

REPORT: THE PHD IN THE DUTCH ACADEMIC SYSTEM

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INTRODUCTION

Science has become a self-referential system where quality is measured mostly in bibliometric parameters and where societal relevance is undervalued. Furthermore, citizens do not really know what science really is or what scientists do and society employs too many PhD candidates who subsequently have scant chances of satisfying research jobs or a decent academic career. These are just a few of the statements made in the position paper titled: "Why Science Does Not Work as It Should And What To Do about It" by the Science in Transition (SiT) initiative. They believe that the academic world is in need of fundamental reform and argue their viewpoints in their position paper in order to start a dialogue about changing the academic world for the better.

One issue raised by SiT that caught our attention was the issue involving the PhD candidates. We are a group of five master students from five different graduate schools at Utrecht University (UU) who all participate in the "Young Leaders League" honours program at the UU. Since doing a PhD is a serious option for all of us and since SiT is an initiative that originated at the UU, this topic was one that was close to our hearts and one that we were all passionate about.

The primary component of the PhD in the Netherlands is doing research. The goal of every PhD candidate is to become an independent researcher, preparing for a possible academic career. A PhD is considered to be necessary to get a job within academia and a PhD candidate has the status of an employee. It depends per discipline how the research is shaped (generating, practicing, evaluating and interpreting complex knowledge) and how the work in a PhD is perceived. Furthermore, the extent of freedom and independency within the research is eval-

uated in different ways. In general, the PhD-trajectory has a total of three to four years.

In addition to research skills, PhD candidates also learn skills that can be useful in the business world. These skills are among others communication, writing, presenting, teamwork, business sense, planning and leading, skills which are considered to be valuable by most businesses. These business skills, however, are within academia considered to be 'secondary', 'soft' and 'relational skills', and are often left to the PhD candidate itself to develop.

The second most important task of a PhD candidate is teaching. Teaching has been a standard component of the PhD-trajectory in the Netherlands and this has not changed in the last decades, although the extent differs per faculty and university. In general, the amount of teaching has increased over the last years.

The fact that PhD candidates have employee status in the Netherlands is relatively rare abroad. Most countries feature either a full bursary system or a combination of the employee and bursary systems. For example, German PhD candidates tend to follow a three year track on a grant. In the UK, students either pay tuition or apply to a grant. Many PhD trajectories abroad also have the candidates follow a significant amount of post-graduate education, while in the Netherlands many PhD candidates instead have a mandatory teaching component. A review of the current changes of the PhD across various countries was recently conducted in *Nature* (Cyranoski, Gilbert, Ledford, & Nayar, 2011). It shows that the Netherlands is far from the only country with a large increase of the number of PhDs in recent years.

As mentioned before, SiT states that there are currently too many PhD candidates

and that, since a large portion will not end up continuing their career in academia, a large number of PhD candidates is not well prepared for their future. The aim of this report is to evaluate the current role of a PhD candidate in academia, particularly regarding his career perspectives and to investigate whether there are differences between the different graduate schools. To achieve this, we conducted 26 interviews with people in different faculties and different layers within university or connected to the university. We want to know if opinions differ per faculty and per layer. Beyond that, we attempt to map the current issues and changing environment occurring in and around this part of the academic system.

QUALITATIVE STUDY

For this report, we conducted a total of 26 interviews with PhD candidates, professors, deans, PhD-coordinators and other actors involved in the PhD process across various graduate schools at the UU and this section will present our findings. This will be split broadly by topic in the following subsections.

ROLE OF THE PHD WITHIN ACADEMIA

The emphasis on the changes within the system are varied among the respondents and various disciplines. According to Hans Sonneveld, the most dominant change in the PhD-system was the AIO-system in 1986. Other important changes were the internationalisation and feminisation of PhD candidates. Some PhD candidates have several mentors now and it depends on the discipline how strictly a PhD candidate is evaluated.

Perspective of the PhD candidates

A PhD of Geosciences states he has a lot of freedom to follow courses and time to

self-develop by gathering data, publishing, going to conferences and giving information on high schools. However, the PhD could be done by trained monkeys, as 70% of their time is simply handling machines, and the PhD candidate himself is considered to be a cheap worker and a mere extension of his supervisor. Furthermore, a PhD candidate in the natural sciences considers himself as a 'measurement slave' at times, only doing practical work in the lab. A different perspective comes from a PhD candidate from the Humanities, who considers himself autonomous.

The PhD candidate from Humanities states that it is essential to get some varied work experience through teaching. However, he is troubled by the increasing time spent on education, which diminishes the hours available for research. In the last years, the time to do research has diminished from 0,8 fte to 0,6 fte, which is 3 days of research per week. This is probably due to budget cuts.

The focus on teaching differs per location: in Utrecht, an active role in education is considered important, while at other universities the teaching component is not always that big. It also differs per country: for example Nikki Blaauwbroek, PhD candidate in Geosciences at the University of Bremen, states that she does not teach at all and is discouraged to do so, as it may distract from research responsibilities. She is, however, seen as a student instead of an employee.

