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HOW TO SUPERVISE (AND BE SUPERVISED) ON A RESEARCH DEGREE

Tips and tools for supervisors and students

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Chapter 3:
Deciding the general direction of the research

By their definition, PhD studies are seeking to untangle complex ideas and produce original thoughts on their subject matter, which are backed-up by a thorough examination of the evidence available. For this reason, deciding the aim of the research can be rather broad at first. When students' start-out and get asked the question, 'So, what is your PhD about?' the typical answer will be a rather hesitant, half-page explanation. Ask this question again when they are on the point of completing the PhD and the reply is likely to be a very concise and quite specific, single sentence. The process of systematic research casts its net widely, then refines and re-focuses subsequent investigations to reinforce, or challenge, previous ideas and insights. Seeing the process as a little piece of a much larger, complex mosaic of ideas can be helpful, but a bit daunting.

To help the process of the distillation of knowledge, there are some basic techniques that any researcher can use. Firstly, it is wise to recognise that the PhD, as with almost any complex task, can be broken down into a number of smaller tasks, and that the role of the dissertation is to explain these tasks logically and clearly. In compiling the dissertation, the research student needs to effectively present the story of the research, from the introduction to the conclusions, in a way that makes it easy for the reader to understand what might be complicated and challenging issues. To make a start on this story-board, some people might like to utilise the concept of mind-maps to graphically link and make sense of the multitude of tasks that it will be necessary to write about. Mind-maps do not really work for everybody, so you might prefer to construct a hierarchical list of all the possible sections and subsections. This has the advantage that such a list can very quickly be edited to provide the contents pages to the dissertation. Other people may have different techniques to create some structure for their subsequent work. For those who like diagrammatic checklists but struggle to find mind-maps useful, another way to help to identify the tasks that are required is to use

software to create an easy-to-construct flow diagram which uses simple text and drag-and-drop shapes to (re)organise the sequence in which the research tasks need to 'flow'.

Whatever planning style is adopted, and regardless of whether the research student starts with a question, a hypothesis, or simply a broad subject title, the aim of the research planning at this stage is to lay out with a broad brush the likely trend of the enquiry. Obviously the actual course of the research is likely to change tack several times during the PhD as new ideas emerge and light is thrown in some currently-dark corners, but the directional trend of the story, from the first sentence of the introduction to the last sentence of the conclusions, should remain relatively constant. To some extent, it helps at this stage to be as specific as possible in the identification of each possible section and subsection of the future research, but obviously this itemisation needs to be treated lightly so that it is flexible enough to change and modify. Treat it like a storyline which can be embellished or contracted as the research student's knowledge of the topic deepens and

extends. Like all good stories, there should be a beginning, a middle, and an end, with a path to link them up.

Revising the research question

As we wrote earlier, once the student becomes better acquainted with the research area, it will probably become necessary to slightly revise the original research question. There could be several reasons for this, but largely this is because the review of the previous academic literature on the subject has helped to clarify what the academic community already knows about the topic and what still remains to be discovered. Hopefully this will result in minor adjustments, rather than huge changes of emphasis, but it is important to recognise that this is an ongoing process which will require a bit of settling down. For some people, in certain subject areas, this settling-down process will take longer than others, and a crucial resource to help the process along is – surprise, surprise – the research supervisor! It might seem obvious, but when the research student becomes enmeshed in the research problem, it

seems that sometimes they forget to communicate effectively with their supervisor(s).

While we always emphasise that the research project belongs to the student, the supervisor also has a very direct interest in the success of the study, and regular discussions between the student and the supervisor are essential. The definition of ‘regular’ can be a bit loose. Does this mean weekly, or monthly, or what? In practice, meetings are usually closer together at the start and towards the end of the PhD, and a bit further apart during the middle period when the student is really getting into the data-gathering and analysis. Perhaps meetings might be every 2-3 weeks at the start, to help orientate the student and discuss the broad plans, and about the same regularity in the later stages to discuss feedback on the writing as each chapter gets produced. Normally, it is helpful to meet every 6-7 weeks in the middle phases of the study, just to keep on top of what the student is working on at that time.

Similarly, the word ‘discussion’ can be a rather misused term. We do not just mean quick chats in the corridor or tea-

room, and we do not mean that the student is brought in to hear a monologue from the supervisor. Discussion means both parties exchanging their views. A level of trust needs to be learned – trust that the student's half-formed thoughts and ideas can be shared and developed; trust, too, that the supervisor has the student's best interests at heart and will give detailed feedback which is both supportive and useful. The student is learning the business of advanced research, so it is unrealistic to expect perfection from the outset, yet many students are reluctant to share their ideas and their writing with their supervisor, perhaps in apprehension of looking inadequate. This is completely the wrong attitude. As supervisors, we cannot give advice unless the student tells us what they are thinking; we cannot give written comments or suggestions until a student submits some text for us to read. The more we learn of how the research project is developing, the more we can share our own thoughts and expertise. After each formal meeting we get the student to email all the supervisory panel a half-page summary of what has been discussed and agreed. No-one else needs to see this summary, but it is a useful record to look back upon as the research project evolves.

