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CAREER DEVELOPMENT : ARTICLES

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Mastering Your Ph.D.: Defending Your Thesis With Flair

Patricia Gosling, Bart Noordam
 Germany
 25 July 2008

You're nearly ready for the final act. After several years of research and the hard slog of writing up your results, you have submitted your magnum opus to your thesis committee and now face the final step. Ready or not, it's time to put yourself and your work in the critical spotlight.

A thesis defense is a cross between an exam and a ceremony.

Depending on your personality and how you handle stress, the prospect of this ultimate "oral exam" may be no big deal, or it may be frightening. No matter how you feel as the day approaches, the better you prepare for your thesis defense, the stronger and more confident you will feel going into it and, very likely, the better you'll perform.

A variety of formal procedures and regulations, which vary by institution, dictate how and where your thesis defense is conducted. In some countries, and at some universities, the defense is almost a formality, with few tough questions and no real prospect of failing--just a pleasant hour or two in front of an audience of friends and relatives. At other institutions, a candidate is interrogated endlessly by an international committee of experts, and there is a small but finite chance the candidate will fail. There's more on the line at this type of institution, obviously, but either way, you want to perform well and bring your Ph.D. studies to the best possible conclusion. To ensure a successful thesis defense, you need to do three things: prepare, prepare, ... and prepare.

RESPECT THE FORMALITIES

A thesis defense is a cross between an exam and a ceremony. As with all ceremonies, rules must be followed, such as standing when the examiners enter the room and not addressing the examiners by their first names.

Such rules are taken more seriously at some institutions than at others, but it's always a good idea to learn and observe them. But

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combining the observation of unfamiliar formalities with answering tough questions is not easy. So try to adjust to the formal procedures beforehand so you can focus on answering questions. If they're written down somewhere, study up. If it's permitted, attend a few thesis defenses before yours to familiarize yourself with details such as how to address the examiners, when to stand and when to sit, what the dress code is, and what will be expected of you during the ceremony. It's a good idea to observe more, not less, of the formalities than your examiners require. If the event calls for business casual, wear a business suit.

PREPARE SCIENTIFICALLY

With all you have to think about--and with all those experts questioning you--it's easy to forget that you are the foremost expert. After all, your research has been the focus of your time and attention for several years. So, take heart; you really do know your stuff.

It would be a mistake, however, to underestimate the examiners' knowledge of your subject. Moreover, in the formal setting of a thesis defense, you have one truly big disadvantage: Your examiners can prepare questions beforehand, but you have to reply to them on the spot. Some examiners are very good at finding awkward or controversial issues, and they will certainly question you about those aspects of your work. As you stand in the spotlight, you may even realize, to your discomfort, that it's been quite some time since you thought about those thorny issues.

So in the week or two before your thesis defense, read your thesis all the way through with a critical eye and a highlighter in hand to refresh your memory about experimental details, protocols, results, and your conclusions. Years have passed since you did some of that work, so it's important to remind yourself of the fine points.

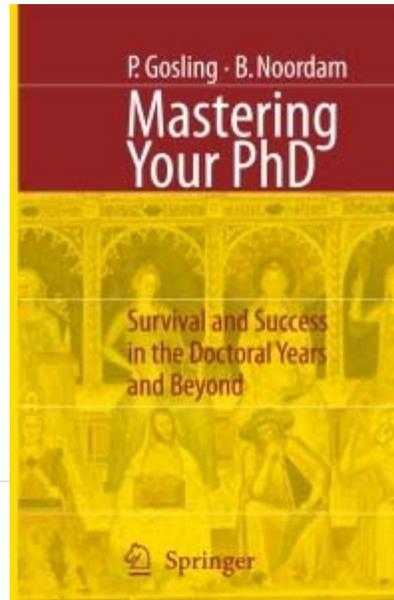
As you read, put yourself in the role of an examiner. What would you ask the author of this thesis? Where are the trouble spots, the unresolved issues, the shaky conclusions? If you can predict some of the questions and prepare the answers, you will be in much better shape during the defense itself. Even if you don't get those questions, the exercise will give you confidence and reacquaint you with the fundamentals.