Perspective of the higher layers

Hans Sonneveld, research master teacher of Law and director of the Netherlands Centre for Graduate and Research Schools, fears that the real talent gets lost with the increase of the number PhD candidates: they are told what to do and lose

much of their independence. Herman Vromans, professor of Pharmaceuticals, is also worried about the current state of the PhD-trajectory, for it does not leave room for creativity and prevents innovative results. According to Vromans, in the past PhD candidates had more freedom, no script and no emphasis on finance, which resulted in more innovative results.

On the other hand, Sjef Smeekens, vice-dean of the Science faculty, does not give notion to these concerns: he considers the PhD the perfect way to become a critical independent researcher. This vision is shared by Jaap Dijkhuis, department director of Physics and Astronomy, who states that the PhD has room for creativity and independence. Simone Veld, PhD coordinator of Humanities, also does not see a problem. She feels that PhD candidates and their supervisors are still passionate about their field and thus will not settle for less quality. Furthermore, she points out that PhD candidates themselves should regard their PhD-trajectory to a greater extent as a learning trajectory. They should decide in advance what they want to learn and take responsibility.

Simone Veld also notices some changes within Humanities: the amount of collaborative projects increases and generally PhD candidates do not write their own research proposals anymore. Collaborative project-based PhDs are a good alternative, because solitary work is considered unpleasant by many PhD candidates. The change that prevents PhD candidates of writing a research proposal on their own, however, limits free spirits and research as a whole. Also, Veld expects that in the coming years publications will become more important in her faculty.

Feike Dietz, assistant-professor of early modern Dutch literature, feels that the teaching part has increased disproportionately. Dietz states that 25 percent of the

4-day PhD contract can be spent on teaching, which leaves only 3 days for research. Simone Veld also feels that the work pressure has become too high because of the increase in teaching responsibilities. Frank Kessler, Academic director of the Graduate school of Humanities, doesn't acknowledge that the education part has grown, but does consider a PhD candidate to be a teacher as well as a researcher.

Professors of Life Science and (vice)-deans of Science and Life Science, on the other hand do not think the amount of education and secondary tasks has increased and consider research as the most important task. However, they do think soft skills such as communicating, teamwork, discussing and leading are important and should be getting more attention. A bigger focus on soft skills is also emphasized by Rogier Swierstra, who, after his PhD, immediately started to work in business and encountered difficulties in his transition from academia to the real world. This is troublesome, because, according to Hans Sonneveld, many PhD candidates do not end up in academia.

IS THE PHD THE END OF AN ACADEMIC EDUCATION OR THE BEGINNING OF AN ACADEMIC CAREER?

There are various opinions on whether the PhD-trajectory is the end of an academic education or the beginning of an academic career. Two PhD candidates, Tiuri Konijnendijk and Nikki Blaauwbroek, and two professors, Herman Vromans and Hans Sonneveld, agree that a PhD is the final part of an academic education. The arguments brought forth are that PhD candidates are in a process of *learning* and – in the end – only a minority of the PhD candidates actually stay in academia after their PhD. However, two other PhD candidates, Susanna Gerritse and Manon Wormsbecher, and a professor, Geert

Kops, think it is definitely the start of an academic career. Geert Kops argues the learning continues after the PhD-trajectory – thus a PhD cannot be the end of an education. In addition he says, without a PhD you cannot start an academic career, so it must be its beginning. In fact, evaluation of an academic résumé usually includes work done during PhD.

Another argument, according to Manon Wormsbecher and Marijtje Jongasma, is that PhD candidates generate a substantial part of the academic output within the University. Therefore it should be considered as *work* and thus the start of an academic career. Susanna Gerritse also notes that the answer to this question may differ per graduate school.

Sjef Smeekens, Gerard Tel, Frank Kessler, Roeland Harms, Rogier Swierstra, Saskia Ebeling, Feike Dietz all agree that the PhD-trajectory is *both* the start of an academic career *and* the end of the education. They argue that the answer depends on the PhD candidate: if they continue in academia it is probably the start of his/her career, but if (s)he does not, it must be the end of his/her education. Ronald van Kempen and Jaap Dijkhuis have a slightly different opinion: they think that the PhD-trajectory is the start of one's career in general – whether it is in academics or in business.

Considering the various opinions of the interviewees it is not clear whether the PhD-trajectory has a dual goal or a single goal and, if it is a single goal, what that might be. It also seems that some arguments regarding this question are based on whether we think PhD candidates should be rewarded financially for the trajectory or not. It is argued that because of what PhD candidates produce, their academic output – which is of substantial value to the University and society – they *work*, and the trajectory should therefore

be considered the start of an academic career. If the PhD-trajectory is deemed to be *education*, a PhD student should not receive a salary, but should pay for the costs. However, if the PhD-trajectory is seen as the beginning of a career – in academia or elsewhere – it is considered more like a *job* and PhD candidates should be rewarded for it accordingly. Watse Sybesma thinks a PhD is comparable with a traineeship: it is an education because of all the courses you have to take during your PhD, but also a career because of all the work you do.