The effective research supervisor should be both approachable and knowledgeable, and ideally is the best critical friend that a research student could have. For a bit of light-hearted reinforcement of this almost symbiotic relationship, check the parable at http://www.cosy.sbg.ac.at/~held/fun/thesis_advisor.txt.
Don't say you have not been warned!

What do you need to know?

This is another difficult question when starting out on a PhD - for both the supervisor(s) and the student. If you knew the answer to that, then perhaps you would not need to undertake the PhD in the first place. It gets more complicated still (and yet, at the same time, more straightforward!) Obviously, the initial broad area of investigation will get parsed down into a more specific, more manageable topic, with a particular 'research question' or perhaps a 'research problem' which the student then attempts to explore in detail. The PhD, however, is more than simply a research project looking for a clever answer (although, it can be that as well). The most

important component of the PhD is to be able to demonstrate that the doctoral candidate fully understands the process of advanced research at this level. In the context of the research project, this means knowing (or learning) when to explore a new area (or branch of academic literature) and when to narrow the options and investigate in greater depth. It means learning when to stop reading and start gathering new data; when to start writing and when (and what) to re-visit, edit, and revise. As the student becomes more deeply embedded in the research topic, this becomes more important, because a fondness for the topic might obscure critical judgment, leading to an attempt to have a comprehensive investigation of everything, rather than developing a speciality which advances knowledge about the subject. Regular, open discussion between supervisor(s) and student is a crucial element that should help to make better sense of all of this.

Part of this learning process is also about correct timing. Students frequently complain that they ‘don’t have enough time’ to complete the project successfully, but this is often because they are trying to squash a six-month project into

three months. Bad planning means that something has to be sacrificed. It is always difficult to be deterministic about how long it will take to do each stage of a PhD, because each person and each research problem is different. As a rough guide, however, it is not uncommon that over three-years of full-time PhD research, the student will spend the first 6-9 months just getting to grips with the literature. During this time they will perhaps complete the draft of a literature review, giving a constructive narrative on the main events and key articles on the research topic to date. Towards the end of this period, the student will be developing a more intimate feel for the methodological approach and the methods of gathering new data that they wish to adopt. The methodology chapter can probably be drafted quite quickly at this point, although it will usually be necessary to revisit it later to 'tweak' the proposal to reflect what was actually done (as opposed to what was intended to be done in an ideal world). Having established the preferred research methods, ethical permission to conduct the research can now be applied for and hopefully speedily approved.

The PhD now enters the really interesting point – the ‘meat’ in the sandwich – where the student can now begin to conduct the research and gather new data. This period (subject to the above caution that every project is different) may last from the end of the first year (of full-time study) until the beginning of the third year. The student will be writing drafts of the results chapter towards the end of this period, and the final six months or so will usually be spent on writing the discussion/conclusions/recommendations chapter and tidying up the dissertation. Do not underestimate how long it will take to check all the spelling, grammar, citations, references, figure numbers, diagrams, and general formatting! A part-time PhD will obviously take longer than the three-year full-time project (normally 5-6 years) but this rough time-line can be adapted to suit. With a clear initial research question, and a careful approach to each subsequent stage in the process, ‘what you need to know’ usually emerges from the academic mist!

Where can new data be discovered?

Having prioritised what information the PhD student needs to know in order to make progress towards answering the research question, the next step is to consider where new data can be found. An initial role of the supervisor is to direct the student towards existing data, then to discuss what sort of data might be required to build upon this prior knowledge in order to give new insights. This might not be quite so simple as it at first appears. In an idealised view of research, the problem is articulated, the types of information needed to answer the problem are identified, and then the researcher goes out and collects that data to be analysed. In the real world, there are several problems to be addressed. Firstly, the data that the researcher needs might be hidden, unavailable, or simply difficult to get. Secondly, even if it is accessible, the data needs to be collected in a way that is impartial, systematic, and allows subsequent analysis. Thirdly, there may be problems with the design of the data collection methods, such as obtaining ethical approval, or enabling cross-comparison with previous data,

which need to be resolved before the primary research activities can proceed.

The role of a good supervisor is to help smooth the path of the research student without actually doing the data collection work for them. This certainly entails casting a critical eye over the research design and giving friendly feedback. It may require the supervisor to provide a covering letter of introduction for the student, to open doors and archives and to confirm that the student is a serious researcher worth giving some time to. In some situations it may be that the student is directed to existing data sets, either online or in archives, which can be used to provide preliminary analyses. Perhaps the supervisor has done some research on the subject already, so there are practical tasks which they can advise on – the selection of data-gathering methods, the construction of questionnaires or interview schedules, and of course ensuring that any ethical issues relating to the proposed research are adequately covered.

