “I...” is still considered inappropriate by many
- <http://advice.writing.utoronto.ca/revising/passive-voice/>

# Writing – some suggestions (II)

- Tense: stick to the present tense, unless chronology is important for your narrative

The past, the present,  
and the future  
walked into a bar.  
It was tense.

# Writing – some suggestions (III)

- Avoid wasted word and vague or inflated intensifiers
- <http://andromeda.rutgers.edu/~jlynch/writing/index.html>
- Structure: use paragraphs and transitions
- Avoid clichés: e.g. “one the one hand...”
- Be careful with humour: it can backfire

# Edit, edit, edit!

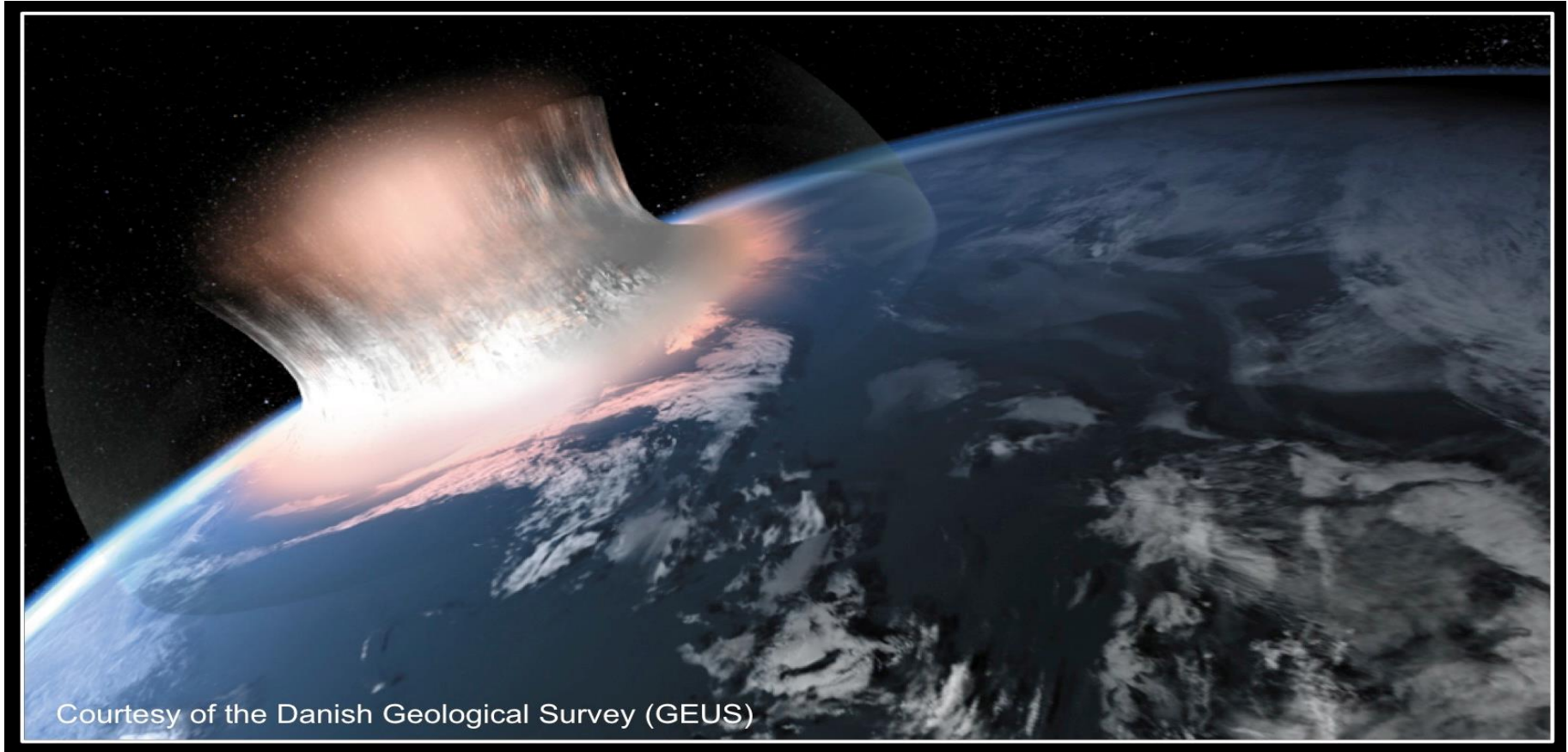
- With extremely few exceptions, even the best writers edit their work rigorously and repeatedly
- Ideally, complete the final draft a few days before it is due for submission. Put it aside, and then return to it, you will be amazed at what you find
- Ask a colleague or friend to read through („PhD cooperative“)
- Rigorous editing can usually reduce the length of a manuscript by 10-20% with no loss of content whatsoever!

