

Doing your doctorate

Making conscious decisions and getting off to a good start



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1. Introduction / Foreword

If you decide to do a doctorate, you are in good company, because after Switzerland, Germany has the highest rate of doctorates worldwide. In Germany, more people of the same age group decide to do a doctorate compared to nearly all other countries in the world. On average, a doctorate takes four and a half years, although most models of duration and funding are still based on a period of three years. Currently, around 200,000 people are doing their doctorates at German universities and the number of doctorates awarded annually has risen steadily over the past decades, reaching 29,303 in 2016.¹ The former President of the German Academic Exchange Service (DAAD), Prof. Dr. Margret Wintermantel, is one of the representatives of higher education institutions and views this trend as positive because Germany, she argues, is a knowledge society and needs many clever minds with the highest levels of qualification.

On the other hand, it is not always the case that a doctorate leads to a highly lucrative position, for example at a university. The Council of Science and Humanities – the advisory body of the federal government on questions of higher education policy – points out (2014) that only 4% of current doctoral students will ultimately be able to take up a permanent contract position at a university. Furthermore, the path from making the decision to pursue a doctorate to the moment when the doctoral degree is awarded is long and often fraught with obstacles that need to be overcome in order to reach one's goal.

You see, the question "Do I want to do a doctorate?" is more complex than you might think at first glance. A number of aspects and questions need to be considered and weighed up before an answer can or should be given that ultimately sets the course for an entire stage of one's life.

With this brochure, we would like to help by explaining to you the requirements and prospects of a doctorate in such a way that the path to a doctorate becomes

¹ Federal Statistical Office (Destatis), 2018: <https://www.destatis.de/DE/Themen/Gesellschaft-Umwelt/Bildung-Forschung-Kultur/Hochschulen/Tabellen/promotionen-bundeslaender.html>

more transparent. It provides information on the framework conditions and the doctoral process, the time and personal requirements, as well as the career prospects after completing your doctorate. This should make it easier for you to answer the question "Do I want to do my doctorate?"

2. Motivation, professional and personal requirements

Why do you want to pursue a doctorate? What is it about a doctorate that interests you and what are your aims for writing a doctoral thesis? What is your motivation?

Do you have a strong interest in research and are you looking for an academic career on this basis?

Then you will need an optimal research environment. You should therefore – as best as you can – ensure that this is the case at your intended department chair, professorship or research institute. You should inquire about possibilities to prepare your thesis within the framework of a graduate institution or a structured doctoral program (see also chapter 6 "Doctoral Structures"). These institutions can offer you an inspiring, research-intensive context, as they often bring together a large number of people working on a similar topic. The suitability of the research profile of your supervisor is also very important. Is your supervisor relevant in the field in which you are interested? If you have this question, it may be worth seeking the advice of doctoral candidates who are already supervised by him or her. You should also ask yourself whether there are other mentors or networks available besides your supervisor who would help you advance your research. If necessary, you will have to decide whether you would like to change universities for "your" topic (possibly also abroad) or whether you would rather cut back or adapt the focus of your doctoral thesis in order to stay in a certain place or with a certain supervisor.

Especially in view of the academic career prospects after your doctorate, it is important to assess how the dissertation topic you are aiming for is embedded in the relevant professional environment. In the case of more marginal topics, the career opportunities following the doctorate may be more limited than in the case of a topic that is located at the "core" of the subject and is represented by a number of professorships at German universities. If you are looking for a pro-

fessorship, you need teaching experience; therefore, make sure that you are able to teach in your chosen doctoral program or department. Participating in courses to improve your teaching performance can also increase your chances of a career in science and research. Moreover, the opportunity to publish research results and discuss them with the academic community is a prerequisite for successfully pursuing an academic career. When choosing your supervisor and the professional environment, you should try to assess or inquire as to whether you would have the opportunity to publish your research results, for example within the framework of an academic series located at the institute or department chair.

As you may have noticed yourself by attending research colloquia or specialist conferences, the academic world, like all professions, is characterized by certain manners and conventions of behavior and communication. Question your willingness to get involved with the "academic community", including its habitus and forms of behavior, because in addition to professional recognition, this side of the field of activity can also be decisive for whether you would operate successfully and feel comfortable in this area.

Even with great professional competence and extraordinary research achievements, it is quite possible that your dream of a professorship will not come true or that the path to it will be tedious and accompanied by uncertainty. In most cases, you need to be very patient when pursuing a career in science and research. In this regard, it is important that you ask yourself whether you have the personal prerequisites, such as considerable stamina and a good degree of perseverance, which will enable you to get through even precarious times and overcome possible setbacks on the path within science and research. After all, it is wise in any case to draw up a "Plan B" in the event that you do not obtain an academic position at a university. Be clear about possible alternative career paths that would be attractive to you!

Are you highly interested in research and would you like to work in a research-related field without pursuing an academic career?

In recent years, a number of areas of employment have emerged at universities and non-university institutions that open up good prospects for those pursuing this path. In the field of research management, for example, highly qualified individuals with research experience are sought who can contribute their expertise as coordinators or heads of graduate institutions, research networks or as employees at universities (e.g., administrative offices, departments). If you are interested in this professional field, it may make sense to be more pragmatic with regard to the time and resources you devote to your doctorate than in the case of work that is designed for a career in science and research. While you are still working on your doctorate, take advantage of the opportunities offered by professional development programs with regard to your desired field of work. For instance, courses on project management or communication between research and the non-university public can be interesting and effective.

If you see your professional future in a research-related field, funding your doctorate through career-oriented employment may be more effective than a scholarship, since you will be able to make good use of your professional experience and build up helpful networks during your doctorate. A position at the university would be most helpful, as it gives you direct insight into the university and research structures. Try to take on coordination tasks during your doctoral studies, such as preparing for conferences, and practice your skills in committee work.

Do you intend to do your doctorate in order to be professionally successful outside the university, for example in business?

For a non-academic career, it is obvious to use your time and energy more pragmatically with regard to the research topic and its scope. Also with a view to attending conferences and the number of scientific publications on which you want to work parallel to your dissertation, "less can be more" if you are aiming for a non-university career. Take advantage of the opportunities to acquire skills during your doctorate that will help you to enter a non-university career. Future employ-

ers often expect you to have distinctive skills in project management, effective communication and networking. Find out about the offers of the graduate institution at your university and make use of its relevant events! If your career path is intended to lead you out of your university, it is advisable to look for professional experience or a connection to the desired field of work during your doctorate. You should also take this into account when considering funding options for your doctorate. With the qualification goal "non-academic career", a job-related activity can be more meaningful than a scholarship. In some specialist fields, doctorates in cooperation with business are common and at such project locations you have close contact with the client of the project, gain insights into commercial project management and can practice non-university communication and thinking patterns. Perhaps you could consider this form of a so-called business doctorate, in which the company where you take up a job and gain professional experience simultaneously funds your doctorate and gives you the time you need?

Did a professor at your institute give you the opportunity to do your doctorate after completing your studies, possibly in conjunction with a job offer?