In considering what sort of data are needed to answer the research question, and where this data might be found, the research student and the supervisor have a common interest to ensure that sufficient thought goes into the pre-planning process. Thinking carefully in advance about the possible obstacles involved in collecting robust new data to explore the research topic, is time well-spent. Knowing what to ask will be critical for the study but knowing who to ask could be more important still. Depending on the subject discipline, and the nature of the study, the identification of key contacts, or an appropriate population of study participants, could make the difference between a perspective which gives a blinding flash of the obvious versus an exciting and innovative research discovery. It will not be possible to foresee every possible angle of the research process but having a clear idea of where data can be found, or with whom, is a big step in the research project design.

Writing the methodology

When starting a PhD, there is often a great mystique surrounding the selection (and writing-up) of the proposed methodology. It is important to remember that the term ‘methodology’ means more than simply describing the methods that are intended to be used for the collection of research data. The methodology is the whole style of approach to the study, including philosophy of the research and the means of gathering new data. Importantly, in order to understand the data which might be generated by the research, it is critical to first understand the rules which govern the various research methods selected, their strengths and their limitations. The selection of a variety of methods will enable the researcher to gather different types of data, and to look at the research area from complementary angles. As always, it is the role of the supervisor to help the research student put together the best methodology for the research project, that is to say, the best combination of methods through which the student proposes to gather new data on the topic. In most circumstances the supervisor will already have an

established preference for one or more methods. It might be necessary to include a second, or third, supervisor who has expertise in a complementary or different set of methods, particularly for multi-disciplinary research.

There are many ways of gathering research data, but broadly they can be divided into three major methodological approaches; these are quantitative, qualitative, and mixed methods. We do not propose to go into much more detail here – there are whole volumes written on even the specific subcategories of these approaches – but briefly, quantitative research explores through the *measurement* of phenomena, while a qualitative researcher looks for the emergence of *themes* or patterns in the evidence provided. A 'mixed-methods' approach is not simply a randomly constructed 'a-bit-of-one-and-a-bit-of-the-other' style, (the mixture must serve a particular purpose) but it does use both qualitative and quantitative analysis to provide an integrated perspective on the same research topic.

The reason that so much early attention is given to establishing the methodology of the proposed research

project is partly because the confirmation of the methodology will determine how the researcher looks at the world emerging through the data. Partly, also it will condition the forms of analysis, the reliability, and the compatibility of the research data produced. Any fool can go out and collect data, but getting hold of the type of data which will allow reasonably reliable conclusions to be established is a different matter. In some cases, the choice will be easy. There may be a very limited number of tried-and-tested ways in which an experiment can be constructed, or there might be a very similar study already published, and the replication of those methods to the new subject area might facilitate a useful extension and comparison of knowledge. The supervisor may even have pioneered a particular combination of methods over a long research career and therefore be in a good position to give the research student advice on the very practical issues, as well as on the theory. The literature review is, of course, one element of the methods of gathering together new data, and the published academic records will likely reveal a quite precise range of potentially fruitful options to follow. In any event, it is worth thinking hard right from this stage, in order

to avoid false starts and perhaps gathering false data later on.

What methods will help to answer the research question?

This is where it starts to get hard, not simply because the research student is venturing out into the unknown, but also because selecting the methods through which the research will be conducted will differ hugely between cultures, between disciplines, and perhaps between research subjects within the same discipline. There is no one-size-fits-all template which will allow a pick-and-go approach to selecting the most appropriate methods. In one sense, this could be an easy step, because it may be pretty obvious from the outset what methods will be needed in order to answer the research question(s). Almost all academic research methods will involve reading, either to follow-up on what has already been said about the topic or to put it into a wider context. After that, the methods might include interviews, experiments, observations, questionnaires, focus groups, and a host of other activities which will

change in emphasis from discipline to discipline. Getting the ‘correct’ mixture of these methods is what will determine the methodology, which is, the total system of procedures for further research.

Here is where high technology can come in. We say ‘high’ technology because even using a pen-and-paper or driving a car to conduct an interview is using technology, but of course we generally mean computer-based technology. In educational circles you will frequently hear the assertion that ‘the technology should never lead!’. This is certainly true, to an extent, but not entirely. For instance, if there are two (or more) ways to record research data, and one way entails using a high-technology solution which makes it easier, more flexible and/or more secure, then surely most sensible people would vote for the use of that technology. Examples might include, the use of specific software to compile the dissertation reference list and store it on the cloud; using Mendeley to store the articles online; the use of a survey service to conduct a questionnaire online rather than face-to-face, giving time-flexibility, wider geographic coverage, and the ability to utilise automatic data analysis

and presentation tools; the use of a free voice-recorder smartphone app to record interviews, the use of an app to give a written transcription of an audio recording … the list could go on and on.

A crucial factor in all of this is to consider carefully – right at the start – how these methods will allow you to analyse and hopefully make sense of the data which will be gathered. It makes little sense jumping off a high-point without knowing, even approximately, where you might land. Similarly, it makes little sense to gather mountains of data without any ideas how to begin to make sense of it. The supervisor should be able to give some clear directions, but ultimately each situation, each carefully worded question, is slightly different, and will have different constraints on time, resources, and abilities, so the student will need to be fully comfortable with the methodology before even starting to gather any new data. Prior studies in a similar area can help to provide some direction, but the precise mixture needs to be decided for each individual research project.