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Swiss doctoral programs:

a “modest” opinion after running one for eight years

Ted Turlings*, Christiane Bobillier**

For almost eight years we have been in charge of a doctoral program (formerly graduate school) that formed the academic backbone of the National Center of Competence in Research (NCCR) *Plant Survival*. At the time of its creation the discussion about developing doctoral programs at Swiss universities had only just started. The program was one of the first and has served as a model for the creation of several subsequent programs, in particular in the French-speaking part of Switzerland. It seems indeed appropriate that we provide some insights into our experiences and discuss some of the difficulties and successes that we encounter along the way. Hopefully, this brief account of our experiences can serve policy makers and academics that wish to develop a program of their own.

Current doctoral programs are a logical consequence of the Bologna agreement and were made feasible because of the agreement. The enhanced compatibility between universities and the relatively simple exchange of students and interactions among universities are also reflected in the facility with which an interuniversity program can be developed. However, there are clear limitations, especially when it comes to making a program obligatory and “forcing” students to take exams or otherwise validate their participation.

In the development of the program we had no particular model that we could fall back on. The American system, which includes an intense course program comparable to a modern European masters program, is not compatible with the Swiss PhD projects that entirely focus on research and preferentially have the candidates finish within three years. A more modest program

“Interuniversity Doctoral Program in Organismal Biology”.

with short courses and workshops in the style of the CUSO 3ème cycle courses seemed more appropriate. This is now common practice among all doctoral programs and is the only concept that minimizes interference with research projects.

Reluctance and skepticism of students and their supervisors

We were lucky that we consulted and asked for feedback from the participating PhD students right from the start. Initially, the students and several of their supervisors were skeptical and did not see much need for a doctoral program. If it had not been obligatory for PhD students that were funded by the NCCR, the initial skepticism would probably have resulted in very few participants. If maximum scientific output is considered the sole goal of a PhD thesis, this skepticism is certainly understandable. However, as many (but not all) have now realized the doctoral programs can contribute to enhancing the chances of a successful career of their participants. This is particularly relevant for biology students, as not many of them will have a realistic chance of finding a job in their specific area of interest. This focus on career advancement should perhaps be one of the main reasons to have doctoral programs (see below). Eventually, many students (and supervisors) have become aware of the advantages of the program and the numbers of participants in our program have increased steadily, including many (50 %) students that were not obliged to take part.

One initial negative comment that we received from the students was that the program was too scholastic. In Switzerland PhD students do not consider themselves students anymore. They readily accept that they still have plenty to learn, but are reluctant to do this by classical means of courses and subsequent examination. Indeed, they can be given more self-responsibility and as long as the program offers a large enough selection of courses, the participants will find a sufficient number of courses of interest that they will follow attentively and with active participation. We

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now try to avoid validation in the form of exams, but rather rely on other active contributions by the students.

Most important is that the participants realize the value of each course. For this reason, we have developed questionnaires after each course with the appropriate questions. This has helped us to receive essential feedback to select and adapt courses for subsequent years. The students are also each year asked for their opinion on the overall program and are consulted on what type of courses they would like to have added to the program. Their feedback and recommendations have been taken seriously and have helped us to greatly improve the program.

Interdisciplinarity

One of the greatest successes of our program is the bringing together of young scientists from a very diverse range of disciplines. It has been especially satisfying to see that this interdisciplinarity has created interactions among students that would normally not necessarily interact because of the differences in their research domains. This has also led to some very interesting collaboration among very distant research groups. One great catalyst for these interactions has been the annual meeting of the doctoral program. This one-day event is now fully organized by the students themselves. They can invite renowned speakers and themselves present their work to each other. This is also a social event with a joint dinner and party. This social aspect is also stimulated during courses where we often offer lunches and a dinner. This may appear decadent, but as many of the readers will know, the best scientific discussions take place over a pleasant meal and a glass of beer or wine. These social activities have also helped to take away much of the reluctance to participate in the courses.