An offer such as this is first and foremost an appreciation of your person and work and therefore something you should be proud of. But especially in this situation, which you may not have expected at all, it is all the more important to consider whether the offer suits your actual professional interests. You should also carefully consider the general conditions for yourself, because the offer of a doctorate is not always accompanied by a job that specializes in the respective field. If you are not employed, it is your responsibility to ensure adequate and suitable funding for your doctoral project (see also Chapter 5 "Funding"); this may take some time. Nevertheless, funding that is still uncertain at the beginning of the project does not have to be a reason not to carry out your research project. But even if you are offered a position as an employee, take the time to reflect and avoid slipping into a position that you may not be able to leave unscathed later. The acceptance of the job offer implies your multi-year commitment to a specific professorship and institute. If possible, you should inquire with other re-

search associates about the situation at the department chair or institute, which can include the existing resources for research and conference visits as well as the organization of work, compulsory attendance and interpersonal communication. Clarify what tasks you need to take on in the areas of teaching and administration, including their scope, in addition to working on your dissertation. Finally, it will also be important for you to ask yourself whether by accepting the vacancy you are more in line with your own wishes or those of your professor. Are you worried about upsetting or offending the person who supports you if you reject the offer? Be as honest as possible to yourself and also to the person who gave you the chance, because a premature commitment can put you in a position that you may not be able to handle, that runs counter to your actual interests, or that is likely to damage a trust that has grown between you and the person in charge. If you are able to deal proactively with your possible doubts and reservations and, if necessary, eliminate them, you will be all the more motivated to accept the job offer!

After completing your studies, do you feel rather undecided and not yet fully aware of the path you want to take? Are you considering a doctorate because you don't know which other step you should take or because you can't decide on your next qualification or job yet?

In this case, it is important that you assess your situation realistically: Are intensive research and the writing of a dissertation really tasks for which you have the necessary desire and motivation? Do you have enough stamina for an "embarrassment solution doctorate"? Think about what career or career prospects you associate with a completed doctorate and ask yourself whether there could be career and other development prospects for you that would be an alternative to a dissertation. Particularly in a phase in which you would like a thorough and new orientation, it can be of great benefit to you if you turn to the counselling centers at your university, e.g., in graduate institutions. In addition to professional advice, these institutions often also offer events that provide an overview and orientation on the further career path of those interested in a doctorate.

Clearly, there are very diverse and varied motivations for a doctorate. Another point on which you should gain clarity is the subject-related and methodical qualification that forms the basis for a promising doctorate in your field. At the beginning of your doctorate, you are expected to have already mastered considerable parts of this "tool of the trade" in your field, which is indispensable for a major research project. Thus, you should have a general overview of the thematic and methodological range of your field of research and be able to locate your possible dissertation topic within it. Are there any scientific methods or techniques that you are not yet familiar with, but which you need to carry out your dissertation project? What contact points are there, for example in your working group, with your first supervisor or in a graduate institution, which can support you in obtaining the necessary methodological advanced qualification within an appropriate time frame?

Particularly against the backdrop of the cases of plagiarism and scientific misconduct that have been widely discussed in the media in recent years, it is important that you find out what good scientific practice means in your field. Familiarize yourself with the relevant rules so that you can recognize the boundaries between honest and problematic scientific work and prevent possible misconduct in your research (see also Chapter 3 "Starting").

The dissertation is an independent research project. Have you gained enough experience in planning and working on your dissertation independently? Clarify with your first supervisor what degree of autonomy and personal responsibility is expected of you! Do you feel fit in scientific writing and in the presentation of research results? In the course of your dissertation, you will certainly present and discuss your research topic and your preliminary results at symposia and conferences for junior researchers. A convincing presentation of your work will enable you to position yourself in your professional community, which can also be of great advantage with regard to your next career steps after completing your dissertation. Take advantage of the qualification opportunities offered by the graduate institutions at your university in the field of scientific writing and presentation! In addition, it is important for your own progress that you build up a network that makes it easier for you to start your doctorate, accompanies you through

the dissertation phase and also supports you in the time between graduation and the next step in your personal and professional planning. Build up this network in such a way that you can also discuss and clarify subject-related and methodological questions with your peers!

In addition to motivation and thematic and methodological knowledge, the personal requirements you have at the beginning of your doctorate also play a decisive role in the successful completion of this qualification phase. The decision to do a doctorate has great influence on the way you live your life in the years ahead. Check whether you have the personal prerequisites necessary to complete a doctoral thesis and whether this decision is in line with your non-academic life planning.

A number of issues need to be addressed here:

- What does my life and family planning look like?
- Am I a resilient person and capable of being self-motivated and self-disciplined?
- Do I possess stamina and a certain degree of frustration tolerance?
- Do I have good time- and self-management?
- Do I have a time-consuming hobby? Am I prepared to limit this temporarily?
- Do I often need vacation or can I get along without vacation for a year?
- Do I need a lot of free time? Can I put friendships and family aside?
- Can I possibly get along with relatively little money?
- Are years of precarious employment and insecure career opportunities a problem for me?

Many of the above questions refer to the complex nature of work-life-balance. Be aware that the work on a dissertation will often be accompanied by phases of considerable stress and time pressure. On the other hand, there is the desire for research, the recognition of your research achievements by the "scientific community" in your field, and a relatively high degree of autonomy and personal responsibility that characterizes the scientific field and makes it attractive for

many people. Be aware of the complexity of this situation and consider whether you want to meet the high personal requirements that go along with writing a doctoral thesis. By opting for a doctorate, you will be integrated into the university system in a different way and often with higher working time requirements than at the time of your studies. Within this system, however, there is room for maneuver, which you can use through sound advance planning and the merger with like-minded people in order to improve the conditions under which you can complete your doctorate and achieve a beneficial work-life balance. Take the time to actively deal with the demands and "impositions" of your doctorate, but also consider the possibilities and positive aspects that academic qualification brings with it.

3. Tips for starting your doctorate

Structuring your doctorate

The usual three to five years of doing your doctorate (depending on the form of employment and funding) may seem very long at the beginning of your doctoral thesis. Don't be fooled by this initial impression; a doctorate needs this time. In order to make the most of it, you should develop a plan at the beginning of your doctorate as to how you would like to manage your own project. Always consider the following factors, which could strongly influence your planning:

- Dependencies on persons and certain conditions that you need for your research (supervisors, working group, study participants, data, technical equipment, facilities such as laboratories or other spatial and temporal conditions);
- Career goals for the period following your doctorate that require other qualifications or experience in addition to in-depth specialization (e.g., internships, teaching experience, stays abroad, conference visits, applications for research funding);
- Starting a family or compatibility with the family (e.g., maternity/paternity leave, adult care, work ban during pregnancy, childcare while working).

Of course, not all of these factors are foreseeable at the beginning of a doctorate. However, taking them into account when planning will help you to get a clearer picture of what you might want to accommodate during your time as doctoral candidate.

If you have not already done so before starting your doctorate, you should always read the doctoral regulations that apply to you in your department, research training group, doctoral program, etc. when planning your project. As a rule, the doctoral regulations also specify whether certain prerequisites must still be fulfilled during the doctoral period.

If so, you should take this into account when structuring your doctorate. In some departments, doctoral programs or graduate institutions at certain universities,

for example, you will have to complete a doctoral program or curriculum and even earn ECTS or other credit points. You should include such points in your project plan so that you can complete the courses at a time that is convenient for you to progress in your project. It is generally recommended that you build a good foundation for time and project management at the beginning of your doctorate, as you should regularly adapt the time and project plan to the research process in the course of your doctorate. Therefore, ask your institution and university whether they offer courses on time management and/or project management (ideally with a focus on the doctorate). Many graduate institutions, career centers or HR training and development departments at universities offer such courses nowadays. In addition, employees can often book courses for university staff through the training programs of the universities or the respective state.

