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Mastering Your PhD

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Survival and Success
in the Doctoral Years and Beyond

With 8 Figures

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Library of Congress Control Number: 2006926427

ISBN-10 3-540-33387-8 Springer Berlin Heidelberg New York
ISBN-13 978-3-540-33387-6 Springer Berlin Heidelberg New York

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Springer is a part of Springer Science+Business Media
springer.com

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Printed in Germany

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Cover design: eStudio Calamar, Spain
Typesetting and production: LE-TeX Jelonek, Schmidt & Vöckler GbR, Leipzig, Germany

SPIN: 11395232 57/3100/YL 5 4 3 2 1 0 - Printed on acid-free paper

Preface

Why read a book about getting a PhD?

As a general rule, PhD students and their supervisors tend to focus primarily, or even exclusively, on the content of the research that will go into the doctoral thesis. Other issues are often taken for granted: how to organize your work, give a presentation, work in a team, cope with your supervisor, and how to effectively manage your time. When asked, former PhD students usually claim that the general experience of being a graduate student, which includes learning how to solve complex problems and work well with others, was of greater value to their careers than the actual topic of their thesis.

The goal of this book is to help PhD students master some of the skills that have been proven effective in the world outside of academia, and to help PhD students gain mastery over the non-scientific aspects of getting a PhD. Hopefully, this book will help graduate students more fully enjoy their doctoral years, as well as provide some much-needed support as they prepare for their post-PhD careers.

Sink or swim

After hearing about this project, one professor had this to say: ‘This book should not be published. Obtaining a PhD is like swimming across a big lake. Some students can’t swim, so they will sink. That is the way the academic system selects those who will win. By providing students with a book on how to swim, they will pass and ruin the system.’

We can't think of a better endorsement for this book. And we believe, of course, that it is indeed possible to learn to swim, and even to do it well. In fact, we think that mastering certain skills along the way is just as important as swimming across the lake to get the prize – your PhD – on the other side.

Saving an Old Master painting from the ravages of time

To help illustrate some of the principles and suggestions we've outlined in this book, we've decided to follow a team of graduate students as they work together on an important project: saving a priceless Old Master painting from further deterioration.

The robe of the Virgin Mary in the middle panel of *The Coronation of the Virgin* by Lorenzo Monaco (ca. 1414) is currently white. Technical examination has shown, however, that the robe was originally a deep pinkish mauve. A restorer can retouch the painting with red paint, of course, but if the robe is still fading a colour difference will occur. Elucidating the correct chemical composition of the original paint, plus understanding the exact nature of the fading process will be critical for a proper restoration to be carried out.

Isabel, a chemistry PhD student, will be analyzing the chemical composition of the paint. Her challenge will be to use the analytical techniques currently available to study a sample from the painting, typically a tiny sample that is barely visible to the human eye.

Yousef is a PhD student in physics who will be focusing on calculations of the rate of fading of certain paint compositions, as well as the important issue of whether it will be possible to reconstruct the original colour of the painting. Another aspect of Yousef's project will be to develop new analytical techniques for gaining more information from the precious paint samples.

Peter is working on his PhD in art history. His project will include the interpretation of the painting based on its use of colour, particularly when the colour is thought to have a religious or symbolic significance. The use of colour may also be characteristic for this particular artist. The Virgin's white robe,

for example, is symbolic of her purity as the mother of Christ, while purple is symbolic of her royal nature as the queen of heaven.

In order to solve the problem of the painting's degradation the team will have to work together and rely on each other's data. The three graduate students attend the same university, albeit in separate research groups. Isabel has joined a well-established group run by a senior professor. Yousef works for a world-renowned professor in a large group with many PhD students and several Post-docs. Peter works as one of two graduate students for a young assistant professor.

To finish the project successfully, the team will have to draw on many skills they hadn't really counted on using when they started out including good communication, proper planning, and effective time management.

Baarn
Amsterdam
May 2006

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