It is our view that all doctoral programs should be interdisciplinary. It is exactly this interdisciplinary aspect that is threatened by the current push for specialized programs. We are not suggesting to have chemistry students in the same program as economists or anthropologists with law students. Rather we would unite students from all directions within one department (in our case Biology) in a particular program. The innovative new collaborations have arisen from the exchange of information between, for instance, behavioral ecologists and plant geneticists, or modelers and chemical ecologists. Most courses

that are of value to promote communication skills and career opportunities will be of use to all students. With a large enough spectrum of more specialized scientific courses there will be something to everybody's liking.

Compatibility and agreements with other programs

We have found it to be extremely useful to stay in touch and consult with others that are in charge of doctoral programs. Exchange of information not only helps to better identify what works and what does not, but it also can lead to sharing courses that are useful to more than one program. Depending of available places, courses should also be open to students other than those that are registered in the specific program and different programs should recognize the credit points from each other's courses. This will also make it possible to organize rather specialized courses that may attract only few students within a program, but can still be filled because external students can participate. Popular courses and courses of general interest can be given on a regular basis and by multiple programs. By coordinating the timing of courses to be given, students can take part when it is most convenient to them.

We and others have adopted a simple 12 credit points system. This means that during their PhD (3 to 3.5 years) the participants will have to acquire a minimum of 12 credit points, of which at least 8 through courses offered by the program. One credit point is equivalent to 1 hour lecture/week/term, and includes personal work (articles to read and present, etc.). The courses are divided into three categories: communications, research tools and scientific activities. To assure that student participation covers each of these topics they should obtain at least 3 credit points per category. Oral presentations or posters at congresses are recognized too for the category communication.

By avoiding a focus on obtaining credit points as a goal, but rather emphasizing the benefits of the various courses, students usually obtain many more credit points than are required. As always, there are exceptions, but they are surprisingly rare and we find it not useful to adapt the program to accommodate these exceptions, but rather accept that the program is not for everybody.

Some advice to administrators

With respect to doctoral programs it seems pertinent that administrators and policy makers keep two things in mind. The first and obvious point is that the doctoral programs should be designed to ensure that **the graduate students receive maximum benefit**, while minimizing interference with their research activities. Secondly, and this may not always be obvious, administrators should realize that the creation and successful management of a program is largely dependent on the input and **enthusiastic support of academic volunteers**. This latter point requires avoiding excessive regulatory and bureaucratic obstacles that are likely to dampen this much-needed enthusiasm. Without volunteers doctoral programs are doomed to fail. Enthusiasm can be maintained by flexibility, ample support, and encouraging feedback.

The first point - maximum benefit - can be tricky too because it requires that we define what the benefits of a doctoral program should be. We propose that the function of a doctoral program should simply be to optimize the chances of all participants to find employment of their liking after finishing their theses. The thesis supervisors and other colleagues can be expected to cover the specific scientific aspects related to the thesis itself. The doctoral program should provide an added value in the form of courses and workshops that help students develop additional skills (often referred to as soft skills). One of the most important requirements for an academic career is being able to communicate your science to your

peers. This needs to be done in the form of publications, as well as public presentations. No matter how proud we may be of our native language, as scientists we will have to accept that science has to be communicated in English to reach the relevant scientific audience. That is why all courses should be given in English, also to make them accessible to graduate students of all nationalities and, within Switzerland, of all cantons. Besides courses on scientific writing and oral presentations, we also find it important to stimulate active participation at international meetings. This is why we distribute competitive grants to attend meetings. Not all supervisors see the need or have the means to let their PhD students attend congresses. Through grants that the students can apply for themselves, they will get a fair chance to present their work to an expert public. This way they are likely to receive useful feedback from authorities in the field and build up a network of acquaintances within the scientific community, which will further facilitate their chances to obtain a post-doc position.

In conclusion, we have had the feeling that doctoral programs can be of great use to Swiss PhD students, especially if they do not just focus on a specific research domain, but rather put the emphasis on promoting interdisciplinarity. It seems particularly important for students in fields with limited job opportunities, like Biology, that a variety of courses are offered that provide additional skills and allow access to a broader job market. This aspect is even more important in times of economic hardship.