The supervision agreement as a means of structuring

How close the cooperation with your supervisor or supervisors will be, both in the planning and in the implementation of your project, depends strongly on the form of work in which you will do your doctorate (working group vs. individual doctorate), but also on the individual supervision style of your supervisor(s), the respective culture of the field and your own need for feedback. The supervisory relationship is a relationship between both sides, the supervisor and the doctoral student, the functioning of which is shaped by the individuals and the resulting interactions between them. It is highly recommended to sign a supervision agreement in order to reach a common understanding about the project and its progress and to define a common "roadmap" and the respective responsibilities. This usually includes the following points:

- Formal details concerning the names of the participants, title of the project, subject area, doctoral institution;
- Commitment to good scientific practice;
- Frequency and general conditions of the meetings with your supervisor (location, scheduling process, etc.);
- Agreements on the supervision to be provided by the supervising persons

(e.g., in what form the supervision takes place: Conversation, reading chapters, publishing together, etc.);

- Agreements on the performance of the doctoral candidate(s) (if necessary, protocols of supervision consultations, regular reports on the status of the dissertation, submission of texts as well as certain qualification goals such as conference visits or professional development);
- Work plan for the entire duration of the doctorate;
- If applicable, information on the funding of the doctorate (position, scholarship, project funds, private);
- Special measures or regulations to balance family and academic activities;
- Contact persons and procedures in case of conflict;
- Severability clause and signatures of the supervising person(s) and the doctoral candidate.

Ideally, both parties should complete and sign the supervision agreement together at the beginning of the doctorate. In the course of the doctorate, however, the supervision agreement should always be adapted to the given situation and the newly developed goals and needs. It is recommended that you do this at least once a year with your supervisor or supervisors.

Although a supervision agreement is structured like a contract, it is not legally binding (e.g., in the sense of an employment contract). This means that neither party can take legal action to ensure that the agreed regulations are complied with. Nevertheless, the supervision agreement is a document that can be referred to in a legal dispute. If, for example, things have happened which have led to a litigation, the supervision agreement serves as proof of the jointly established regulations under dispute and can support a verbal claim.

In principle, the supervision agreement serves to structure and document the dialogue between doctoral candidates and supervisors. This enables both parties to read up on the regulations agreed upon at any time, to orient themselves on them or to remind the other side should difficult situations arise.

Career planning is a must

The pursuit of a doctorate is a qualification period that focuses not only on submitting a dissertation but also on professional qualification. You should therefore consider at the outset whether you would like to stay in academia after your doctorate or whether you would rather pursue a career outside academia. Even if you are not sure whether you can answer this question at the beginning of your doctorate, you should consider at an early stage which options are possible for you at all. A workshop or individual coaching for career planning can help you to define your goals more clearly for yourself and to get to know and understand the qualification requirements that you should fulfill in order to achieve your goals (see also Chapter 7 "Career").

Internationalization of your doctorate

When planning your doctorate, you should also consider whether trips or stays abroad are suitable for you or are useful or even necessary in the context of your research. These are funded in particular by scholarships abroad, e.g., from the DAAD, but also from other scholarship institutions (see also Chapter 5 "Funding"). International experience is generally assessed positively and is recommended in many fields to support future careers. Therefore, you should consider at an early stage which options for gaining experience abroad might suit your professional and personal situation. If your research focus is clearly at your home university and the culture of your respective field does not require it, shorter trips abroad of several days, e.g., to conferences, workshops or summer schools, may be a good option for you. If the culture of your field has an international orientation, if you want to include an international second referee in your project, if you want to visit an international research institution or if you have career goals abroad, one or more stays abroad of several weeks or months may be advisable. For example, you can become a visiting researcher at a foreign university or take part in an exchange program for lecturers or researchers. In this way, you can gain valuable insights into the structures of foreign higher education systems and into the research of other institutes; your home university would nevertheless re-

main your sole doctoral location in the sense of the university that will award you the doctorate.

A special form of internationalization during the time of your doctorate are binational doctoral procedures such as a joint PhD or a cotutelle doctorate. In both cases, these are doctoral procedures offered jointly by two universities in different countries. In the first case it is a jointly organized doctoral program to be completed as a doctoral candidate, and in the second case, it is an individual agreement to jointly supervise a doctoral student. In principle, every doctoral candidate is free to pursue a cotutelle doctorate, whereas a joint PhD can only be acquired within the framework of a fixed program.

A binational doctorate usually contains the following key points:

- You have two primary supervisors, one person in each country;
- Your university draws up a contract specifically for you with the partner university (model contracts already exist for this);
- You must spend a contractually stipulated period of time (several months up to 50% of the doctoral period are possible) at the partner university;
- Both universities have certain requirements for the dissertation and the examinations that you must fulfill;
- The intended binational doctorate (which is not a double doctorate!) is only valid if you fully meet the requirements of both universities. If you only meet the requirements of one side, you may not be able to receive a degree.

Due to the complexity of the formalities involved in a cotutelle doctorate, you should in any case talk closely to your supervisor and seek detailed advice on the subject from the relevant offices (international offices, graduate institutions or responsible administrative offices and dean's offices).

Building networks

It is important for your own career planning to build up a network. Developing good relationships with people in your research environment not only promotes

your professional but also your personal development. Especially for a possible career in science and research, it is essential to become a part of the academic community. In all fields, research also means cooperation with others, so that you can use your network to expand your own area of competence and research opportunities.

In particular, however, we recommend networking at the same level, i.e. with other doctoral candidates and early career researchers, in order to successfully complete your doctorate. Exchange ideas with your colleagues and share good and bad experiences with them. You can profit enormously from the experiences and approaches of your fellow doctoral candidates. Network with peers; many universities and institutions even provide fixed arrangements for this. This offer often ranges from informal gatherings that take place on a regular basis or committees for doctoral candidates to financially supported peer-mentoring groups. Some institutions and universities also have doctoral councils or similar official university committees in which doctoral candidates can represent their interests vis-à-vis the university. In some fields, there are also networks of young academics that offer opportunities for exchange at the subject-specific level.

Another option for organized networking is, for example, THESIS e.V. (www.thesis.de). THESIS is a unique, Germany-wide network of doctoral candidates who exchange ideas with each other beyond their own university. THESIS supports early career researchers with a range of different offers such as regional and nationwide workshops, local meetings, excursions, etc. The association also sees itself as a communication platform that bundles information, opinions and developments for junior researchers.

The Exposé

Getting started with a doctorate can be very different in the various disciplines. Therefore, the tips for starting a doctorate are not always equally applicable and should always be considered in relation to one's own individual situation. A good example to illustrate the differences between the disciplines is identifying a topic (see also Chapter 4 "Formalities"): particularly in the engineering, natural and

life sciences, the topic often already exists, for which a suitable doctoral candidate is then sought, e.g., by means of a job advertisement. In the social sciences and humanities, on the other hand, the doctoral candidate usually chooses the topic himself/herself.

Therefore, if you are doing your doctorate in subjects in which you choose your topic yourself, it is advisable to prepare an exposé of your intended project at an early stage. The exact timeframe for an exposé is not fixed in every case, but depends on the aim you wish to achieve with the paper. In addition to the individual benefits (which should not be underestimated) for your own scientific development and that of your project, which the written structuring and formulation of your research project has, there are several formal purposes for which you need an exposé:

- Application to a desired (primary) supervisor or a desired supervisory team;
- Admission requirements for acceptance to doctoral studies at a department/faculty or at a graduate school that has the right to award doctorates;
- Application for employment as a research associate;
- Application for a doctoral position in a structured doctoral program (Research Training Group, graduate school, etc.);
- Application for a doctoral scholarship through a foundation.

In most cases, you will need the exposé during the application process. In some departments and at certain institutions, it is also a necessary prerequisite for admission as doctoral candidate. In any case, an exposé is an important means with which you can prove your innovative strength and your abilities in scientific work and writing. In the course of your doctorate, there are always occasions when it is helpful to have access to an exposé that was prepared at the beginning, such as, for example, applying for funding for conferences or stays abroad, or other opportunities which may come up in the course of your doctorate.

