

## Reviews of *Rethinking the PhD* on Amazon websites

Erich Wimmer (Chairman of Materials Design Inc.)

*5.0 out of 5 stars* [Outstanding education of scientists and engineers in danger](#)  
Reviewed in France on 24 February 2020

I recommend this book most highly. It raises serious questions about the underlying trends in the funding of outstanding training in science and engineering. There are few scientists of the calibre and international renown as the author of this book, Adrian Sutton, who has dedicated his life-long experience, efforts and energy with such passion to improve the education of the next generation of scientists and engineers. But never shall a good deed go unpunished! An absurd, short-sighted evaluation procedure by the EPSRC axed one of the very best CDTs in the UK. Remarkably, despite the enormous disappointment the author must have felt, he takes a higher-level view, he tells the story of how he rethought the PhD program and how it was implemented at Imperial College London. He highlights achievements, he shares the successes, he analyses the underlying principles and he outlines future alternatives.

Perhaps most disturbing, the story told in this book reveals a profound cancer in our society, namely the rush for highest immediate impact, irrespective of long-term value, with complete disregard for proven excellence. It took Adrian Sutton and his colleagues at Imperial College decades to develop the visionary PhD program described in this book. Just as it started to flourish, it was cut down. Is our society no longer interested in nurturing the most successful educational projects for more than a few years? The result is disastrous, because academic institutions have a mission to educate and train young scientists & engineers, who in turn will transform their knowledge and skills into valuable products, generating the revenue to feed the cycle of education and innovation. The timescale of this cycle is measured in decades. Adrian Sutton's deep concern, expressed eloquently in his book, rings alarm bells when this vital cycle of innovation is severed at the most vulnerable part, namely the provision of the highest quality education and training. For all these reasons, I recommend this book most highly.

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Martin Carter

*5.0 out of 5 stars* [Insightful, inspiring... and infuriating](#)  
Reviewed in the United States on 19 February 2020

This is a quick must-read for academics who might be thinking of restructuring their own PhD programs, or those who are curious about the nature and benefits of such programs.

Sutton describes the genesis and evolution of a superb program at Imperial college. The program's objective was to broaden the spectrum of the students' skills and competencies to maximize their future opportunities—and to maximize their value to the society that funded their education.

The program also—demonstrably—provided direct and immediate benefit to the UK's economy and technological competitiveness.

The program was extraordinarily successful. A fraction of the students continued an academic path, but the majority applied their skills to starting successful businesses, making policy, or other vocations where the addition of one well-trained PhD provided a disproportionate benefit.

The book should be required reading for anyone participating in education policy or peer review processes. The book describes a Medean Greek tragedy where a comically ill-conceived review process and policies destroy a universally applauded program. In the words of Marvin Gaye: "Makes you wanna holler"

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X. A. Markenscoff

5.0 out of 5 stars A paradigm of a successful Center of Doctoral Training in the UK and the world  
Reviewed in the United States on April 20, 2020

This book is the story of the genesis, evolution and subsequent demise of the Centre for Doctoral Training (CDT) on Theory and Simulation of Materials at Imperial College in London. As the Distinguished Professor in Solid Mechanics at UCSD I can attest to the international impact of this CDT. Although I was not directly involved in any of its teaching or research, I became aware of its ground-breaking work to simulate shock impacts using elastodynamic dislocation dynamics, and invited one of the Ph.D. students as a main speaker at the NSF funded Symposium on Defect Dynamics that I organized at UCSD. This work was the first of its kind world-wide, and it has opened a whole new chapter in dislocation dynamics and high strain [rate] plasticity. The strategy of recruiting students with strong first degrees in primarily physics and engineering enabled the CDT to deliver mathematically and computationally demanding coursework in materials science. The level of the student intake was further enhanced by attracting gifted students from the EU. But this CDT was about much more than teaching and research. It provided students with a unique and thoughtfully designed suite of professional skills courses that prepared them for work starting up their own companies, as well as working in industry, banking, science policy and academe.

