Advanced Research Methods and Skills – 3

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Literature

- ▶
  - ▶ Strunk and White, 1979, The elements of Style. Allyn and Bacon.
  - ▶ Martha Davis, 1997, Scientific Papers and Presentations, Academic Press.
  - ▶ Björn Gustavii, 2008, How to Write and Illustrate a Scientific Paper

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Introduction

- Introduces the work
- Contains: (i) the problem, and (ii) the proposed solution
- Omit empty, ever-true opening sentences?
- One page length?

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Discussion

Contains:

- Main message
- Critical assessment
- Comparison with other studies
- Conclusions

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Goals/research questions/hypotheses

- Goals: broadly formulated, hard to evaluate quantitatively
- Research questions: end with a ? , should be answer-able
- Hypotheses: (positive) statements, that should, after the research being done, be supported, or rejected, by your findings
- *statistical* hypotheses (H_0, H_A) are *part* of the methods, by construction; they are being *tested* (...*we test whether A has an influence on B*)
- formulating these is a very good thing to do, but you do not see them in many scientific papers. Discuss with your supervisors whether they are required in the main text, an whether they serve as a good basis for the research.

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Communication with peers (supervisors)

- *... I now finished chapters 1-4, could you please take a look whether everything is in order?*
- *...could you please take a look at the research questions on page 7, and assess whether the table of contents seems to reflect a sensible and systematic approach to the topic?*
- do not forget that a supervisor has to grade the work as well.

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Graphs

- give care to the smallest details
- choice of colors (colorbrewer.org)
- avoid unnecessary duplication
- (show barley, sunspots)

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Tables

- give care to the smallest details

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Graphs or tables?

- Graphs are much less demanding to read than tables; humans tend to ignore information in tables because it is hard work
- some tabular information can be intergrated in graphs

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Numbers

The yearly deforested area dropped between 2004 and 2010 from 31,381 to 17,358 km^2.
The yearly deforested area dropped between 2004 and 2010 from around 31 to 17 thousand km^2.

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