For all the purposes you are pursuing with the exposé, you are well advised to ensure that the text is of high quality. The following important tips can help you: be sure to adhere to the structure of this type of text. Above all, the exposé should

clearly indicate which insights you want to gain from your research. In addition, the exposé defines the steps necessary for the research project as well as the method and timeline for its implementation. If this structure is not recognizable, important steps are missing or formal errors occur, readers can quickly turn these shortcomings into exclusion criteria. An exposé is usually structured as follows:

1. The issue addressed by the proposed doctoral project;
2. Current state of research on the topic;
3. The concrete question of your planned dissertation, including the research interest, the declared goal of the thesis and possible hypotheses;
4. Theory(s) on which your thesis is based;
5. The method(s) you use;
6. Sources or material you use in your work and how to access them;
7. Preliminary outline or project plan;
8. Timeline.

Be sure to use correct spelling. Many careless typos or spelling mistakes indicate a lack of accuracy and, in a worst-case scenario, may even be interpreted as linguistic or thematic inaccuracy – and thus as a negative assessment of you as a an early career researcher.

Always have your exposé checked by readers (ideally those who are familiar with the subject). Ask your readers to pay attention to the coherence of the text, to the comprehensibility, logic and persuasiveness of the argumentation as well as to the correct use of technical terms. When writing, attach importance to straightforward language that is appropriate for the culture of the field within which your topic is based.

Pay attention to brevity and conciseness. An exposé is not a dissertation, but only the sketch or plan of such a dissertation. Accordingly, an exposé should not exceed 5-20 pages. In view of the reader's limited time, you should therefore avoid redundancies and detailed descriptions if these are not absolutely necessary.

Good scientific practice

Before you begin your research, it is important and highly advisable to keep in mind the "rules of good scientific practice" (see below). Even if you already know the basics of good scientific practice from your studies, you should definitely familiarize yourself with the topic. Good scientific practice is fundamental within the academic community. Only those who adhere to the rules can be part of the academic community. Violations of the rules are not always intentional, but often due to ignorance. Such a breach of the rules does not necessarily have a legal consequence for you, but it almost always affects your reputation within the "academic community" and can very quickly lead to exclusion and thus inevitably to the end of your career in this field.

The *Deutsche Forschungsgemeinschaft* (DFG, German Research Foundation) has published a memorandum entitled "Securing Good Scientific Practice" and a "Procedural Guide to Good Scientific Practice" to safeguard good scientific practice, which you should always read at the beginning of your doctorate.²

² Download at www.dfg.de/foerderung/grundlagen_rahmenbedingungen/gwp/

4. Formalities along the way

Getting started: Searching for a topic and a supervisor

The doctorate begins with two closely related steps: the search for a supervisor and the search for a topic. It is crucial that both steps precede the further formalities, because without a supervisor and without a topic you usually cannot achieve formal acceptance as a doctoral candidate.

For the initial contact with the supervisor, it is advisable to consider a research field within which the doctoral project is to be located. How precise the development of your own thoughts and your research idea should be depends, among other things, on the field of research (but even within a field of research, the expectations can vary from supervisor to supervisor). In some disciplines – especially in the humanities and social sciences – the independent development of the research project of a doctorate is a decisive part of the doctoral process. In other disciplines, on the other hand, such as experimental laboratory sciences, doctoral students often work on a project that is already defined by its basic features.

In any case, you should define the exact scope of the project in close consultation with your current or your potential doctoral supervisor. Make sure your supervisor gives you a clear commitment. Some higher education institutions require a written supervision agreement (see also chapter 3 "Starting"). Even if this is not the case at your university, it would be worth considering contacting your supervisor to determine whether or not certain framework conditions of the supervisory relationship should be specified on the basis of such an agreement.

In most instances, it is not necessary to appoint a second supervisor at the beginning of your doctorate. This is usually only necessary in an advanced phase or even in the final phase of the doctorate. There are, however, certain supervisory constellations (e.g., for interdisciplinary research topics) in which a second supervisor and/or a second reviewer can and should be appointed at an early stage. The early involvement of a second supervisor has, among other things, the advantage that you can benefit from further academic expertise.

The inclusion of one or more other supervisors should always be agreed on with the first supervisor.

Confirmation of supervision, admission and enrollment

A decisive difference between the bachelor's/master's program and the doctorate is that, in terms of examination law and organization, the examination office is no longer responsible for the program, but rather bodies which are entitled to award doctorates, such as deans' offices, faculties/departments, graduate schools or other graduate institutions.

As soon as a confirmation or agreement of supervision has been received from a supervisor or an institution entitled to award a doctorate, you will be able to apply for your official admission as a doctoral candidate. It is important that you do not hesitate to take this formal step once you have received your confirmation of supervision, because at the end of the day unexpected obstacles may stand in the way of your admission, which you should better clear up sooner rather than later, e.g., the possible problem that another doctoral candidate wishes to register with the same or a very similar research topic, that specific study or examination work still needs to be completed or that an aptitude test procedure must be passed.

In order to be admitted as a doctoral candidate, you should now contact the office or secretariat of the institution entitled to award a doctorate that is responsible for you. You can often already find the necessary forms and a list of the documents to be submitted online. These documents usually include your previous university degree certificates (and in some cases proof of enrollment = "Immatrulation"). At some universities, enrollment as a doctoral candidate is not mandatory – at least not in the initial phase of the doctorate, so that in many cases it is possible to "officially" start the doctoral thesis without being enrolled at all.

In any case, you should make sure that you achieve official admission as doctoral candidate at an early stage, as this could help you significantly in the further execution of your doctoral thesis in the event of any difficulties that may arise at a

later date (e.g., the absence of a supervisor, interim changes to the doctoral regulations, etc.). Even when applying for a doctoral scholarship, some foundations require an enrollment certificate or another form of proof of acceptance or admission as part of the application package.

The doctoral regulations

It is important that you familiarize yourself with the valid doctoral regulations right from the start of your doctorate. Some dean's offices/institutes/faculties hand over the currently valid doctoral regulations to doctoral candidates when they register for their doctorate, or at least inform them where they can find them. However, the doctoral regulations are not always referred to at the beginning of the doctoral program. Assuming that this only becomes relevant when the doctoral thesis is submitted or shortly before the final administrative procedure is launched, many doctoral candidates initially neglect to review the doctoral regulations that apply to them.

In most cases, the principle is that the doctoral regulations that are valid at the time of admission will continue to apply even if changes are made to them while the doctorate is in progress. As a rule, when the doctoral regulations are changed, at least one transitional regulation is defined that states how long the previous regulations will remain in force. In many cases, the institutions entitled to award a doctorate even guarantee indefinite protection of the regulations in force at the start of the PhD phase.

Registering with your doctoral / graduate center or a graduate institution at your university

Depending on the type of doctorate (structured or non-structured doctorate; as an employee, scholarship holder, member of a graduate program, external doctoral candidate, etc.), PhD candidates are either integrated or not integrated into continuing education and advisory structures in very different ways (see also Chapter 6 "Doctoral structures"). Most higher education institutions, however, offer professional development courses and advisory services that accompany

doctoral studies and are accessible to all PhD candidates, regardless of the type of doctorate. Registration at such key doctoral centers or graduate institutions (usually on one's own initiative) is highly recommended.

5. Funding options for your doctorate

The question of funding plays an important role when deciding on whether to pursue a doctorate. There are various ways of earning a living during the PhD, and these in turn have an impact on the way the doctorate is carried out, especially with regard to the time applied to the doctorate and the frequency of contact with the supervisor. In addition, the type of funding has something to do with the professional career you have in mind. Regardless of whether you want to establish yourself in science and research or in the free labor market, it is advisable to position yourself in the respective field as early as possible, gather experience and build up networks.

In many cases, doctoral funding is "mixed funding", i.e. the type of funding changes during the doctorate and does not always come from the same source. In many cases, the funding periods for employment positions or scholarships is not sufficient to cover the entire duration of the doctorate. Furthermore, transitions, for example, when applying for a scholarship, must be bridged.