It is difficult to think of another institution that could bring together academics from nine departments across two faculties to deliver the breadth and depth of teaching and supervise the research undertaken in this CDT. For all these reasons it is baffling to say the least how and why the research council EPSRC did not renew the funding of this internationally acclaimed CDT in 2018. From my US perspective the research council's decision has done permanent damage to education and training in this industrially important area of science and engineering not only in the UK but worldwide.  
Xanthippi Markenscoff

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Professor PJ Dobson

5.0 out of 5 stars This book is invaluable for anyone planning to run a graduate course  
Reviewed in the United Kingdom on 1 October 2020

This book acts as a guide to anyone who is prepared to put a lot of effort into running a graduate training course. It gives very sound advice but it exposes the risk when such a course is subject to the illogical vagaries of funding by Research Councils. It is a superb account and very sad, because of the lack of concern by the very agency that should be supporting such work.

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Robert Pond, Visiting Professor, University of Exeter, UK.

5.0 out of 5 stars Funding Postgraduate Training  
Reviewed in the United Kingdom on 29 February 2020

This book is an account of an instance where bureaucratic ineptitude undermined a jewel in the crown of postgraduate training in the UK. Centres for Doctoral Training are a carefully nurtured keystone of postgraduate training policy, and a superb example - Theory and Simulation of Materials - was developed at Imperial College. Its pedagogical structure provided entrants from diverse disciplines with a thorough grounding in theoretical and computational knowledge, and enabled them subsequently to tackle complex problems faced by key industries. The audit of accolades from international institutions and companies for the achievements of its alumni is breathtaking. Yet this pinnacle of training was laid waste at a stroke by an inadequate Research Council review procedure and an unwillingness to reconsider its disastrous decision to withdraw funding. Academic and industrial researchers reading this book will share the author's restrained anguish. One hopes that educational policy makers will read this lucid account and reflect on the consequences of the procedures they impose on training providers.

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Chris Race

5.0 out of 5 stars All those involved in PhD research (funding, supervising and managing) should read this.

Reviewed in the United Kingdom on 7 February 2020

Anyone involved in running, or applying for funding to run, a Centre for Doctoral Training (CDT) would do well to invest the hour or two needed to read this excellent little book. Moreover, those involved in making funding decisions or with an opportunity to improve funding policy would be wise to heed the advice given by the author.

Sutton provides a brief history of the CDT in Theory and Simulation of Materials (TSM) at Imperial College London, one of the relatively few undoubted successes of the CDT concept - the UK's current model for funding the majority of PhD research in engineering and the physical sciences. He details many of the important innovations in training and management that made this CDT a success. He also makes clear the underlying motivation for the TSM CDT; this strong motivation being a necessary condition for a truly successful CDT.

Sutton's account of the failure of the research council to fund a second renewal of the CDT lays bare several fundamental flaws of the UK's current model for funding UK research: preposterously, funding decisions explicitly exclude any measure of past performance of the applicants, and the distribution of funding is far too heavily steered from above by those with scant knowledge of the science or little interest in the outcome and is often at odds with the consensus view of academics and their colleagues in industry.

This book will provide much useful practical advice to those involved in training graduate students and might, I hope, help to prompt a broad reform of our broken system of funding research (and particularly PhD research) in the UK.

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A T Paxton

5.0 out of 5 stars Policy makers must read this

Reviewed in the United Kingdom on 4 March 2020

Sutton writes, "If the objective is to understand better some property or process in a material a model has to be developed first. A computation framed by the model enables the model to be tested against real experiments. There is a relative abundance of people capable of developing computational methods and writing computer software. But there are far fewer who have sufficient insight and understanding of materials to create successful models. I believe this is why there has been a recent surge of interest in machine learning and artificial intelligence in materials science. Machine learning replaces the quest for understanding with fitting, interpolating and extrapolating data from experiments or computations ... it is difficult to see how data alone will enable the identification of mechanisms of processes in materials."

It is currently not fashionable to take a stand against machine learning and indeed it is a powerful tool in the modern world of facial recognition, image processing and so on. But I was struck by Sutton's statement because in the context of materials science I could not agree more and it puts succinctly into words my own opinion. This is exactly how Sutton encourages his PhD students to approach a problem: don't throw it at a computer, find a model (as "simple as possible but no simpler," as David Pettifor was fond of remarking, after Einstein) express it mathematically and then find analytic solutions. Therein lies real understanding. In fact I have shared some PhD supervision with Sutton and moreover I was the first external examiner in the MSc component of the TSM CDT. Therefore I completely recognise the present account of the huge successes of the CDT and its value to its students and their subsequent careers. I am also aware of other CDTs that do not offer professional level careers counselling, cohort mentoring and cross disciplinary supervision; and hence I share the frustration expressed in this work for these innovations and measurable successes falling through the cracks of the flawed peer review system.