CAREER PERSPECTIVES OF PHD CANDIDATES

The general voice is that a PhD does not prepare you adequately for a career outside academia and that a career within academia, which is the career a PhD prepares you for, is difficult to obtain. According to Sjef Smeekens, PhD candidates feel that if they work hard enough, there will be a job for them and that opting for a career outside academia is second choice, even though they will likely be better paid. Among the PhDs there is a clear division between the Humanities and other faculties such as Geosciences, Life Sciences and Science. Laurens Ham, PhD from the Humanities, as well as Simone Veld, PhD coordinator for the Humanities, explicitly state that PhD candidates are not well prepared for the corporate world and supervisors do not offer any help. PhD candidates from other faculties, who are encouraged to take non-academic courses, do think that they are well prepared for a career outside university. This difference is also mentioned by Marijtje Jongasma, who states that it is very hard for people from the Humanities to get a suitable job outside academia, while it is quite easy for people from the statistical or medical world.

(Assistant-)professors acknowledge that there is not enough attention for skills that help you find a job outside university and that this should be improved. Geert Kops, professor of Life Science, even states that department leaders generally do not encourage PhDs to do courses, which develop skills that are useful outside university. When we look at the opinions of the (vice-)deans interviewed we see that they do not agree with the aforementioned grim future of most PhDs. Sjef Smeekens states that all PhDs get good jobs and are not the super specialists that are unable to function in the real world, the future which Science in Transition sketches for all PhDs. The dean of Geosciences, Ronald van Kempen, states that he does not think a PhD is prepared for the business world but also does not think this is necessary: "Doing a PhD is enough work and you already learn some skills that can be useful in your further career. It is fine if people want to pay attention to developing softer skills, but I think it is hard to make it compulsory."

Among the directors and people working now outside academia there is more diversity in opinions. Jaap Dijkhuis does not see a real problem, because in business there is a lot of demand for PhDs. This is supported by Armelle Kloppenburg, who still profits from her PhD in the work field every day. Hans Sonneveld on the contrary thinks PhD candidates are not well prepared for the labour market and that there is – aside from specific disciplines like for example engineering – not enough interaction between companies and the university. Frank Kessler also thinks the attention for the possibilities beside an academic career are very limited, mainly because a PhD is marginally valued outside academia. According to Roeland Harms, supervisors do not support you when you look for options outside academia. This is confirmed by Laurens Ham who states that supervisors are mostly

strong on content, but do not help their PhD candidates with their future plans at all. You have to figure it out yourself.

There are however initiatives that already pay quite some attention to the link between PhDs and the business world. Saskia Ebeling (member of the Board of Studies of the Graduate School of Life Sciences) thinks it should be the task of supervisors to stimulate PhD candidates to think about their career and feels that this is indeed sometimes happening. Life sciences just started to give their PhDs more tools to explore their chances outside academia, for example an annual PhD day and courses for self-exploration given by PhDs who are now doing something else. This is exactly what Rogier Swierstra, risk manager at a major bank and mathematics PhD, missed when he did his PhD, for he did not learn enough soft skills and suggests that there could be more career days and more network events. Rogier Swierstra says that these kinds of activities would have made him aware of alternative career options, perhaps leading him to make different choices.

Another initiative where PhDs can learn how to present themselves outside the academic world and show corporations that they can add something because they have a PhD is the Professional PhD Programme started by the PhD candidates Network of the Netherlands (PNN), which up until september 2014 was lead by Manon Wormsbecher. This programme aims to improve career perspectives of PhDs by giving them the opportunity to work outside academia for a short period of time during their research. According to her, the question is not whether PhDs have added value, but whether they are able to present their added value to corporations and public organisations.

NUMBER OF PHD CANDIDATES

Whether there are too many PhD candidates at Utrecht University, the opinions vary. Though there are many calls that there are too many PhD candidates, this opinion was not often voiced by our interviewees. Moreover, Sjef Smeekens even thinks that there are too few PhD candidates at the science department, though he recognises that in other departments there may be a surplus. He also notes that the pressure to take on as more PhD candidates is indeed growing, and is aware the quality of the PhD programme must not suffer from it. Ronald van Kempen, who works in the Geosciences department, and Leon van de Zande, director of Policy at Academic Affairs, also do not recognise a surplus of PhD candidates in general. Leon van de Zande does note, however, that there are differences between disciplines.

There is however a general concern about a reduction in quality of the PhD trajectory as the number of PhD candidates grows, which is shared by Saskia Ebeling, Simone Veld, Gerard Tel, Laurens Ham, Marijtje Jongma, Tiuri Konijndijk and Manon Wormsbecher.

Many interviewees thought there are/will be too many PhD candidates in relation to the number of post-doc and professor positions within the academy. Simone Veld, Gerard Tel, Laurens Ham, Marijtje Jongma, Tiuri Konijndijk and Manon Wormsbecher think that the quality of supervision of PhD candidates may suffer as one professor has to supervise more and more PhD candidates in the same amount of time. However, no-one thinks the quality already has decreased.

