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Challenges and opportunities in doctoral supervision – a student's perspective

Romain Jacob*

Doctoral Supervision has recently attracted a lot of attention in the Swiss media after the breakout of the story of the former Institute of Astronomy at ETH Zürich, in Fall 2017. As one of the authors of a survey on Doctoral Supervision conducted by AVETH (Academic Association of Scientific Staff at ETH Zürich), I was given the opportunity to share my views on the topic.

I must clarify that the views I present here are my own [being myself a third-year doctoral student, enrolled with D-ITET (Department of Information Technology and Electrical Engineering, ETH Zürich)], and not coordinated with, and thus may not reflect those of AVETH or ETH Zürich.

1. About the AVETH supervision survey

After the public release of the AVETH Supervision Survey report¹, Swiss and international media ran stories using some of our findings... with various levels of honesty. Multiple headlines read something close to: “a quarter of doctoral students at the ETH Zürich experience abuse of power from their supervisor”. This is a misleading summary of what we reported and I want to correct this.

Overall, 24% of the survey respondents indicated that they experience some kind of abuse of power, but:

- This count includes very diverse things, ranging from harassment to lack of scientific freedom (the complete numbers and answers are shown in Fig. 1).
- This completely neglects the response rate of the survey (37%). Although this cannot be verified, one can reasonably believe that such survey has a natural bias towards ‘the most unhappy people’, which are more keen to answer this kind of polls.

This is not to say that there is no problem, but saying that “a quarter of doctoral students at ETH Zürich experience abuse of power” is a misrepresentation of the available data. Moreover, the case of ETH should not overshadow the situation. Unfortunately, I do not believe that abusive supervisors are a problem limited to ETH.

Following our efforts, multiple university representatives from Switzerland are now running (or plan-

ning) surveys similar to the one we conducted. It will be very interesting to see what their findings are... assuming that their results are also made public.

Finally, it must be said that the large majority of professors are doing a great job, as also shown by our survey results: 62% of doctoral students at ETH are satisfied with their supervision (40% very satisfied).

2. About doctoral training

Before delving into my views on what makes doctoral supervision challenging, and how we could (try to) improve it, it might be worth reflecting on the doctoral training itself. The number of people getting a doctorate has increased enormously in the past decade, both in absolute numbers and in percentages. But does this make sense? Should we keep pushing in that direction? Or should we give up on doctoral training completely?

I think everyone would agree with at least one thing: The landscape of higher education has significantly changed in the past few decades, including doctoral training. A doctorate used to be the entry point of an academic career. Today, we train many more people for a doctorate than there are available positions in academia. This came to be for at least two reasons:

- The general level of education in new generations has increased, at all the levels; high school, bachelor, master, and eventually doctorate.

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Romain Jacob is Doctoral Student and Research Assistant at the ETH Zürich since 2015, focusing on low-power wireless communication and networks. Born and raised in France, he studied Mechanical Engineering at the École Normale Supérieure de Cachan (now ENS Paris-Saclay). There, he passed the Agrégation (a French teaching accreditation

for higher education) in Mechanical Engineering in 2013, followed by a one-year stay at UC Berkeley as junior researcher, then moved to Zürich for his doctorate.

Beside research, Romain Jacob has been involved in university politics both at ENS Cachan and ETH Zürich. As representative of the scientific staff, he led the Politics Team of AVETH for one year and coordinated the work on the AVETH Doctoral Supervision survey, in 2017–2018.

¹ <https://www.research-collection.ethz.ch/handle/20.500.11850/262661>
(8 October 2018)