Below you will find an overview of the most common types of funding for a doctorate and the possible advantages and disadvantages:

- Research associate;
- Jobs in the field of research management;
- Research assistant positions (Hiwis);
- Doctoral scholarship;
- External funding;
- Partial scholarships.

The possibility of balancing doctorate and family often also plays a role when choosing a position or source of funding. Employment at a university usually offers flexibility with regard to working hours; most universities also have their own day-care centers for the children of students, doctoral candidates and staff, as well as separate programs and offers designed to facilitate work-life balance.

Most scholarship providers grant monthly family allowances and support for childcare costs.

Employment as a research associate

Jobs as research associates at universities have different professional profiles and focus areas. According to several studies, they are the most common type of funding for a doctorate.³ Employee positions can be roughly divided into three categories (see below).⁴ What all categories have in common is that the earnings are based on the collective agreement for the public sector of the federal states, and for doctoral candidates, the salary level TV-L E 13 is usually provided. The scope of the position, its duration and its tasks can be found in the respective job advertisement; this also indicates in which of the three categories the position is to be found. In the case of employment, the *Wissenschaftszeitvertragsgesetz* (WissZeitVG – Science Time Contract Act), which regulates the employment duration for academic personnel, must be observed. Roughly speaking, doctoral candidates can be employed as academic staff for a limit of up to six years during their doctoral studies. In addition, there are many detailed and special regulations. It is therefore recommended that you inform yourself about the law on the website of the Federal Ministry of Education and Research (BMBF), obtain information from the personnel department of your own university regarding the position in question and include the time limit in the planning of the doctoral project.

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- 3 Cf. Statistisches Bundesamt (Hrsg.): Promovierende in Deutschland. Wintersemester 2014/2015, Wiesbaden 2016, p. 39: <https://www.destatis.de/Migration/DE/Publikationen/Thematisch/BildungForschungKultur/Hochschulen/Promovierende.html>
- Cf. Hauss, K. et al.: Promovierende im Profil: Wege, Strukturen und Rahmenbedingungen von Promotionen in Deutschland. Ergebnisse aus dem Profile-Promovierendenpanel. ifQ-Working Paper No. 13, Berlin 2012: www.forschungsinfo.de/Publikationen/Download/working_paper_13_2012.pdf, p. 124.
- 4 Staff positions with a research-oriented or academic focus are also advertised at (technical) universities or universities of applied sciences. In some cases, these are grouped into lower salary brackets and the range of tasks may be different.

- Jobs at institutes or departments are regarded as "classic" qualification positions and are assigned to a professorship. Depending on the federal state, they include a different amount of teaching, and the range of tasks usually also includes supervising students and student research projects, taking part in examinations, working on the various tasks of the respective professorship, possibly joining faculty or university committees and possibly working on one's own research project. Since the latter is not necessarily part of the job profile, it is advisable to clarify whether this is the case if this is not stated in the job advertisement. The scope of the job varies between the disciplines; in the humanities and social sciences, for example, a part-time position can usually be expected; full-time positions are mainly to be found in the area of computer science/electrical engineering (cf. Hauss et al. 2012, p. 127). In the case of institute positions, your boss or superior is usually also your doctoral supervisor. This has a positive effect on the frequency of exchanges, but can also have disadvantages with regard to the propagation of possible conflicts (of interest). By being integrated into the "university business" and its academic networks, institute positions are ideal when it comes to pursuing an academic career.
- Established researchers, often professors, secure project positions from third-party funding sources (e.g., German Research Foundation (DFG), Federal Ministry of Education and Research (BMBF), large foundations, funding programs of the European Union, and companies); these can be individual positions, but also larger projects with a variety of employment opportunities. The main focus of a project position is on the content of the project, which in turn is usually linked to the doctorate. Depending on the sponsor or project scope, a limited amount of teaching is part of the official tasks or a focus on research is envisaged. This type of position is also ideal for an academic career and a doctorate.
- Lecturers for specific tasks are hired to impart practical skills and knowledge; some of them take on similar tasks as the staff of the above-mentioned institutes and are also assigned to a professorship. A special feature, however, is that they have a particularly high proportion of teaching time and none for

their own professional development. Although such positions are possible for the purpose of funding a doctorate, they are not recommended because of their structure.

Jobs in the field of research management

Research management positions have a completely different structure than the previously mentioned positions: they involve conceptual and organizational tasks that are often also located in central university facilities. These positions do not provide for continuing academic training, and involvement in teaching is normally not one of the official tasks either. Even if the workplace is the university, the job profile is associated with activities that are not related to doctoral studies and there is no given involvement in the academic field. These positions are suitable for the qualification period only to a limited extent, but pave the way for management roles and less for a traditional academic career.

Research assistant positions ("Hiwis")

In some cases, employment as a research assistant with a degree is a way of entering the field of higher education, e.g., if the assistant applies for employment as a research associate, where contacts already exist, relevant experience is available and the initial conditions thus improve. Doctoral candidates employed as "Hiwis" also provide services in research and teaching, i.e. tasks that are similar to those of the associates. The salary of an assistant is calculated according to the hours stipulated in the employment contract and is not subject to the public sector wage agreement of the respective federal state. There is no nationwide uniform hourly rate, but this is determined by the federal states (and varies according to university in individual federal states). In principle, however, an assistant earns less than an associate. "Hiwis" cannot be employed for more than 19 hours per week, which further limits the earning potential in this position. The contract period is variable and often depends on the availability of funds. A job as a research assistant is therefore not a permanent solution, but rather a stepping stone or a source of temporary funding.

Doctoral scholarships

A scholarship enables you to concentrate fully on your doctoral project and represents an achievement due to the successful, extensive selection process. The application requires, among other things, an exposé, timetable, expert assessment, curriculum vitae, copies of certificates and proof of admission as a doctoral candidate or enrollment. In addition to financial support, almost all funding institutions also provide non-material aid, e.g., through professional development programs or a network. Moreover, many sponsors offer funding for working periods abroad besides these doctoral scholarships. The disadvantage of grants is that they are not subject to social contributions; for example, health insurance must be paid by the doctoral candidate herself/himself. Apart from this, scholarship holders do not pay into unemployment and retirement funds, which means that they are not entitled to unemployment benefits after the funding expires. Scholarships normally offer the possibility of additional income up to a certain amount. However, the scholarship rate will be reduced accordingly if the specified additional earnings limit is exceeded. Many scholarship holders work on an hourly basis as research assistants, which means that they have closer ties to the university and can be covered by health insurance through this position. In addition to the financial aspect, the option of part-time employment also offers the advantage of establishing networks and gaining professional experience in the field in which you would like to work after your doctorate. Please note that with most doctoral scholarships, it is not possible to combine these as partial scholarships with an extensive part-time job.

There are a number of scholarships available to finance your doctorate, which can be awarded by a foundation or institution and funded by the private sector or commercial industry. Firstly, there are scholarships that are linked to specific topics and subject areas; secondly, there are scholarships as part of a structured program (e.g., Research Training Group, graduate school, research school, etc.); and thirdly, there are scholarships that doctoral candidates from all fields can apply for (see also Chapter 6 "Doctoral Structures"). Due to the diversity of scholarships, only a few can be presented here. For an individual search tailored to you and your project, we recommend using the following databases:

- *Stipendienlotse*⁵ (the scholarship database of the Federal Ministry of Education and Research (BMBF))
- ELFI, the Electronic Research Funding Information System⁶;
- *Stifterverband*⁷ (joint German initiative started by companies and foundations to promote improvements in the fields of education, science and innovation).

Some federal states run scholarship programs and provide universities with a certain number of doctoral scholarships, which they advertise themselves. In addition, the universities often have their own funding programs, which support the entire PhD or only individual phases, for example, graduation or start-up scholarships. Please contact your university to find out which in-house or state programs are available and what the conditions and deadlines are.

