

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

Hendrik Tews

Operating-Systems Group
Technische Universität Dresden

EZAG July 13, 2012

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...

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...

Nothing could be more wrong!

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...

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

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
- ▶ **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

Outline

General Advice

Diploma Thesis Process

Mistakes we saw more than once

Conclusion

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

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
- ▶ your supervisor is busy with other stuff;
don't expect him to call you every week

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
- ▶ 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

Getting Things Done

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

- ▶ this might be helpful
- ▶ ... or not

Getting Things Done

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

- ▶ this might be helpful
- ▶ ... or not
- ▶ 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

Getting Things Done

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

- ▶ this might be helpful
- ▶ ... or not
- ▶ 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

Better follow the [Ultimate Productivity Blog](#)

Getting Things Done

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

- ▶ this might be helpful
- ▶ ... or not
- ▶ 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

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

Outline

General Advice

Diploma Thesis Process

Mistakes we saw more than once

Conclusion

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

Outline

General Advice

Diploma Thesis Process

Mistakes we saw more than once

Conclusion

Conclusion

- ▶ 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