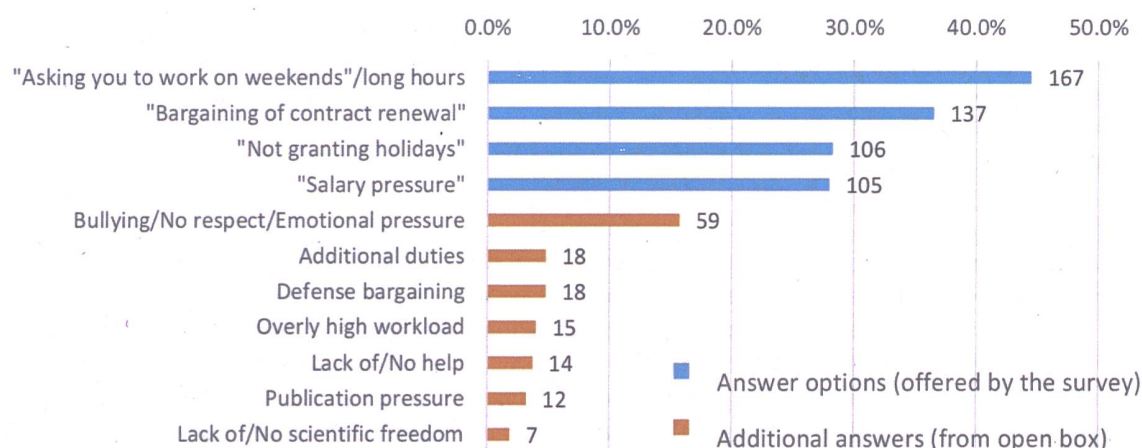


Figure 1. The original figures related to abuse of power from the AVETH Survey on Supervision of Doctoral Students (based on 1'594 completed survey answers, corresponding to a response rate of ~37%).

– The doctoral students are those 'doing the research' at university. The more doctoral students, the more research can be conducted.

That being said, I think the doctoral training is indeed valuable beyond academia. In fact, doctorate is a lot about independent learning, critical thinking, problem solving, analyzing a situation, and deriving a strategy towards a solution; and in my opinion, this is at least as important as the scientific expertise. The time when people would do the same job for 40 years has passed. Things simply change too fast. Society needs more and more people who have the agility required to adapt to these changes, and I think the doctoral training is an important piece of the puzzle. Actually, holding a doctorate is already being more and more recognized as an asset in industry.

In summary, I believe the doctoral training is indeed extremely valuable, and it is a worthwhile effort to make it even better.

3. The challenges in doctoral supervision

To argue about potential means of improvements, we must ask ourselves the following questions: What makes doctoral supervision difficult? Why are doctoral studies so peculiar?

First of all, the most obvious challenge in doctoral supervision is the double status of the doctoral students; both in training for a degree, and employed as research assistants. As such, a doctorate is not like any other job; there is the end goal to graduate. For somebody who wants to pursue an academic career, there is hardly a second chance. The doctoral project must work out, or one will be too old to be competitive for tenured positions. This creates a lot of pressure for doctoral students and might lead them to put up with more than what young professionals in industry would ever be willing to accept. Con-

versely, professors are simultaneously employers, supervisors, and examiners of the thesis; a great deal of power for a single pair of hands.

To be fair, professors and university group leaders also have a difficult job. Beside their scientific expertise, they must be good lecturers, good mentors, fund raisers for their research (where competition is fiercer than ever), and managers of their group; without mentioning the beloved administrative duties. It is rare to find such a diverse set of skills in one person. Even prestigious universities like ETH have difficulties finding such people. In the hiring process, the mentoring and management skills are often neglected, or at least considered not as important as research productivity.

Being a doctoral student is a wonderful but difficult job that requires above-average commitment to one's work; it is much longer than other projects one takes on as a student. Plus, it is endless. One can always go further or dig deeper. A senior doctoral student I once met summarized this problem in one sentence: "in a PhD, you can never say 'This is done', but only 'I am done with this.'" In such context, it is objectively hard to differentiate self-indulged long working hours (out of personal motivation) from the unreasonable pressure of a supervisor.

In addition, the doctoral studies are often the first "professional experience". Most doctoral students have spent their whole life at university. As students, they were used to follow the orders of professors; thus as employees, they tend to lack critical thinking on what they should tolerate.

Furthermore, doctoral studies are difficult to regulate by nature, because of the many forms they can take. First of all, because good supervision is not (and should not be) a well-defined recipe. People are dif-

ferent, and ultimately successful doctoral supervision strongly depends on a good match between supervisor and student. Moreover, there are differences in the scientific fields. For example, external expertise work (on topics unrelated to one's thesis) are common place in some engineering fields like civil engineering, but completely unheard of in others. Finally, there are cultural differences; for example, people from different cultural backgrounds may have very different perspectives on authority. This cultural variety is continuously growing as both students and professors are coming from all around the world.

