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Some short advice to a PhD student

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Some short advice to a PhD student

Accept that it is a big challenge

The PhD education is the highest education available - no wonder that it is demanding and difficult. Accept this.

Do not forget that it is an education

PhD research education is an education that will lead to becoming a good researcher who can do his "craft". That is the central part. If you, as a PhD student, will find an interesting result, that is of course a plus, but it is not the central part of the education - but to learn the "craft" is. It is also true that the PhD student is to learn this craft during a certain time – usually a full-time study period of 4 years. Normally, the PhD education consists of two parts - one course part and a written thesis. The course part requires of course a lot of work but this is usually not impossible to manage. The writing of the thesis, however, may cause a problem. So, from now on, focus will be on this.

Realize that there are three parallel processes

The writing of the thesis is extended over several years and can be divided into three different parallel processes:

- A learning process
- A funding process
- A supporting process

It is true that many people perceive the thesis writing merely as a learning process, but it is important to realize that there are three parallel processes and that all three processes must work satisfactorily. These processes are present all the time but tend to differ in 'weight' during different parts of the writing. For example, the supporting process becomes increasingly important, the closer you come to a finished thesis.

Choose a research area that is of personal interest to you

Choose a research area that interests you personally and that you would like to work with in the future. This will redouble your motivation; partly this concerns your desire to graduate, and partly your wish to gain increased knowledge within your research area. It will give you more energy during the research project itself, but it will also make it easier for you when applying for work after finishing the doctor's degree.

Formulate very early the *preliminary* title, purpose and objective of the study

Formulate, already in the beginning, the title, purpose and objective of the study. Don't hesitate to reflect on several different titles, purposes and objectives, but don't wait too long to make a decision about a specific title, a specific purpose, as well as specific objectives. Keep in mind that they are preliminary. Consequently, they are possible to adjust, or abandon completely or partially during the course of the study.

Also reflect early on the type of results

Of course you don't know the results of the study until it is finished. But you should, already early on, consider what type of results the study might lead to. For example: Verification or falsification of a certain hypothesis? A percentage rate? Clarification of concepts and definitions? A literature review? A check-list? A further development of an established model? Creation of a whole new model? Or ...?

It may seem difficult to think about the results of the study, or rather the type of results, already at an early stage, but otherwise there is a certain risk that you 'shy away' from the question. There are various reasons for this; one reason is simply that it is difficult, already in the beginning, to know that much about the outcome. Another reason is the emotional strain it involves to think in terms of results early in the study, since that leads to thoughts of the review when you will present and defend the final thesis. Did I really come up with something new? Can I sufficiently confirm my results? What if I totally missed a significant source? What if my study, to a great extent, has already been made by someone else? What if ...?

But it is important to make a stand against this and early on formulate the results of the study; or, rather, the results that are on your mind at that specific moment, not in detail but broadly. During the course of the study, the result will gradually be more profound. It is also

important, occasionally, to return to the initially expected outcome of the study and check if it still agrees with your intention. It will probably need to be adjusted/reformulated several times during the course of the study and perhaps the final result will differ substantially from the originally formulated. But this does not contradict the value of formulating the preliminary results of the study early and, above all, the type of results.

In addition, there is a clear connection between purpose, objectives and choice of method on the one hand and the type of results on the other hand. If you wish to achieve a certain type of results, it is important that the structure of the study, not least the choice of method, enables this. Therefore, it is advisable to discuss the type of results in close connection with the determination of the preliminary title, purpose and objectives.

Find a small, well-defined research object

The best way to learn the craft within the set study time is to choose a small, well-defined research topic. Choosing a broader and vaguer research topic may feel more exciting and challenging since the study then, e.g., might lead to more interesting and perhaps even innovative results. However, this increases the risk that the study will take too long and perhaps even remain unfinished. My advice is therefore to postpone this type of study/project until after finishing your doctor's degree.