# A (personal) list of pet peeves

- The over-use of the word 'impact' ☹️



# This is an impact:



Courtesy of the Danish Geological Survey (GEUS)

- It is not an impact when higher education of a household head increases the probability of adoption by 3.1% (neither sudden nor dramatic)
- It is not an 'impact' when income growth leads to twice as much meat consumption (not sudden, even if dramatic)

# A (personal) list of pet peeves

- The over-use of the word ‘impact’ 😞
- Using ‘impact’ as a verb 😞 😞 😞
- Colons in titles (“Play it again, Sam: The case of the colon in the titles of journal articles”) – not wrong, but very worn out
- Using ‘significant’ to mean ‘big’ or ‘important’
- ‘Compare with’ / ‘compare to’
- ‘Like’ / ‘such as’



# A selective list of smaller things (I)

- Numbers one to ten spelled out, 11 and greater in numerals
- Statistical significance does not necessarily imply economic relevance! Explain your effect sizes
- When in doubt, keep it simple
  - ‘First, second, third’ rather than ‘firstly, secondly, thirdly’
  - ‘While’ rather than ‘whilst’
  - ‘Among’ rather than ‘amongst’
  - ‘Will’ rather than ‘shall’ (unless you know what you are doing!)

# A selective list of smaller things (II)

- Sexist language
- Affect / effect
- Data (are plural!)
- Elision (isn't, won't etc.) is acceptable in informal writing, but not in an academic paper
- Possessives: The rat's tail, the rats' tails, the rats had tails, the mice's tails, the children's tales, its tail, it's a long tale (there is no apostrophe in the possessive form of 'it')
- ...

## Some additional links

- Very useful material on paragraphs and transitions:  
<http://writingcenter.unc.edu/handouts/>
- Jack Lynch:  
<http://www.andromeda.rutgers.edu/~jlynch/writing>
- University of Toronto, advice on academic writing  
<http://www.writing.utoronto.ca/advice>
- For literature searches (it has never been so easy!)  
<http://ageconsearch.umn.edu/>

# Good Scientific Practice (GSP)

- Please see separate set of slides on GSP

# The journal landscape in agricultural economics

- In which journals do agricultural economists publish their work?
- How are journals ranked?
- Are journal rankings useful?

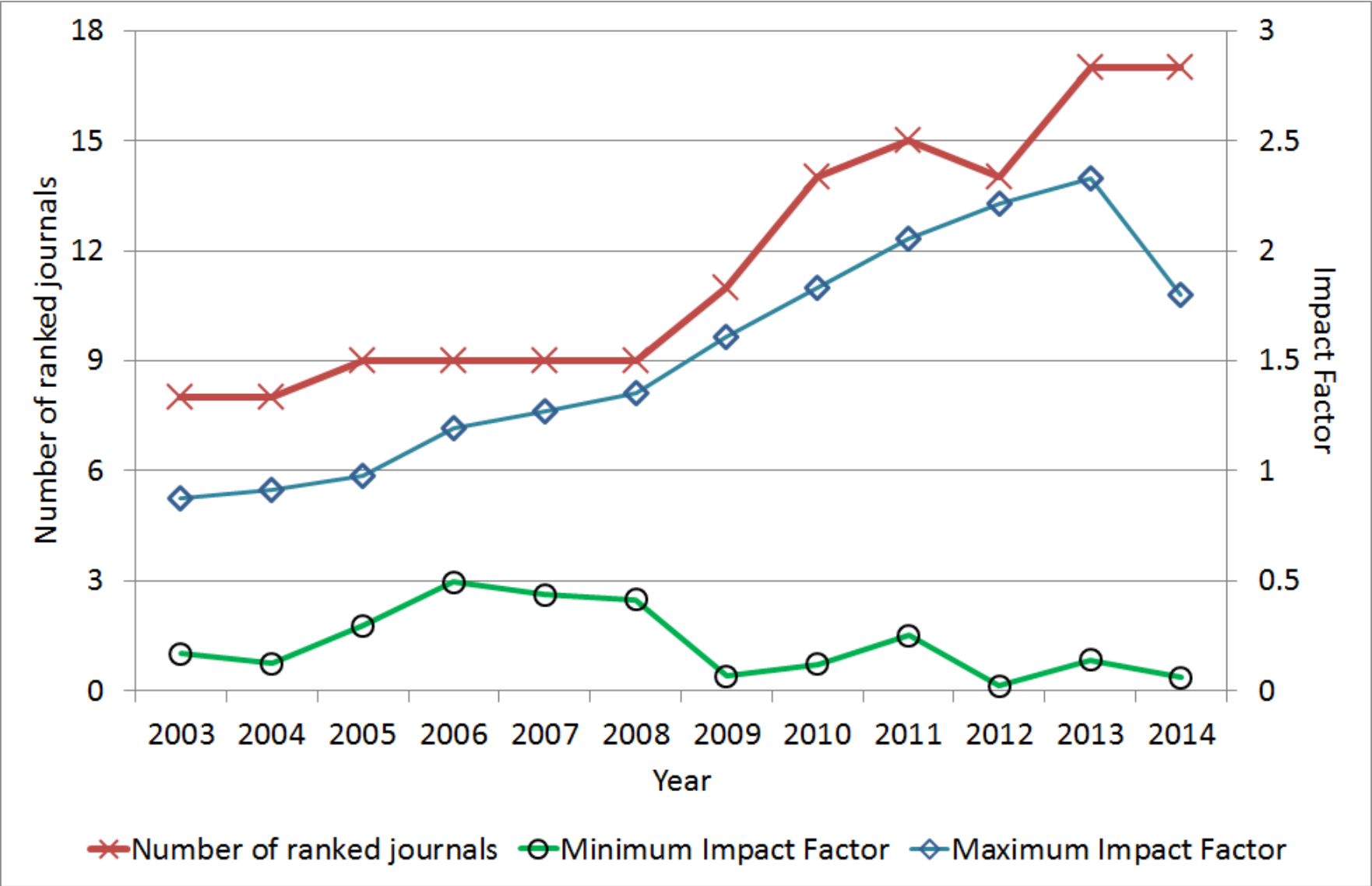
# Thomson ISI Journal Citation Reports (I)