In this international context, universities are competing to attract the best talents; reputation is of prime importance, bad press is dreaded, and problems are concealed. Thus, it is not surprising to see that universities try to deal silently with serious issues, like harassment from professors. As we say in French: "On lave son linge sale en famille", i.e., dirty stories should remain private.

But handling problematic individuals privately does not solve the issue. When cases of abuse of power are undeniable, the involved professors quit their position quietly rather than resist and eventually see their mischief publicly exposed. Thus the tyrannical professor is gone and the university's reputation is preserved; so everything is well? Not quite. This same professor is still a leader in his or her field and he or she is likely to get hired somewhere else, where the story is likely to repeat itself. This has happened in the past, happened again recently, and unfortunately will most likely keep on happening. The problem is that the right thing to do from a moral stand point (i.e., publicly exposing abusing individuals) can seriously damage the university's reputation; arguably a real dilemma for university leaders.

Finally, academia offers high job stability through tenured positions (or some equivalents). This was originally thought to protect researchers and let them explore 'crazy ideas', push them to be innovative, go outside the beaten path; without having to worry too much about succeeding to keep their job. And that is great!

Unfortunately, there is another side to the same coin: professors have such safe positions that it is legally difficult, in many countries, to do anything against a professor who reveals being a poor group leader or manager.

4. Making a change

Improving doctoral supervision is an important but challenging task for all the reasons I mentioned above,

and probably others. Some practices must disappear; some would be worth spreading. I discuss here a handful of ideas that I find the most interesting.

4.1. Abolish the practice of fake part-time

I mentioned earlier the above-average job-commitment of doctoral students. Such commitment calls for the respect and support from universities and employers. Fake part-time contracts are the opposite of that: It is a common practice in some Swiss universities that doctoral students are employed with a 60% work contract, in a wicked manipulation to lower the salaries. Beyond the disputable morality of such practice, this also has serious consequences regarding the social rights of the employee. Needless to say, most doctoral students actually work more than the 41h/week of a full-time job, often much more.

This practice of fake part-time employment is disappearing at ETH (the new salary system – 100% employment by default – came into force in 2015). Let us abolish fake part-time completely.

4.2. Accept to spend some money

If universities are really serious about improving the quality of doctoral supervision, they must accept to dedicate some money for it. There is work to be done: For example, it would be important to seriously investigate academic productivity. What makes a good research team? What conditions must be fulfilled to maximize its productivity?

Chances are that the findings would be similar to the ones from "re:Work", a project from Google that strives to "make [Google's employee] happier, healthier, and more productive"². They found for example that the premise of everything is psychological safety; "far and away the most important of the five dynamics we found".

The recent ETH+ initiative³ would be the perfect opportunity to start an ambitious project on doctoral supervision at ETH Zürich. Members of AVETH submitted a proposal in that direction, but it was not selected in the first round of financed projects. Let us hope that ETH will reconsider and seize the opportunity in the second round of ETH+.

4.3. Prevent conflict

Assuming that indeed, the psychological safety is the most important criterion for academic productivity,

² <https://rework.withgoogle.com/blog/five-keys-to-a-successful-google-team/> (6 October 2018)

³ https://www.ethz.ch/en/the-eth-zurich/portrait/Strategy/ethplus_en.html/ (6 October 2018)

much effort should be spent on preventing conflicts. And I really mean 'prevent', not mediate or mitigate; organize teams such that personal conflicts do not happen in the first place.

That may sound like wishful thinking, but there are actually some interesting ideas that can make that possible. Social sciences have shown that conflicts most often stem from divergence in the core values of individuals. In other words, we can avoid conflicts by better matching doctoral students and supervisors. That is the underlying idea of a project called "Matchademics". Similar to a love matching service, a set of carefully crafted questions allow both students and supervisors to get an overview on each other's values, before starting the doctorate; thus avoiding later-revealed personality clashes.