Make sure the level of ambition is realistic

If, after completing the doctor's degree, you intend to stay at the academy, you will have good prospects in the future to pursue more research projects/studies. Most likely, you are even required to engage in research to some extent, more or less, and therefore it is not necessary that all your interesting thoughts are expressed in the thesis - you will have many more chances to present and try them out. If you, on the other hand, after finishing your doctor's degree, intend to leave the academy and enter the world of business or the public sector, it is important that you have not become too old, i.e., that your studies take too long. In both cases, it is recommended to keep the ambition level at: Passed + a certain safety margin. Do not aim at writing "the best thesis ever within x".

Compose a logical, argumentative introduction text from the beginning

Write early an introductory text that starts with a general background description and then logically, step by step, via a problematizing argumentation leads to a presentation of the purpose. The purpose should stand out as an obvious consequence of the logical, step-by-step argument, previously presented in the introduction section.

The structure first - the body text afterwards

Let's assume that you have studied a particular research area, i.e., you have gained what is usually referred to as a certain pre-understanding of the research area, and that you also have

decided what research question you want to highlight. Now it's time to start writing the thesis itself and you should begin with the structure: specify what chapters to include, their headings and the logical context between them. Make short descriptions of the contents of each chapter. A recommendation is, at the end of the introductory chapter, to draw a simple figure with boxes and arrows describing the successive order of the chapters and their mutual logical context; then repeat this procedure with each chapter. Once this is done and you feel satisfied, proceed with the body text, i.e., write your text under the different headings.

The reason I recommend this successive order, first structure and then text, is simply that it is a central requirement for a thesis to have a logical structure. In other words, that there is a clear main theme that is easy for the reader to follow. If the purpose claims that the study is intended to be about apples, you must not let it drift off to start dealing with pears instead and then finally in the results, with oranges. This is of course obvious, but according to my experience it is easy to gradually shift perspective, since the thesis work goes on for several years. The more pages there are in the thesis manuscript, the more difficult it is to see this.

Therefore, from time to time, you should check up on the inner logic to make sure that it still agrees with your plan. This might lead to that the purpose should be reworded and be dealing with oranges instead of referring to apples; the reason for this might be, for example, that the focused problem (such as the presence of pesticide residues) is marginal in terms of apples but significant in the case of oranges. That is, of course, a strong reason to go back in the thesis and change the purpose. Once this is done, check again that the inner logic is correct, i.e., that the study has a clear main theme. But always start with the structure and then fill in the body text.

On the other hand, if you start writing the body text and then try to find a structure that corresponds with the text passages, it may be harder to make it work - the body text already written can become a mental obstacle. In addition, you may be faced with some redundant text, i.e., a body text that simply does not fit into the structure.

Do not get stuck in questions about stringency, support, and source references

In the finished thesis the study is required to have an anchoring (a support) in established theory within the specific field, as well as in detailed source references and stringency. This is important also during the first part of the writing process, but here it is a matter of achieving just the right amount of stringency, support and source references for the time being, and later on in the study return to these questions and then delve more deeply into them. For a certain "observation/assertion", for example, it might in the beginning be sufficient with two references to established theories and then, at the end of the study, you can add a few more. If you early on in the study aim at achieving the same level of requirements as in the finished thesis, you may get stuck in these issues at a point where it is more important to move on.

State in detail all central concepts and words

All the words and terms included in the title and/or purpose and/or objectives shall be considered as central. They must be discussed and clarified unless they are generally accepted words and concepts such as: A, an, one, two, the one and these. Even words and concepts such as man, woman, child, senior citizen and a self-employed person, who at a quick glance seem obvious – everyone knows what a child is - can prove to be at least partly unclear. What counts as children by the public transport service in one municipality, may not be regarded as children in another municipality - for example.