If you've made good use of previous opportunities, this won't be the first time you've spoken in front of a group and been questioned about your work. Each time you give a presentation, even a poster presentation, at a conference or department meeting, you're preparing for your ultimate oral exam.

PREPARE YOUR ACT

Because a thesis defense is a formal ceremony as well as an examination, you will have to play the highly scripted part expected of you. It's not sufficient to mumble a reply to a question while staring at the floor. Assuredly, your examiners will not be pleased if you reply to their questions with "Yes, ... No, ... No idea." Answering a question properly is a three-step process.

1. Listen to the question carefully. Too often, Ph.D. candidates stop listening halfway through because they believe they know what the question is about, or they are so nervous they start preparing the answer in their heads while the question is still being asked. But sometimes the real question comes only at the very end of a long exposé (in which the examiner may be trying to show off), and it may not be the question you anticipate. So listen attentively the whole time the examiner is speaking. To help you maintain your concentration, you might want to take simple notes or jot down key words to remind you what was said. Just don't let the note-



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taking distract you from careful listening.

2. Begin your answer by rephrasing the question succinctly and politely: "Professor Smith (or "Esteemed professor" or "Bob"--whatever address the formalities require), your question on the research described in Chapter 4 addresses enzymatic degradation from an interesting perspective. If I understand your query correctly, you wonder why ..." This rephrasing establishes whether you have understood the question properly, and it gives you a moment to collect your thoughts and prepare the best possible answer.

3. Finally, answer the question. This might seem obvious, but too often the candidate will make no serious attempt to answer the question properly, launching instead into a related or unrelated tangent or long-winded explication that--it is hoped--seems like an answer but isn't.

Some questions may be just too difficult to answer right away, or you may be caught off-guard. You could try to bluff your way through it, but a better solution is to admit that you don't know but discuss the issues raised by the query intelligently. Examiners will recognize the distinction between a candidate who prevaricates and one who makes a real attempt to address the question, even if there's no complete answer.

In case we haven't convinced you of the importance of preparation, imagine the following scenario: Your examiners ask you a critical question that is foundational for your field, and you don't know the answer. Some questions are still open--but not that one. Failing to answer a foundational question, whether it's due to a lack of preparation or nervousness, can have dire consequences. So don't let it happen. Read your thesis until you know your work backward and forward, reread your field's seminal papers, strive to stay relaxed, and keep your thoughts open and accessible.

KEEPING YOUR COOL

No matter how well prepared you are, you'll almost certainly experience some anxiety. Each person reacts differently to stressful situations, and you have surely had some experience with this type of stress (before conference talks, say, or sitting examinations), but the scale and import of a thesis defense--and the degree of public exposure--puts it into a different class. So in the days before your defense, seek balance in your life. It's probably best not to develop a new relaxation regimen at this point; do what has worked for you in the past. Get some sleep, go for a walk, eat regular meals, talk to friends. Breathe.

Just before your oral examination is scheduled to begin, mingle with the public or chat with friends, especially if you're a nervous speaker. Engaging others right before your exam rather than locking yourself in the coatroom may help you feel more comfortable once you're in the spotlight.

When it's over and you've got your degree in your hand and a framed photo of the big day, do something to celebrate. Throw a party or take a vacation; it doesn't matter what you do, but do take time to savor your accomplishment before jumping into the next high-stress thing. Getting a Ph.D. is a once-in-a-lifetime event, so enjoy it and take satisfaction in what you've accomplished.

<p>Patricia Gosling and Bart Noordam are the authors of <i>Mastering Your Ph.D.: Survival and Success in the Doctoral Years and Beyond</i> (Springer, 2006). Gosling is a senior medical writer at Novartis Vaccines and Diagnostics in Germany and a freelance science writer. Noordam is a professor of physics at the University of Amsterdam, the Netherlands, and director of development and engineering at ASML. He has also worked for McKinsey and Co.</p>	<p>Comments, suggestions? Please send your feedback to our editor.</p>

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