To date, there has not been any large-scale pilot experiment of "Matchademics", which would be very interesting. Similar approaches are successfully used in the private sector; there is a priori no reason it cannot work for academia as well.

4.4. Include lecturing and mentoring as part of the career advancement

In many countries, the career evolution of professors and researchers mostly depends on their research track record. Little emphasis is put on their lecturing and mentoring skills. I think that should change. Young assistant professors are rarely trained as group leaders, while this is a core competence needed for the job. Management training should be systematic and compulsory.

Furthermore, universities should value more these leadership skills, and promote exemplary leaders. Precisely for this purpose, AVETH and the ETH Zürich recently co-created the ALEA Award (Art of Leadership)⁴.

4.5. Be more selective in the hiring process

As I mentioned earlier, professorships tend to be very safe and stable positions. I think this should remain that way, but I also think universities should be more demanding on the candidates. As discussed above, it is not just about research, but also lecturing, mentoring, and managing.

Furthermore, even if training and courses for newly appointed professors are important, they are not the answer to everything. They can help people to improve if they are willing to; a person that believes

lecturing is a waste of time will not become any better with pedagogy training. The core values of people do not change.

Thus, I think it is important that both graduate and undergraduate students are systematically involved in the hiring process of professors. Naturally, they are not the best judges of the scientific expertise of one candidate, but they are directly concerned by his or her pedagogical skills. Experience has shown cases of undergraduate students who got in touch with students from a candidate's previous university to discuss his or her lecturing performance; and this made a difference in the hiring decision.

4.6. Generalize the doctoral schools

Doctoral schools are becoming more common around the world. Among other things, they can help to limit the problem of over-pressuring supervisors, as they are a third party that both makes and enforces the rules. Yearly committee meetings, retreats, seminars, progress reports: all this represents organizational overhead for universities and additional work for the students. Yet, all the students I met that are (or used to be) enrolled somewhere with strong doctoral schools find it beneficial. Yes, the overhead of preparing and presenting a progress report is significant, but that is work that ultimately pays off.

4.7. Assess the doctoral supervision quality

It is a common practice that, at the end of the semester, students evaluate the lectures they took. But I am not aware of any place where the doctoral students are asked to evaluate the supervision they received during their doctoral studies. Why not? Without going as far as 'evaluation', I think it would be interesting to normalize the exchange of feedback between doctoral students and supervisors.

4.8. Discuss the limits of peer management

In most countries I know, managing positions at university (head of department/faculty, director of studies, etc.) are held by professors. On the one hand, this is good because they know best what their fellow professors need in order to work in the best conditions. On the other hand, these professors are essentially managing their peers, which can cause authority issues.

This may become even more problematic when professors are assuming the responsibility as a duty, for a couple of years, before resuming their position of a 'simple' professor. In this context, it is definitely a complex task to handle a colleague that is abusing her/his power over her/his employees.

⁴ <https://www.ethz.ch/services/en/employment-and-work/working-environment/family/alea-award.html/> (6 October 2018)

So maybe that should not be. Maybe managing university positions should be given to non-professors, that would stay in charge for longer periods, and effectively detain some authority.

5. About ETH Zürich

In this article, I have discussed many challenges of doctoral supervision and formulated some criticisms, often taking ETH Zürich as an example. This could be (wrongly) interpreted as a criticism of ETH itself. It is not. I mentioned ETH a lot, simply because that is the environment I know best.

To be absolutely clear: I honestly think ETH Zürich is a great place to study and to work. It is considered one

of the best universities in the world, and that is for good reasons. The support you get and the opportunities available are excellent. Maybe more importantly, there is the awareness that, to remain one of the best, one needs to act, to adapt, and to improve; continuously. And ETH is doing precisely that. The regulations for doctoral studies are currently being revised, through a global and cooperative process that includes all the university actors, and driven by the honest will to improve the current situation.

If I could do it again, I would still come to ETH for my doctorate; and I would advise anyone to do the same. Of course, there are some issues and aspects on which ETH can improve; but we are working on it! ■

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