Take hold of the tough questions first - don't postpone them

An important reason for several of the above advice, such as starting with the structure and later filling up with body text, and to determine the preliminary title, purpose and objective early, is that these issues are difficult - even unpleasant - for most PhD students to take hold of and they might be inclined to postpone them. But these issues will not be easier to handle just because they have been postponed. On the contrary.

Formulate the purpose and objective of the study in a way that makes the results possible to evaluate

At the end of the result analysis chapter it is customary to compare the results achieved with the formulated purpose and the set objectives. To be able to make a meaningful comparison, the stipulated purpose and, above all, the set objectives must be so accurately formulated that it is possible to compare them with the achieved result. Otherwise, it will be difficult to determine if the study has been successful or not. Another reason to be precise when formulating the purpose and above all objective is, that it forces you to think again about what you intend to do and why.

Choose level of ambition for the result evaluation

It may seem obvious that the results obtained must be proved. That the results obtained are "true". Within some subjects, such as mathematics, you can safely find research results that are proved in the sense that nobody can question them - at least not within the system of rules that apply to mathematics. But in the vast majority of cases, it is more a matter of "making it likely" to varying degrees. There are different measures of significance within statistics, and if you achieve a certain degree of significance, the results are considered valid. But you cannot claim that they are "true" with certainty. A deep study of a single organization can yield interesting results, but you cannot assert that these results are valid in all organizations; these are just a few examples. Thus, when it comes to the validity of the result, the extent of the degree of "certainty" is large.

What you, on the other hand, always can and should do is to check that the inner structure, including any models created in the study, is logically correct. You can also critically review your results. For example, you can look at already established models and theories and see if the study results point in a completely different direction. You can also, more in general, try to find something that doesn't agree with the outcome of the study.

The possibilities to make the results reliable depend, not least, on the choice of purpose, objectives and method, and in order to make the results possible to evaluate it is therefore essential that the level of ambition has to be considered in connection with the choice of purpose, objectives and method. Thinking about the issue of evaluation only at the end of the study gives no scope for action; then the degree of possible evaluations has already been set by the choices made earlier in the study.

Use established, preferably straightforward, methods

Method is the way chosen to try to achieve purpose and objectives as effectively as possible. Usually, it is not the question of using only one method, but you pick out several various methods that may be the most suitable choices for different parts of the thesis. If the thesis intends to give a methodological contribution, of course that affects the choice of method but generally this is not the ambition. Then the method selection is controlled by which method, simple or advanced, that seems to give the greatest opportunity to achieve the intended purpose. Choosing a more advanced method is no merit in itself but justified only if it increases the ability to achieve the set purpose. The general advice is: stick to as straightforward and well-established methods as possible.

Specify and account for all the chosen methods

A large number of method choices of varying importance are made in the thesis. All these choices must be clearly stated and the different, chosen options have to be discussed. In addition, a clear explanation must be given to each choice you have made, including why you chose them.

Avoid the temptation of overestimating the result

As a writer, you have been absorbed by the research project for several years and perhaps you tend to overestimate its results. However, in most theses, the result/results are quite limited but, if other parts of the thesis are well done, it will probably pass. Still, if the writer claims that the results are greater than they actually are, this will cause a problem. This is grave from an academic point of view, so make sure not to overestimate the results before sending the thesis to the printers. Nor is it good, however, if the writer underestimates his results.

Also give an account of what you have *not* done

It is important that the writer also describes what has not been done, not only what has been done, in order for readers to be able to judge the thesis correctly. Perhaps it is not as fun to tell about what you have not done but quite important since it makes it easier for the reader (and maybe the writer, too) to understand the study and its results.