The organizations for the advancement of gifted students⁸ assembled under the umbrella of the BMBF award the majority of doctoral scholarships. Doctoral candidates from all fields (in some cases also medicine) can apply for a scholarship with their project there. There are several similarities among the 13 funding organizations for gifted students: the monthly scholarship installment, possible additional benefits (e.g., family allowance, childcare costs) and the duration of the scholarship are the same. In addition, they all offer non-material support in the form of supervision, networking, a range of events and for stays abroad and the possibility of extending the scholarship for doctoral candidates with child/children. All applicants must pass through a multi-stage selection procedure and submit extensive documentation. It is important to know that, in addition to good grades, applicants must also exhibit social or volunteer commitment. There are differences between these institutions with regard to the focus of their content, which you should take into account when making your selection: there are ideologically neutral as well as politically, religiously oriented funding organizations, as well as organizations linked to the trade unions or the economy.

5 <https://www.stipendienlotse.de>

6 <https://www.elfi.info>

7 <https://www.stifterverband.org/foerdersuche>

8 <https://www.bmbf.de/de/die-begabtenfoerderungswerke-884.html>

External funding

In general, it is possible to obtain a doctorate with external funding, i.e. to work outside the university and only come to it for the purpose of meeting with your supervisor. Specific challenges can arise if the employer has an interest in the doctorate or if the job is explicitly intended to serve the doctorate. In the case of so-called industrial doctorates, there may be differences of opinion with regard to the rights to the data, discrepancies with regard to confidentiality versus publication obligations and different interests between supervisors and companies. You can prevent this by addressing these topics at the beginning and setting out the agreements in writing. The university's guidelines regarding good scientific practice must be observed (see also Chapter 3 "Starting").

The job situation on the free labor market is extremely heterogeneous both with regard to the compatibility of professional employment and doctorate as well as with regard to remuneration. Here, it is important to examine on an individual basis how the doctorate can be implemented, the scope of the position and whether it is possible to link the content of the profession with the topic of the doctorate. Research-oriented employment is offered by non-university research institutions (which usually also remunerate after or on the basis of the public sector wage agreement of the federal states) or the research departments of large corporations.

Funding your PhD by working outside the university may present you with significant challenges in terms of self- and time management, and it is not uncommon for your work on your doctorate and your gainful employment to clash to a certain extent. It is important to be clear about this challenge in advance and to confront it. At the same time, external employment offers clear opportunities for qualification in the free labor market after graduation, especially for those who are not aiming to pursue an academic career.

Partial scholarships

You can apply for partial scholarships on various occasions on top of your income. If, for example, you are planning a research stay abroad, there are separate scho-

larships from the DAAD, which cover travel expenses and some living expenses. Furthermore, various foundations and university programs make it possible, for example, to apply for grants to attend conferences or to publish a dissertation. On the one hand, such partial scholarships are a good way of keeping the costs of a doctorate down and, on the other hand, they are a valuable addition to your CV. It is important that you inform yourself about the application requirements at an early stage in order to have enough time to prepare the documents and to avoid missing the application deadlines, some of which are several months in advance.

6. A variety of ways to structure your doctorate

Before you decide to take up a doctorate, you must ask yourself whether you intend to do your PhD within the framework of one of the various doctoral structures or in the traditional "independent" or external way, i.e. without predetermined involvement in a structuring doctoral context and, if necessary, with only one supervisor.

There are traditionally different doctoral and supervising contexts at universities, e.g., research positions at a department chair/institute or, since the early 1990s, the so-called Research Training Groups of the *Deutsche Forschungsgemeinschaft* (DFG, German Research Foundation), etc. In recent years, however, most universities have established and expanded structuring doctoral institutions, such as graduate schools, graduate academies, graduate centers, etc., which have had a lasting impact on doctoral and supervisory cultures, set new standards and promoted the professionalization of supervisory relationships. What all graduate institutions have in common is that they structure doctoral studies much more effectively, especially through their supervision and qualification programs. Depending on the university, these institutes are embedded in different ways and offer a variety of services. Some institutions, for example, cover all faculties/departments of their university, while others have a clear subject-specific or thematic orientation.

Degree of structure of the doctorate

The interpretation of a structured doctorate can vary at different university locations and also among supervisors. The decisive factor here is the degree to which the individual supervision context is structured, which manifests itself above all in the following areas:

1. The intensity of the supervision and the fact that it is usually based on a standard;
2. The range of academic and qualification and professional skills programs;

3. The information, support, funding, scholarship and networking offerings, etc.⁹

Anchoring the doctoral structures

Inform yourself at an early stage, especially at the local graduate institutions, about the possibly different doctoral opportunities and institutions at your location. Discuss with your prospective supervisor or supervisors and find out for yourself which degree of structure is most suitable for you personally, for your research project, and for your further academic or non-university career path. Different doctoral structures are usually laid down in the respective doctoral regulations:

- At most locations, faculties/departments formally carry out a doctorate according to their respective doctoral regulations and doctoral candidates receive services from the graduate institutions that structure and sponsor the doctorate;
- At a few universities, there are also doctoral institutions with their own doctoral regulations, which are generally geared to an even more intensive structuring, and in some cases even with their own doctoral degree programs.

If the most suitable doctoral context for you is not offered at your university location, it may be possible to find it at another university.

The four relevant doctoral contexts / supervision contexts

More specifically, these are structured in descending order¹⁰:

- Doctorate in a structured program, e.g., within a Research Training Group, a graduate school, or a special doctoral program;

⁹ On the different financial aspects of the respective supervision contexts, see also chapter 5 "Funding".

¹⁰ It should be noted that this list represents preliminary information, i.e. it focuses on some core characteristics and should not be regarded as definitive; moreover, these characteristics vary at the individual university locations, institutes or departments depending on the general conditions there.

- Research collaboration or job within the framework of a research project (possibly funded by third parties);
- Research associate or job at the department chair/institute;
- Independent/external doctorate or doctorate with a scholarship.

A survey among doctoral students on their doctoral and working conditions in these different doctoral contexts has shown, among other things, that the respective doctoral and working conditions can be very different and that each context can have advantages and disadvantages at the same time.¹¹ However, there is apparently no universal, significant influence on the supervision satisfaction of doctoral candidates; the intensity of supervision is particularly high in structured doctoral studies and research projects.

The decisive factor for one's own satisfaction with the chosen form of doctorate is certainly an in-depth examination of one's own work habits and needs before starting the doctorate. It is helpful to think about the following questions: how much structure do I want or do I need for the work on my doctorate? Which structures would best support me, and which would possibly hinder me? Which individual advantages and disadvantages can I foresee for myself personally in advance and what consequences will arise as a result of these?

Doctorate in a structured program

A structured program specifically supports the doctoral candidate and the doctoral project in various ways:

- Close supervision provided by a team consisting mostly of several people, possibly also interdisciplinary, along with an agreed-upon consultation timetable;
- The selection of supervisors and referees is usually limited;

¹¹ Jaksztat, S., Preßler, N., Briedis, K.: Promotionen im Fokus. Promotions- und Arbeitsbedingungen Promovierender im Vergleich, HIS: Forum Hochschule, 15/2012: https://www.dzhw.eu/pdf/pub_fh-201215.pdf

- A qualification program specially geared towards the doctorate and future, non-university and intra-university professional requirements with specialist events, i.e. with doctoral colloquia, (main/upper) seminars, conference participation, courses etc., as well as interdisciplinary workshops, e.g., on rhetoric, presentation techniques, project/team/time management, etc.;
- In some cases, scholarship announcements, travel grants, funds for material purchases, etc.;
- Support through information about scholarships, project funds, prize announcements etc., and sometimes, also individual consultation about application opportunities via the respective office;
- Enhancement of networking opportunities through joint events hosted by the graduate institution;
- Admission to the program takes place as part of a transparent application process;
- There are programs from various funding settings, for example the Research Training Groups of the German Research Foundation (DFG), in which approximately ten to twelve doctoral candidates work on partial aspects of a common, overarching project topic and, in particular, receive close, and above all subject-related, support.¹²

Research collaboration or position within a research project (possibly funded by third parties)

The structure of the doctorate in this variation is primarily based on the working context of a research position, the basic characteristics of which are described here under "Research collaboration or position in a department or at an institute" and in chapter 5 "Funding options for your doctorate". Doctoral positions can also be advertised within the framework of a research project (possibly funded by third parties); this applies in particular to the traditionally and particularly per-

¹² Detailed information is available at www.dfg.de/foerderung/programme/koordinierte_programme/graduiertenkollegs

sonnel-intensive and at the same time third party-funded areas such as the natural sciences or engineering.