- Bradford's Law of exponentially diminishing returns to literature searches
- Sort journals in a field by the number of relevant articles that they contain
  - The first  $x$  articles in the first  $n$  journals
  - The next  $x$  articles in the next  $n^2$  journals
  - The next  $x$  articles in the next  $n^3$  journals, etc.
- Taken up by Eugene Garfield, founded Institute for Scientific Information (ISI) (later purchased by Thomson-Reuters)

# Thomson ISI Journal Citation Reports (II)

- The Basic idea of the JCR is to identify
  - Which scientists produce research that has an influence on later research
  - Where they publish this work (the core journals)
- Coverage
  - Over 14000 journals in the Natural Sciences
  - Over 4000 journals in the Social Sciences
  - Over 2000 journals in the Arts and Humanities
- <http://admin-apps.webofknowledge.com/JCR/JCR?PointOfEntry=Home&SID=2Ei7A1J4Yor8njZnYAS>

# Agricultural economics in the JCRs





# The Impact Factor (IF) - definition

$$IF_x = \frac{A_x}{B_x}$$

$A_x$  = the number of times that articles published in journal  $x$  in years  $t-1$  and  $t-2$  were cited in ranked journals in year  $t$

$B_x$  = the total number of articles published in journal  $x$  in years  $t-1$  and  $t-2$

In other words,  $IF_x$  is a measure of the frequency with which the average article published in journal  $x$  in the previous two years was cited this year

# Weaknesses of the Impact Factor (I)

- Three year window less appropriate for slow-moving fields of science
- In small fields of science (such as Agricultural Economic) IF is a ratio of small numbers → volatile
- What you measure is what you get: IF-inflation and IF-manipulation
- For example: self-citation, inclusion of proceedings issues

# Weaknesses of the Impact Factor (II)

- A high IF does not mean that all articles published in a journal have a high impact – as a rule IF is heavily influenced by a few highly cited individual papers (in *Nature* in 2004: 90% of citations due to 25% of papers)
- Different publication cultures lead to different IF-levels in different disciplines – IFs are not comparable across disciplines

Summary: the IF is useful but often overemphasized!

# Other aspects of the Journal Citation Reports

- Other measures (5-year IF, Cited Half-Life, etc.)
- Cited Half-Life = median age of the articles from a journal that are cited in year  $t$  (one-half of the articles are older, one-half are younger than the CHL)
- Note that not all good journals in Agricultural Economics are ranked (e.g. *AfJARE*)
- Compare journals in Agricultural Economics with mainstream Economics
- Compare journals in Agricultural Economics with high-IF journals such as *Nature* and *Science*

# Other rankings

- Herrmann et al. (2011) propose survey-based rankings of journal quality (journal standards and the quality of published articles)
- Rigby et al. (2015) propose a ranking based on Best-Worst Scaling according to two criteria:
  - “A paper in which journal would most enhance your career progression?”
  - “A paper in which journal would have the most impact beyond academia (i.e. policy makers, business community)