Successful Diploma Writing
(How to Avoid Leaving Your Supervisor with bad Memories About You)

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Outline

General Advice

Diploma Thesis Process

Mistakes we saw more than once

Conclusion
Write for Your Reader
And the Scientific Community

Prof. Peter Sloterdijk, *Doktor Wenn und Doktor Aber*, Der Spiegel 49/2011:

… *inzwischen [werden] 98 bis 99 Prozent aller akademischen Textproduktionen in der wie auch immer berechtigten oder unberechtigten Erwartung des partiellen oder völligen Nichtgelesenwerdens verfasst…*

… *meanwhile 98 to 99 percent of all academic text is produced in the possibly legitimate expectation that nobody will ever read it…*
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Nothing could be more wrong!
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**Nothing could be more wrong!**

(except maybe at University for Design, Karlsruhe)
Look and Feel of OS Thesis Work

- you will join the departments hacker team
- investigate a low-level software problem
  (for which neither your supervisor nor Hermann Härtig knows the solution)
- study existing approaches or solutions
- write your solution (in a real programming language)
- measure that your solution is superior
  — or that a promising approach does not work
- write a 50-page-thesis
- join forces with your supervisor to publish a paper at an OS conference
Most simple generic advice

Write such that potential readers

- can most easily understand your work and the results
- can profit most from your work

All remaining advice follows from that...

- not too short — not too long
- right structure for your content
- include interesting stuff, omit uninteresting stuff
- express your true opinion — even if it implies that microkernels are wrong
- assume some —but not too much— background knowledge
- use consistent terminology
Most simple generic advice

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► assume some — but not too much — background knowledge
► use consistent terminology
► use your own brain — don’t follow advice from others literally
Motivation

You passed lots of examinations with good results, why bother about the Diploma or Master?

▶ prove that you can

Work for 6 month on your own to solve some problem and write a consistent report about it.

▶ this is an important qualification that makes a difference
▶ you will learn a lot and become more mature even if this is not obvious to you before and/or after the Diploma

Last, but not least

▶ you will work on a topic that is important for the research of the group
▶ you will help a little tiny bit to improve the quality of computers and software
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Tews
Find a Topic

You have an idea you want to investigate

▶ Good!
▶ talk to Hermann Härtig or somebody you know from the lectures

Otherwise

▶ fine to!
▶ see OS → Teaching → Topics for thesis
▶ talk to Hermann Härtig or somebody you know . . .
▶ sometimes interesting topics are not on that page
You and Your Supervisor

▶ your supervisor will be very interested in your work
   (and – if everything work out – he will use it later)
▶ have a regular appointment (every week or every second week)
▶ appointments can be short
   ▶ because you have been busy without new insights
   ▶ because you did not work on the thesis
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► your supervisor is busy with other stuff; don’t expect him to call you every week
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▶ your supervisor is busy with other stuff; 
   don’t expect him to call you every week
▶ after all, this is a free country 
   — it’s your choice whether to finish your study or not
# Diploma work plan

1. **day** create thesis/main.tex with chapter headings, configure spell-check

1. **month**
   - review related work
   - get acquainted with your working environment
   - understand your task and the context

2. **month**
   - design your solution

3. **month**
   - implementation

4. **month**
   - evaluation, final improvements

5. **month**
   - wrap up

6. **month** hand in, defend
Diploma work plan

1. **day** create thesis/main.tex with chapter headings, configure spell-check

1. **month**
   - review related work
   - get acquainted with your working environment
   - understand your task and the context
   - write related work chapter

2. **month**
   - design your solution
   - write design chapter

3. **month**
   - implementation
   - write implementation chapter

4. **month**
   - evaluation, final improvements
   - write evaluation chapter

5. **month**
   - wrap up
   - write abstract, introduction, conclusion

6. **month** hand in, defend
Diploma Thesis Structure

- frontmatter (title, declaration, acknowledgements, TOC)

0. abstract, (4 sentences: state the problem; say why it’s interesting; say what your solution achieves; say what follows from your solution)

1. Introduction
2. Foundations and Related Work
3. Design
4. Implementation
5. Evaluation
6. Conclusion

- bibliography, glossary, index

▶ ≈ 50 pages, self contained text
▶ This is a proposal, use it if you don’t know better.
Getting Things Done

There is lots of material that tells you how to best keep focus

- this might be helpful
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▶ this might be helpful
▶ ... or not
Getting Things Done

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- something is wrong when you spend 2 hours daily organising and prioritising your task
- something else is wrong when your followers and facebook friends know more about your progress than your supervisor
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Better follow the Ultimate Productivity Blog
Getting Things Done

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Better follow the Ultimate Productivity Blog

You should be working.
Your Prose

Find your writing style

- make first a paragraph structure with itemize bullets
- write the part that you feel most comfortable about

Write from a readers point of view

- write such that your prose is most easily to read and understand
- anticipate readers that make long breaks
  (or are not always fully awake)
- use backward/forward pointers
- shortly repeat points/concepts from the previous Chapters
Your Prose II

Consistent writing

▶ make consistent arguments: state first the problem, then the solution
▶ use consistent terminology (especially if you write in German)

Paragraphs

▶ every paragraph transports a single message to the reader
▶ something is wrong if you cannot formulate this message in a simple sentence
▶ avoid passive voice: name the actors
▶ short sentences are better than long ones
▶ use a style guide if you write in a foreign language
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Take Notes about Ideas, Decisions and Reasons

Student, a few days before handing in:

...there were important and very convincing reasons why I choose MS-DOS instead of Fiasco for my work ... but I can’t remember them any more ...

- take notes about
  - decisions and their reasons
  - ideas and why you did or did not pursue them

- From the FIRST day on!
Don’t ignore related work

Student, after being absent for one month:

I spent the last month implementing X, which I need for Y.

Supervisor:

Interesting work. But student Z has finished his Diploma on X last year. You could have downloaded his solution from www.x.org.

▶ ask your supervisor about pointers for related work
▶ evaluate related work early
▶ identify your evaluation criteria
  Why are existing solutions not sufficient?
▶ ask other people, before doing a detour
Writers block

You have a writers block, when

- when you write letters to the brother of the mother of your brother in law
- you argue on debian-devel about packaging your Diploma-software
- clean the windows for the second time in one week

instead of writing your Diploma

What to do

- start writing with the part that you feel most comfortable about
- don’t think more than 2 minutes about a sentence instead write the imperfect sentence
- write something every day
- the block will go away as soon as you see some constant progress
Miscellaneous

German or English?

- a German computer science text is slightly more complicated because all the terminology is English

Citing Wikipedia

- anticipate crazy article restructurings
- cite specific version
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- prove your proficiency by finishing a Diploma
- help a tiny bit for a better future
- talk to your supervisor regularly
- start taking notes from the first day
- write for the benefit of your potential reader