The research collaboration or position within the framework of a research project often defines the doctoral framework as follows:

- When a position is accepted or filled within the framework of a specific research project, the allocation of a specific dissertation topic is at the same time linked and thus later only to a limited extent variable or even exchangeable;
- Accordingly, the selection of supervisors and referees is also restricted;
- The focus here is on the research work on the dissertation and project collaboration, i.e. in general, such a position is associated with fewer teaching and other tasks than with a chair-funded position (see below "Research collaboration or position in a department or at an institute");
- It is generally the doctoral candidate's own responsibility to take advantage of any qualification programs offered.

Research associate / Position at a department chair or at an institute

In the case of academic work at the department chair/institute, the structure of the doctorate is primarily determined by the work context of the department chair/institute. Here, the topic of the doctorate generally lies in the area of the general research orientation(s) of the supervisor(s). Such positions usually serve to facilitate a doctorate, i.e. the acceptance of such a position is accompanied by the decision to start a doctorate. In areas such as the humanities or social sciences, a commitment to supervise a doctoral candidate is often made without a simultaneous offer of employment; there is the option to apply for any vacancies in the course of the doctorate, though.

In this form, the doctorate as a research associate or via a position in the respective field is mainly shaped or structured by the following aspects:

- Close involvement in the activities of the department chair/institute in the form of doctoral colloquia, joint events organized or co-organized by the de-

- partment chair or the institute, such as conferences, symposia, retreats, etc.; sometimes, non-subject-related or interdisciplinary qualification measures are also offered;
- A research position is always also linked to teaching tasks and partly to tasks of self-management in the institute/department, which generally take up a very large amount of time and have to be reconciled with the necessary time for the dissertation; this includes tasks such as preparation, implementation and evaluation of seminars, exercises, excursions, etc., implementation and correction of examinations, student counselling, etc., but also general support for the work of the department chair or institute;
 - A workplace is generally available with access to the infrastructure, the department chair or institute library and the latest scholarly articles (important!), support from research assistants, technical staff, secretariat, etc.;
 - Mostly direct, close-knit and ongoing support by the supervising person(s), quick lines of communication for information exchange, advice, etc. However, supervisory consultations are often also used to discuss teaching and chair matters within the framework of the position, which greatly reduces the time available for discussing research questions about the dissertation;
 - There may be some competitive pressure among doctoral candidates who strive for a newly established position or an extension of their contract, or who want to ensure the future support in the postdoctoral phase from the supervising person, etc.;
 - Here, too, it is generally the doctoral candidate's own responsibility to take advantage of any qualification programs offered.

Independent/external doctorate / doctorate with scholarship

In the case of an independent or external doctorate, the degree of structuring is not specified, i.e. stays at the institute are mainly for supervising purposes and are funded externally or via private sources. A doctoral scholarship is intended to create financial flexibility for the pursuit of a doctorate without, for example, working as a staff member at the university or being dependent on other forms of funding.

This results in the following aspects with regard to the structuring and design of the doctoral period:

- A scholarship that is not awarded within the framework of structured doctoral programs offers the greatest freedom in the choice of topics, supervisors and referees, but at the same time also implies the greatest challenge and personal responsibility with regard to work planning and time management, funding and the design of the framework conditions (possibly with regard to family, motivation, networking, placement in the academic community, etc.);
- It is worth examining whether a workplace at the department chair or the institute can be made available, allowing access to university facilities such as the university library, IT support, etc.; this is generally only possible automatically for enrolled doctoral candidates;
- The frequent exchange with other doctoral candidates, the inclusion in teams and involvement in networking are not guaranteed, so a clear personal initiative is required;
- No teaching or other chair responsibilities, but at the same time also no continued automatic involvement in the work of the department chair or institute, possibly only limited access to information on job advertisements or assignments, teaching assignments, opportunities to participate in projects, conferences, publications, etc.;
- It is mostly the doctoral candidate's own responsibility to gather information about qualification opportunities offered by various institutions and institutes, which are often open to external doctoral candidates as well, and to weigh up and take advantage of such opportunities with an eye to one's own career objectives, doctoral discipline and other circumstances (possibly job vacancies at another location).

7. Future prospects / Career opportunities and paths within and outside academia

You are thinking about whether you would like to do your doctorate and have already taken the various decision-making guidelines into account (see also chapter 2 "Motivation")? In your decision making process, you should also consider which career path you have in mind: can you imagine an academic career or would you like to work outside the university? You should make this decision in the advanced stages of your doctorate and expand your skills and experience for the respective job market as well as consider strategic planning steps in your career orientation.

We will provide you with some facts and figures to help you to find your way: both the study by the German Centre for Higher Education Research and Science Studies (DZHW) from 2014, which surveyed doctorate holders about their career paths, and the "Bundesbericht Wissenschaftlicher Nachwuchs 2017" (2017 Federal Report on Young Researchers) show that there are hardly any doctorate holders who are not in gainful employment approximately two years after their graduation. Less than three percent are unemployed; however, there are major differences between the respective disciplines: doctoral graduates from the engineering, natural and life sciences start out with better job prospects than their peers from the humanities or law. One advantage of a doctorate could be a faster ascent on the career ladder. One third of the respondents stated that they had held a management position one and a half years after completing their PhD.

In all areas, however, further qualification during your doctorate and the age at which you start working play an important role for most employers. During your PhD, you should already have thought about goals and possible paths after this phase. Would you like to stay in academia, fill a position in research management or enter the non-university labor market? You should have already set the milestones and qualifications required for these career paths during your doctorate. According to a DZHW survey on the careers of doctoral graduates, 55% of those surveyed one year after completing their PhD do not aspire to a future in acade-

mia. The intentions to remain at the university are highest in the humanities and social sciences, while only about 20% of economists, law graduates, natural scientists and engineers would like to stay in academia.

The "Bundesbericht Wissenschaftlicher Nachwuchs" also shows the different distribution of work environments after the doctorate:

- 39% of doctorate holders work in the private sector;
- 36% in the public sector;
- 20% at a university;
- 5% at a non-university research institution.

Nearly all doctorate holders (98%) who work in business have a permanent contract position. In contrast, only five percent of all postdoctoral researchers who remain in academia succeed in obtaining a permanent contract position. The advantages of employment outside academia mentioned by the report include better pay, quicker access to a permanent contract and a wide range of job opportunities. What is particularly attractive about employment at a university, on the other hand, is the freedom to organize one's own research and working hours.

Who can one turn to during one's doctorate to find out about career options and strategies? This depends on the different career paths mentioned above. If you are aiming for an academic career, in many cases you can get important tips and information and find out about networking opportunities from your research supervisors, who in some cases may also pass on concrete information about possible jobs. Some supervisors do not see it as their task to offer support in planning the career path after graduation. However, many supervisors are willing to provide their doctoral candidates with career-related knowledge, experience and contacts. If you intend to pursue a career in academia, it would therefore be good to inform your supervising person(s) about this and to proactively discuss potential forms of support. Another good opportunity is that some universities offer mentoring programs for early career researchers (you can find out more about this at the graduate institutions).