Susanna Gerritse argues that more PhD candidates cannot further their career in academics after they have graduated, because of too few post-doc and (assis-

tant-)professor positions. She also agrees that though the extra PhD candidates cannot continue in academics, there are enough career opportunities in business. She stresses however the importance of informing PhD candidates about their career perspectives.

The most important comment which is stated among the various layers is the fact the ratio between the number of PhD candidates and the number of (associate) professors is skewed. Laurens Ham, PhD candidate of Humanities, for example states that the department he works in decreased from 7 to 4 staff members during his PhD-trajectory. This is supported by Simone Veld, who states that there are indeed skewed ratios and less permanent staff has to do the same amount of work.

Within Geosciences, a same concern is visible with PhD candidate Tiuri Konijndijk, who would prefer less PhDs and temporary contracts and more associate professors. Interestingly, the dean of Geosciences does not think there is a skewed ratio and that there are not too many PhD candidates. The vice-dean of Science, Sjef Smeekens, does acknowledge that there are too many PhD candidates in some departments, but not in the beta sciences, where there is a shortage instead of a surplus. Herman Vromans agrees that at the moment, there is enough place for all PhD candidates and also associate professor Gerard Tel does not think that there are too many PhDs.

Just like the deans and professors, director of policy Leon van de Zande and secretary of the Graduate School Life Sciences Saskia Ebeling do not see a problem in the increase of the number of PhD candidates. The department director of physics & astronomy, Jaap Dijkhuis, is however more concerned about the growing number of PhD candidates, for it will decrease the quality and devalue a PhD candidate to

a cheap labour force. The strongest opinions on the danger of the increased numbers of PhD candidates come from Manon Wormsbecher (PPP) and Marijtje Jongsma (VAWO). With so many PhD candidates and too little supervisors, quantity seems to rule over quality. Current associate professors often do not have enough time to do their own research, are often employed on temporary contracts, report high work pressure and an overload in teaching tasks.

BURSARY SYSTEM

The opinions about the bursary system differ throughout the different layers of the university. In general there is a negative, or at least an indifferent view of the bursary system. Respondents who do not see problems with the bursary system point to the PhD-trajectory itself, which is, after the creation of graduate schools, already turning more and more into an education. According to them, the bursary system will not change the experience and the content of a PhD. A PhD candidate of Theoretical Physics also points to costs that can be saved with the bursary system, which already works in Belgium and where PhD candidates even obtain a larger grant in comparison with the payment here.

The (vice)-deans are the most neutral about the bursary system. Most non-EU PhDs are already bursary PhDs and it would not hurt to try the bursary system again, according to Sjef Smeekens and Ronald van Kempen. And, as pointed out by Leon van de Zande, the bursary system is inevitable since the government has already decided to implement it. According to Manon Wormsbecher of the PNN, the government already has planned to implement an 'experiment' with a sizable proportion of PhD candidates as bursaries for the year of 2015. A PhD candidate of Humanities suggests that, if the bursary system will be implemented anyway, we

should apply the system currently used in England. In that system, aspiring PhD candidates have to fund themselves, have no employee status, and do a PhD that is three years instead of four years. This system should, however, only be implemented as an last resort. Nonetheless, Ronald van Kempen, dean of Geosciences, does think that the bursary system in general is worth a try, provided that we select qualitative PhD candidates.

On the other hand, many respondents think the current payment and employee rights are an important aspect of the PhD that should not be discarded in favour of a grant. Feike Dietz, assistant professor of early modern Dutch literature, feels that you can learn a lot more as an employee than as a student. She points to the advantages of being a professional within an organization and being able to teach and join discussions. Jaap Dijkhuis agrees that teaching is one of the good parts of the current PhD and that this should be cherished. Roeland Harms states that a PhD should not be seen as an extension of the previous education, since it is a lot more work than for example a master. Geert Kops is also against the bursary system: if the PhD-trajectory would be regarded as an education, then it would only be the candidate's own responsibility, while he should have responsibilities and belong in a team. Kops suggests that a PhD candidate could have a new, separate status, somewhere in between student and employee, but that the current employee rights should definitely be maintained.

Other managing staff predicts that some dramatic changes would occur within the PhD-trajectory if the bursary system would be implemented. It would increase the skewed ratio between the PhD candidates and the rest of the academic staff, because there will be more room for PhD candidates in the bursary system and afterwards they will not be able to find a job.

A PhD candidate of Statistics and Hans Sonneveld even state that it would drive those in the natural sciences, law and medicine directly into business instead of doing a PhD, since business would pay a lot better. A PhD candidate of Geosciences and a PhD candidate of UMC agree with that statement, since they were sure that they would not have done a PhD if they did not have employee rights. On the other hand, Herman Vromans, professor in pharmacology, responds indifferently to the bursary system. He emphasizes that the job itself should be the main reason to do a PhD, not the employee status, and suggests that attracting only those interested purely in the research rather than the salary might be a good thing.