Accept that the writing is an emotional process as well

Initially, it was mentioned that the writing of the thesis was not only a learning process but also a funding process as well as a supporting process. To these three must be added a fourth, namely the emotional process. During the writing and especially towards the end of writing, when you are approaching a finished product that is to be closely scrutinized, most writers experience emotions of fear, often very strong emotions. The strength of these emotions may seem surprising; because there is no risk of physical assault or that you will be beaten to death at the seminars – nor at the presentation and defense of the thesis. Objectively speaking, such a strong fear is hard to understand. But when it comes to fear, people appear many times to be irrational. Some of us are, for example, afraid of harmless spiders, others of open places or to speak in front of people. Fear is certainly an important explanation to why many students fail to finish their thesis or drag it on forever. It is sad, but nevertheless it seems to be true. What you can do is to be mentally prepared for the fear to come over you - suddenly or lurking - and that it sometimes can be very strong. And you just have to accept this. Also other strong feelings may emerge. The thesis writing is for most people an emotional roller coaster.

Beware of bad – sometimes truly destructive – seminar culture

Critical thinking is central within the academy, i.e. to question, and this is, too often, interpreted as being equal to criticizing. This is a clear misconception. In my opinion, a seminar should highlight the shortcomings as well as the strength of the presented manuscript, and reasonably, both should be given equally long time. However, my many years of experience are discouraging. In general, almost all the time (and in some cases all the time indeed) is spent on criticizing. In addition, there is frequently sweeping criticism like "you cannot do that" or "that's bad" without explaining why or pointing to alternatives. Rational and motivated criticism is of course justified and important and in case it is also followed up with a suggestion, such as "why don't you try this approach instead", it will become very constructive as well.

At worst, the seminar turns out to be not only negative, but actually destructive for the ones exposed to the attacks as well as for the colleagues and the department's research work in general. I don't know why the seminar culture is this bad - of course there are exceptions - but perhaps it's just an old remnant, claiming that it should be rough.

My advice is: write down what is said and document the seminar as much as possible. Ask opponents and others active at the seminar for written comments; make your own notes, ask a

colleague to make notes for you, record the seminar etc. Then, go through everything stated at the seminar in peace and quiet and separate out what you find relevant and constructive; sift out what is irrelevant or just destructive. The next step is to focus on each of the relevant and constructive views and throw the rest in the dustbin of oblivion.

It is done!

Either, you let the final seminar wait until the tutors think so or until you yourself really think so. A third possibility is to claim that it is time for the final seminar, even though the manuscript is not quite finished yet. The last option has several advantages. First, many times the opponent is taken from outside and is therefore able to easier contribute new approaches to the thesis; second, many of the employees of the institution will now actually read what you have written and take an active part in the seminar. In addition, the tutors will read your manuscript with partly new eyes. In other words, you will learn a lot about the strong and weak sides of the manuscript. The disadvantage of this option is that you may be forced to make such major revisions that a new final seminar is needed. A bit shameful of course, but if you can put up with that, then an earlier final seminar is definitely a way to keep the total study time down – even so, it rarely stays within the stipulated study period of four years.

Epilogue

The above-mentioned advice is by no means comprehensive. For example, the important funding issue is missing but I simply did not think I had anything to add here. This also applies to many other important issues.

The advice should be seen as a complement to the traditional method books. It is true that many of the advice listed above are found in the traditional method books but spread out over different books and surrounded by a lot of extra text. However, I have not found any individual method book or methodology publication (no doubt they exist if you look carefully enough), which provides different tangible advice, in a brief way.

Even though literature has been an important source of inspiration, the advice is largely based on my academic writing experience: my own writing, colleagues' writing and the writing of a large number of students. Now when I look back, it occurs to me that too many of these writing processes - not least thesis writing - have been winding, have taken a lot of time and been emotionally stressful. So now, in hindsight, I have also been able to realize that a lot of this was unnecessary. Therefore, I have compiled these short hints. My hope is that the PhD student, by reading this advice, will get some help in formulating her/his own PhD student process. Thereby I hope that this process will be somewhat less winding, take a bit shorter time and reduce emotional stress.

Good luck!

Ulf

PS. Feel free to e-mail me if you have any comments or questions regarding the above-mentioned advice. My address is ulf.paulsson@fek.lu.se DS