If you are aiming for a non-university career path, the doctoral supervisors are normally not a sufficient source of information, but can refer to or establish contacts in the non-university labor market. Therefore, for non-academic career opportunities, the Career Center facilities available at many universities and colleges as well as the mentoring and alumni programs, some of which are tailored to the non-university sector, are good places to go. On the other hand, most graduate institutions offer information, counselling and/or doctoral workshops on career opportunities.

Pursuing a professorship

If you have decided that you want to pursue a professorship after completing your doctorate, you should set the course for yourself early on. The chance of obtaining the highest endowed professorship (W3 professorship) at a university is less than 10%¹³. Once you have achieved this, however, you will generally be granted permanent civil servant status – with a gross monthly salary of approximately EUR 6,000¹⁴ (salaries vary from state to state, plus a bonus depending on negotiations) and a large amount of freedom in research and teaching. On average, however, scientists are 41 years old when they are appointed to a professorship for the first time. Moreover, the path to a university professorship can vary greatly. It is possible to become a professor by way of habilitation, junior research group leadership or a junior professorship/tenure track professorship.

Already during your doctorate you should decide whether you enjoy teaching and application-oriented or practice-oriented research (Fachhochschule

13 According to the "Bundesbericht Wissenschaftlicher Nachwuchs" (Federal Report on Young Researchers), there is only one new appointment for every ten doctorates. Bundesbericht Wissenschaftlicher Nachwuchs 2013a, p. 311. The German Rectors' Conference (HRK) even published a 20:1 ratio in its position paper from 13 May 2014 titled "Orientierungsrahmen zur Förderung des wissenschaftlichen Nachwuchses nach der Promotion und akademischer Karrierewege neben der Professur" ("Orientation Framework for the Promotion of Young Academics after their Doctorate and Academic Careers"): <https://www.hrk.de/positionen/gesamtliste-beschluesse/beschluss/detail/orientierungsrahmen-zur-foerderung-des-wissenschaftlichen-nachwuchses-nach-der-promotion-und-akademis/>

14 The current salary table can be found at <https://www.hochschulverband.de/w-besoldung.html>

(FH/HAW) professorship/professorship at a university of applied sciences (HAW)), or whether basic research or scientific-theoretical research (university professorship) is more in line with your expectations. An affinity to teaching and a university didactic aptitude are advantageous both at the university and at the universities of applied sciences, but teaching is more clearly at the center of the field of work of a professorship at universities of applied sciences.

It is also worth mentioning that the career paths between university professorship and FH/HAW professorship differ so markedly that in many cases it is not possible to switch from one type of higher education institution to another without further ado. The prerequisites for an FH/HAW professorship are usually a doctorate and several years of professional experience in business in the subject area of the professorship. In addition, FH/HAW professorships have a significantly higher teaching load, which is why, as already mentioned, pedagogical aptitude plays a particularly important role.

If you decide on a university professorship, you must be aware that there is a risk involved in getting there. While an FH/HAW professorship still has a practical connection to business and can therefore more easily fall back on a "Plan B" if necessary, the path to a professorship at a university usually does not offer any career-inherent occupational alternatives.

The habilitation is still a frequently used path to a (university) professorship. As a rule, you spend six years at a university (with or without employment) writing your habilitation thesis. The process for the habilitation varies from state to state. Since 2002, junior professorships and tenure track professorships have increasingly been an alternative to the habilitation. The tenure track professorship offers the prospect of temporary employment following a successful interim evaluation. Both types of professorship can be combined with up to six years' employment, contain the possibility of independent research and authorize the holder to carry out examinations and obtain third-party funding. The beginning of an academic career as a junior research group leader can also be a way to a professorship. Appropriate funding programs enable research with a generous budget, good equipment and a dedicated team.

No matter which professorship you ultimately choose, you must always go through an appointment procedure. In addition to the traditional application process, this includes a test lecture (the so-called "audition"), a teaching trial and appointment interviews. Use the time you have during your doctorate to get involved in appointment committees and gain initial experience in the field of appointment procedures.

Careers in academic positions below a professorship and research management

In addition to a professorship, there is also the possibility to remain in the so-called academic "Mittelbau" (academic positions below a professorship) or in research management. There are various options for (leadership) positions at universities: in research and teaching, research facilities, technology and research transfer and in academic support tasks such as research management and administration. While some of the academic support jobs are on a permanent contract, those of academic staff below the professorship are usually only temporary. They are often seen as "stopovers" on the way to a professorship, while there are only very few open-ended academic posts (such as the position of "Akademischer Rat"/"Akademische Rätin"). If you decide against an academic career and for research management, you should take into account that despite the affinity to the academic context, the majority of the tasks are administrative and there is usually no time for your own academic research.

Ways to gain non-university employment

According to a survey by the weekly journal DIE ZEIT, 81% of young researchers are considering leaving academia.¹⁵ If you are interested in a career in a non-university setting or at least consider this as a "plan B", you should prepare your career path well during your doctorate. When applying for a job in the business

¹⁵ DIE ZEIT from 5 December 2015: www.zeit.de/2015/49/junge-wissenschaftler-karriere-wissenschaftsprofessur-arbeitsbedingungen

world, the most important factors are professional experience and the acquisition of so-called "key qualifications". When applying for a job at a company, you should make it clear that you have already worked towards such a position during your doctorate. Due to the high demand for qualifications and guidance, many career centers and graduate institutions offer various measures to prepare you for the non-university labor market. In order to get an early indication of what opportunities exist, it is advisable to look at job advertisements and find out which jobs would interest you most and which might fit your profile the best. As you proceed, you should compare the qualifications you have found in the job advertisement with your own skills and knowledge in order to identify existing competency gaps and then "plug" these in the course of your doctorate. Ask the graduate institutions and the career center at your university for advice on how to use existing and available networks such as career fairs, alumni meetings and career talks for your career.

8. Conclusion

Does starting a doctorate represent the best possible individual decision for you and your goals in life? As the title of our brochure points out, the main purpose of this information is to enable you to make your decision as consciously as possible and to do so after having considered as many relevant aspects as available.

A doctorate is "...an independent and original research achievement of its own, which contributes to the progress of knowledge in the respective field...".¹⁶ While working on your doctorate, you will notice that your project, your way of thinking and working and thus your personality will develop further: you will definitely be breaking new ground with your PhD project, and neither the results nor the path you will pursue are completely foreseeable. Your subject of research will change contours and, to a certain extent, become unpredictable and may not solidify into new findings until the end.

Accordingly, your original research idea – which you may have initially formulated as a hypothesis, as a project with a working title, etc. – requires years of research from you, and you must constantly review and question your previous results, your applied methods, your working steps, and possibly even your original research goals, in order to actually generate new knowledge. Thus, doctoral candidates often find out only after years of research on their project whether their urge to carry out such work is becoming stronger and whether they want to pursue a career in research in the future – and this is a fundamental question concerning this first level of academic qualification.

In other words, a doctorate is both an academic and a personal adventure. So if this is something that excites you, then you have the most important prerequisite covered!

¹⁶ Wissenschaftsrat (Ed.): Anforderungen an die Qualitätssicherung der Promotion. Positionspaper. Halle, November 2011, p. 8: <https://www.wissenschaftsrat.de/download/archiv/1704-11.pdf>

9. Literature recommendations and internet links¹⁷

Literature recommendations

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<https://www.uni-koblenz-landau.de/de/ipz/promotion/infomaterial-literatur/promotionsratgeber>

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