Again, the most negative voices come from the initiatives especially concerned with the PhD. Susanna Gerritse from PrOUT mentions the introduction of the bursary system in 1997, where a bursary PhD student did the exact same work as an employee but with less rights, less salary and no pension. According to Manon Wormsbecher, the bursary system will devalue the qualitative output of the current PhD. Marijtje Jongsmma from the VAWO thinks the bursary system could only be successful if the current criteria for obtaining a PhD would be drastically changed (i.e. if there would be no obligations with respect to publications and or teaching). According to her, currently a substantial proportion of the core activities of the universities (i.e. producing publications and teaching a large amount of students) is delivered by PhD candidates, who should therefore be treated as employees and get paid for their work. Doing a PhD is hard work and not a mere extension of a master education. Finally, a social economic inequality would occur if part of the PhD candidates had a bursary, whereas other PhD students would receive a regular income.

PROMOTION BONUS

When a PhD candidate graduates, the university receives about € 93.000 from the Dutch Government. The aim of this policy is to create more positions for PhD candidates, who could enter the labour market afterwards. This would lead to a higher educated working population. The general opinion on this promotion bonus however, is that this is a perverse incentive and that it should be abolished. By most layers in the university, the promotion bonus is perceived as a perverse incentive which only leads to an increase of quantity instead of quality. According to PhD candidates, but also professors, deans, management staff and non-university initiatives, we should, instead of focusing on quantifiable things, like publications and promotions, focus on quality, which is in the end more important. This current quantity-based financial model, which increases the pressure on PhD candidates and their supervisors, may lead to fraud.

The money however finances all the research at the university and, according to Paul Henricks, does not reach an individual researcher. According to Saskia Ebeling, roughly half of the amount will go to the board of the university, and the other half goes to the faculty, which decides how to spend it. Professor Geert Kops, who mentions that none of the money would ever reach him and never was told to promote more candidates because of the bonus, confirms this.

There also seems to be a flaw in the bonus-policy and it does not seem to work all the time. According to Paul Henricks and Hans Sonneveld, there are an increasing number of international PhD candidates, who often leave the Netherlands after their promotion. Some come here with scholarships from their home country; so to the university they are 'free' PhD candidates. When these PhD candidates graduate, the

university will receive the promotion bonus, but the Dutch society will not benefit from these PhDs very much. This not only holds for international PhDs but also a lot of Dutch PhDs who find work outside of the Netherlands.

Finally, the last problem mentioned in all layers is that the promotion bonus leads to more PhD candidates who are rushed through the PhD-trajectory and can't find a place at the labour market afterwards. According to Laurens Ham, a PhD is not valued in our society and makes you old and expensive compared to people who immediately go into the corporate world. It also has encouraged the trend to employ less (assistant-)professors and more PhD candidates, who are financially more attractive.

QUALITY OF THE PROMOTION

As described in the section "PhD numbers", there are concerns that the quality of supervision has decreased. The growing number of PhD candidates has not led to an increase in (assistant-)professors to supervise these PhD candidates. This logically forces professors to supervise more PhD candidates than they did before, which means that professors can spend less time per candidate. Supposedly, the quality of supervision and the quality of the PhD declines because of this.

Professors, directors and deans agree that supervision of PhD candidates is of paramount importance. Jaap Dijkhuis states that it is his job to make sure that the number of PhD candidates will not reduce the quality of research output. Furthermore, Simone Veld thinks PhD candidates are still passionate about their profession, and will therefore not make do with less quality. However, Rens van de Schoot states that he currently has less time to adequately supervise his PhD candidates and that one supervisor should definitely not supervise

more than five PhD candidates, which is his one limit. Paul Henricks confirms that there is less staff to supervise the PhD candidates. This is also one of the main concerns of (vice-)deans Sjef Smeekens and Ronald van Kempen, but they do not think that as of yet there is too little or poor supervision. It is financially more attractive to hire PhDs instead of post-docs and (assistant)professors. However, according to Van Kempen the quality should always be guaranteed and therefore stories of bad supervision are always investigated. Leon van de Zande points out that the issue of too many PhD candidates and too few supervisors is pressing in the medical faculty, as they have an extremely high number of PhD candidates, and not so much in other faculties.

On the other hand, the representatives of PNN, PrOUT and VAWO are very worried about the quality of supervision. They especially fear that the situation gets worse, as the number of PhD candidates keeps rising. According to Manon Wormsbecher it is the current emphasis on quantity, in particular pressure to publish, in combination with the increasing number of PhD candidates that may lead to the quality of supervision to decrease further down the road. Marijtje Jongsma argues that more PhD candidates should also mean more supervisors at the level of permanent staff (i.e. assistant, associate, and full professors).

The Dutch policy to create more and more places for PhD candidates does not only lead to a tension with regard to quality of supervision, it also puts quantity above quality, which appears to be the underlying problem. This quantity above quality issue has also led to a focus on the number of publications a dissertation contains, which is used as a measure for quality. If an article is published, it is assumed to be good, and unpublished articles are thought to be of lower quality. This does

not necessarily hold true and even diminishes the quality of the research because of the focus on publishing. This complaint is heard in Life Sciences, but not yet in Humanities, as PhD candidates are not required to publish a pre-determined number of articles there.

Another result of the pressure to deliver graduated PhD candidates in as high numbers and as soon as possible, is that practically none of the PhD candidates come up with their own research proposal anymore. They will work on a project that has already been defined. Nowadays it is practically impossible to write your own proposal, as the candidate will also need to apply for grants for the project, which takes a lot of time. The process of creating your own PhD-proposal is however considered to have added value to the PhD candidate.

There have been pilots – like the NWO Graduate Programme subsidy scheme – in which aspirant PhD candidates wrote a research proposal for a PhD-trajectory in collaboration with a member of the staff. Subsequently he or she could apply for an open PhD-position, to execute his plan. Hans Sonneveld notes that this helps to get PhD candidates from a passive mode into a more active one. Less revolutionary, but in the same spirit, are the Research Masters, which also prepare more for PhD-candidacy than regular master programs.

VALORISATION AND COLLABORATION WITH THE INDUSTRY

One of the statements made by SiT is that the link between science, business and society could and should be much stronger. If companies are more involved then maybe the transition from research to industry will go smoothly and more attention will come to developing the skills needed in the business world.

Only a few interviewees were asked about this specifically but the general answer was that more collaboration with the industry and society is something to work towards. There is a lot of money, knowledge and expertise at companies and this can greatly benefit research, especially within Life Sciences. The PhDs from the department of Geosciences and Life Sciences are partly financed by the government and it is quite normal already to work together with commercial corporations as well, for example for the production and testing of medication and for the search of minerals. According to Hans Sonneveld, there is nothing against collaboration with the industry except in some ethical cases like for the production of chemical weapons. Also, in Delft it is often an issue whether publications about ideas patented by companies are allowed.

There are various opinions about the topic of valorisation. For example, professor Herman Vromans does not think we invest in the future of our society through our PhDs, since many PhD candidates are international and take their knowledge back to their own country. Also, according to him PhDs are just a minor aspect of our so called knowledge-society. Professor Geert Kops on the other hand does think we deliver critical problem-solving people to our society, and this benefits everybody. This however does not mean the connection between society and the university should be democratic. Dean Ronald van Kempen clearly states that society cannot make up the academic agenda of research, for the integrity of the researcher should be maintained. This feeling is shared by Jaap Dijkhuis, who states that it should be prevented that a PhD candidate turns into a cheap workforce for a company.

PERSPECTIVES ON THE FUTURE OF THE PHD

The opinions on the future of the PhD are various and differ very much per person and not so much per role in the university. Among the PhDs there a wish for less PhD candidates, more technical staff who would generate and gather all the data and more independence and creativity was heard. One of the most important perspectives is that the PhD will probably turn into an education instead of a job. PhD candidates will have to take courses in which they would obtain a required number of ECTS.

In the Netherlands research investments seem to have a strong focus on short-term goals instead of mid- and long-term programs," says Marijtje Jongsma from the VAWO who sees a grim future for academia. When the economic crisis will be resolved, academia will be emptied, and Dutch universities will not have a competing position in attracting talented employees. Jongsma suggests that the most important changes should be in the (monetary) faculties: we now have too many academic staff on temporary contracts and too little career options within academia.

A concern among professors is that the chances of getting a PhD are getting slimmer and the focus is solely on publishing nowadays, which is not proof of being a good researcher. The supervisor should see if someone is capable and we should trust his evaluation of an individual instead of looking at his publication ratings. According to Herman Vromans, the PhD should also be more personalized and more societal relevant.

The future of the PhD differs per discipline. Within the Humanities, PhD candidates will often promote merely on articles rather than a book and there will be more attention to the time limit in which you can do your PhD. According to Simone Veld, PhD-coordinator VSNU, only 8% of the PhD

candidates finish within the appropriate time of four years. Chances to get a PhD are also getting slimmer within Humanities: there is fierce competition.

The initiatives supporting PhD candidates mainly want to focus on self-awareness among PhD candidates in the future. PhD candidates should be aware of the skills that are usable in the outside world. Such a policy is needed, for the coming bursary system will devaluate the promotion with its emphasis on quantity instead of quality. According to Marijtje Jongsma, we should look at the long-term instead and see what the effects are of the changes we implement now.

OTHER PROBLEMS

There are several other problems that some of our interviewees mentioned that have not been discussed in the above sections. Here, we will point some of those out.

A PhD candidate in Social Sciences told us that many people need more than four years to complete their PhD, which is a problem since the salary stops after four years. In a recent paper (van de Schoot, Yerkes, Mouw, & Sonneveld, 2013), practical solutions for universities are suggested in order to minimize delays.

Simone Veld and Susanna Gerritse mentioned that work pressure has significantly increased because PhD candidates have more and more educational responsibilities.

Also, both the dean of Geosciences, Ronald van Kempen and PhD mentor Simone Veld mentioned that PhD candidates are not well aware of what exactly they are getting into at the beginning of their trajectory. It would be advantageous for them to think in advance about what it is that they want to learn and what they want to achieve within their PhD-

trajectory. Furthermore, they should be made aware that a PhD costs a lot of time and is very hard work.

Ronald van Kempen also mentions two other problems. Firstly, there is not enough money for PhD projects. The competition is so fierce and the amount of money so small that the chance to obtain a grant is very small. Secondly, PhD candidates sometimes do not know what their rights are. There are mostly problems in the hierarchical relationship between supervisor and PhD candidate: it has happened that supervisor says he wants to be the first name on the article written by the PhD candidate. In his faculty, they are busy making regulations to make clear what the rights and obligations of PhD candidates are.

Finally, Leon van de Zande points out an entirely different problem: at the Universities of Applied Sciences (HBO), there are not enough teachers with a doctorate. Many of the teachers do not even have a master's degree. This results in poor quality teaching and consequently a bad reputation of the HBO. Partly because of this, teaching HBO is not seen as an attractive career choice. This is definitely something that should be improved.

CURRENT INITIATIVES

In this report, the lack of preparation of PhD candidates for the non-academic labour market was discussed often. During this study, several initiatives were encountered that provide some form of solution to the perceived problem as well, both from a personal standpoint as well as more institutionally organized, that provide some form of solution to the perceived problem.

Firstly, the Promovendi Netwerk Nederland, the PNN, has started in 2012 to link PhD candidates with employers. The concept means that a PhD candidate takes a

leave from their PhD position for a few months to work at a firm or government, usually on some project for which a bright academic mind is desired. Unfortunately, not all positions allow the PhD candidate to simply take a few months off.

A university-organized Career Event called PhACE exists for PhD candidates in Utrecht. It provides PhD candidates with two full days of career preparation filled with a multitude of talks, workshops and discussions in order to get PhD candidates thinking about their future.

Another initiative that was encountered is PhD candidates taking control of their own situation, for example by meeting with companies or organizing dinners with PhD alumni from their department.

The university may or may not be expected to take responsibility for training its PhD candidates for non-academic jobs. Much can be said for (and against) improvement within the training provided by the university, but in the end, universities are incentivized by the government and their surroundings to focus on the research and didactic tasks of the PhD, for which they are rewarded greatly. The initiatives that push towards better preparation for the non-academic labour market may come from those that are incentivized to care for the well-being of the PhD: the PhD candidates themselves, unions and PhD Networks. In fact, there is absolutely no problem with such structure, and it may prove more lasting than forcing universities to provide training that is of little benefit to them.

In order to allow this, however, two things are required. First, PhD candidates must be given space within their current position to prepare for the full spectrum of the labour market. Second, they must have both the awareness and mental space to realize what their prospects are and what they

can do to develop themselves to fit these prospects. From this study, there is no reason to assume that major problems exist in the first requirement. The second seems more problematic: numbers of attendees for Career Events and the lack of awareness of their career path continuation suggest room for improvement.

SUMMARY OF OUR FINDINGS

PhD candidates are primarily taught to be independent researchers. An often heard opinion, however, is that PhD candidates do not do their own research anymore, but simply work according a pre-defined plan. A PhD candidate told us he perceived himself as a 'trained monkey'. According to two professors, this leads to a lack of creativity in PhD candidates which hinders innovations. The PhD-trajectory is seen as both the end of an academic education and the start of an academic career. No one thought it was strictly one of these.

The Dutch policy created more positions for PhD candidates, but the PhD-trajectory did not necessarily change with it immediately. This resulted in misunderstanding of what the PhD-trajectory currently stands for: instead of an education to work in academia, it is now more of an academic education or job which, upon completion, can be applied in other fields. Current Dutch policy is focused on having more PhD candidates, but lacks a plan to increase the amount of supervisors. Up until now, this has not led to decrease of quality in supervision or of the PhD-trajectory. However, it does place more emphasis on quantity instead of quality, which is a growing concern within the academic world.

The increase in PhD-positions was meant to increase the number of PhD candidates

on the general labour market. In the Natural Sciences and Life Sciences, having a PhD is a good preparation for work in for example R&D departments. However, PhD candidates are not specifically trained for the business world and lack feeling for it. In addition PhD candidates rarely have time to orient themselves on their future and to acquire the skills they will need.

Valorisation efforts are fairly limited in many field. In science, collaboration with the business world is beneficial in principle, but the integrity of the scientific community should be well protected. Neither society nor industry should completely dictate what should be researched.

There is very little support for a bursary system, both among PhD candidates and professors. Some professors fear that bright students will work in businesses where they can make more money, whereas others think that no-one pursues an academic career for the money so a bursary system will not make too much of a difference.

There are various initiatives to encourage PhD candidates to think about their career after the PhD-trajectory outside of the academia. There is however some discussion as to whose responsibility this is: the PhD candidates' themselves or the University. In the end, it is important to place this responsibility with those who are reward for it, or to reward those that carry this responsibility.

DISCUSSION

In total we have interviewed 26 people who are somehow or other connected to the PhD-trajectory. For a complete list of interviewees, see Appendix 1. Most interviewees (19) were employees of Utrecht University. We aimed to interview people connected to the Graduate Schools of Geosciences, Humanities, Life Sciences,

Natural Sciences and Social and Behavioural Sciences. The Graduate School of Law, Economics & Governance was not covered. Therefore we cannot draw conclusions about the PhD-trajectory in this Graduate School.

As we have interviewed people, rather than survey them, we were able to gather in-depth insights into what is thought to be important and problematic. This helps with better understanding of the underlying issues and it may set the scope for the problems relating to the PhD-trajectory. This study is not meant to be exhaustive in listing issues related to the PhD-trajectory. It is meant as an orienting study to whether issues raised by Science in Transition – like the 'PhD-Factory' – are actual issues and whether they are real issues in all Graduate Schools. To further quantify these findings, a quantitative study should be done.

One major point of discussion is whether the lack of preparation for non-academic jobs has a large impact on further career prospects for PhD candidates. In most fields, PhDs do not seem to have major problems finding jobs outside of academia. If the PhD does reach its potential in the end, preparation for a further non-academic career is helpful, but not essential. On the other hand, PhDs might move into below-level jobs due to their relative lack of preparation for working in a business setting, in which case there is much to be gained from improving their 'soft skills' and business-sense.

Thus, increasing the number of PhD candidates is not necessarily seen as a problem. The surplus of PhD candidates should be encouraged to look for a job outside the university. Furthermore, it has to be made clear that the skills they have obtained are also valued outside the academic world. According to most respondents, there are indeed many jobs available outside the academic world for which PhDs are specif-

ically suitable. However, with more PhD candidates, the pressure on supervisors has increased. There is a risk that a PhD candidate devaluates to a cheap labour force and that supervisors do not have enough time to do their own research because they have too many PhD candidates. It is very important to keep preserving quality. Suggested solutions are to employ more technical staff and to give more permanent contracts instead of temporary ones, although this may turn out practically impossible if the first money flow (money from the university itself) keeps diminishing. It is also suggested that we should cherish the employee-status of a PhD and not switch to a bursary system, or employ less PhD candidates to make it more of an excellence track.

RECOMMENDATIONS

A PhD candidate should not spend almost half of his/time on education. This is definitely not a problem within all faculties but it definitely is a problem within the humanities. The situation should be critically assessed and other faculties should watch out for similar situations. Spending time on education is good but it should not be excessive or come in the way of good research.

The university should invest more in technical staff so PhD's can focus on the things they excel at and not spend valuable time operating machines. This would make PhD candidates less of a trained monkey as some said they felt sometimes. Within some field of science the addition of more technical staff, at the cost of more PhD candidates, could lead to a better division of tasks and personnel. The PhD candidate can focus more on quality than quantity in his/her publications and have more time to form new creative ideas and theories. This

would increase the value of a PhD and would improve the quality of the research.

Organizations that represent the interests of PhDs should continue efforts to improve the soft skills and business sense of PhD candidates, especially those in fields where the connection to the labour market is weak. These organisations should also be more visible for PhD candidates.

The final recommendation is that the university should not stand in the way of a PhD to explore the link with the labour market and industry. PhD candidates should be encouraged to do a short internship or do part of their research within a company to get a better feel of what the life outside academia would be like.

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APPENDIX: LIST OF INTERVIEWEES

This is a list of everyone who was interviewed for our research. Their currently held position is stated, as well as the academic field in which they work within Utrecht University (if applicable).

n.a.= not applicable

No.	Interviewee	Position	Academic field within UU
1	Nikki Blaauwbroek	PhD candidate in Germany (Geosciences)	n.a.
2	Feike Dietz	Assistant Professor/Lecturer	Humanities
3	Jaap Dijkhuis	Department Director of Physics & Astronomy/Professor	Science
4	Saskia Ebeling	Secretary to the board of the Graduate School Life Sciences	Life Science
5	Susanna Gerritse	PhD candidate/board member of Prout	Social Science
6	Laurens Ham	PhD candidate	Humanities
7	Roeland Harms	Teacher Dutch at a Hogeschool	n.a.
8	Paul Henricks	PhD coordinator	Life Science
9	Marijtje Jongma	Acting President of the VAWO	n.a.
10	Raween Kalicharan	PhD candidate	Life Science
11	Frank Kessler	Academic director/Professor	Humanities
12	Geert Kops	Professor	Life Science
13	Ronald van Kempen	Dean	Geosciences
14	Armelle Kloppenburg	Founding director of 4DGeo (privately held consultancy firm)	n.a.
15	Tiuri Konijnendijk	PhD candidate	Geosciences
16	Rens van de Schoot	Assistant professor/co-author of the Promovendimonitor	Social Science
17	Fati Sharhabi	Organiser of PhACE/HR Assistant	n.a.
18	Sjef Smeekens	Vice-dean/Professor	Science
19	Hans Sonneveld	Director of the Netherlands Centre for Graduate and Research Schools	n.a.
20	Rogier Swierstra	Employee of the Royal Bank of Scotland	n.a.
21	Watse Sybesma	PhD candidate	Science
22	Gerard Tel	Assistant Professor	Science
23	Simone Veld	PhD coordinator	Humanities
24	Herman Vromans	Professor	Life Science
25	Manon Wormsbecher	General board member of PNN/PhD candidate (Law)	n.a.
26	Leon van de Zande	Director of Policy at Academic Affairs	n.a.