I recommend this slim volume because exactly as advertised it provides a blue print for the proper and holistic provision of a PhD education. This book should be read and acted upon by policy makers in government and UKRI.

Tony Paxton, Chair in Computational Materials Science, King's College London

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Dave Rugg (Rolls-Royce)

5.0 out of 5 stars fast and compelling read

Reviewed in the United Kingdom on 3 February 2020

I have been heavily involved in PhD research over several decades, delivered in a variety of means. Adrian has captured the innovation and vision of a great deal of the best practice established in the TSM CDT. There is a lot to learn from here, much of [it] simple to apply. The book should be of value to funding agencies, academics and students alike. It is sufficiently engaging that I read it from cover to cover in one go.

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M A Miodownik

5.0 out of 5 stars Read this book if you want to understand how to run a doctoral training programme

Reviewed in the United Kingdom on 5 March 2020

An important book that distills a lifetime of knowledge running a materials science research group, supervising PhD students, and directing a doctoral training centre. The role in society of PhDs, the relationship with industry, policy makers and society are explored. An evidence-based manifesto for change is presented. It is very convincing.

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Helen G

5.0 out of 5 stars A must-read for doctoral training centre leaders

Reviewed in the United Kingdom on 17 February 2020

This is an insightful account of the rise and soon-to-be demise of an Imperial College centre for doctoral training. This book brings to life the tremendous achievements of the centre but also highlights just how precarious that success can be. It provides inspiration, practical advice and a cautionary tale for doctoral training centre leaders about how apparently small decisions by a funding body can have a catastrophic effect. It also helpfully suggests a new model for centre funding. Having worked with the author of the book, his successor and a number of the students from this Imperial centre, I can attest to the quality of the students it has produced, the dedication of the staff to producing employment-ready individuals and the strong reputation of the centre across academia and industry. In my experience it is highly unusual to see a publicly-available, written account of the inner workings of a doctoral training centre, and I recommend that other centre leaders read it carefully and learn from it.

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Jane P

5.0 out of 5 stars Essential reading for all those who have any say or influence in how PhD programmes are funded!

Reviewed in the United Kingdom on 18 February 2020

An interesting and important contribution to the world of higher education policy and research funding in the UK. This book explains why the traditional type of PhD is not meeting the needs of students who undertake it, and explains how the author, Adrian Sutton, ensured the PhD programme he oversaw (a 4 year CDT in Theory and Simulation of Materials) was by contrast exemplary in both meeting the personal and professional development needs of students on the programme and also the needs of industry and wider society, by training and developing outstanding professional researchers, scientists and engineers - so absolutely the sort of research programme that UK Research Council should be funding, which makes it all the more astounding / shocking that funding was suddenly curtailed - even though the research council (EPSRC) knew how successful and effective the CDT was. I hope it will be widely read by all those who have any say or influence in how

PhD programmes are funded to ensure they meet the professional and career development needs of individual students undertaking them, whilst also benefiting UK plc.

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Tchavdar Todorov

*5.0 out of 5 stars* The value and values of science  
Reviewed in the United Kingdom on 24 February 2020

Although the main emphasis in the book is on the TSM-CDT and its towering achievements, it is actually about far more than just the PhD. It is about science and its philosophy and values. It is also about the sometimes difficult but hugely fruitful marriage of physics and materials science. I especially appreciated the point that science means understanding, not just description, and insight, not just pressing buttons.

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Andrew

*4.0 out of 5 stars* Important perspective on what post-graduate education can achieve  
Reviewed in the United Kingdom on 1 February 2020

This is both a personal statement from Adrian Sutton about how he believes PhD training should be conducted, and an account of how the programme he designed and implemented with his colleagues worked in practise. It branches into the related areas of how education is funded, and the societal impact of both the programme and its funding. For someone with responsibility for postgraduate education I believe its primary value is as an easily accessible repository of best practise. For students it provides a vision of what is possible -- and thus can be asked for. For funders and business it provides a testimony to the power of properly organised post-graduate education, and hence why they should support it. Well worth a read.

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Cliente Amazon

*5.0 out of 5 stars* highly recommended  
Reviewed in Italy on 3 February 2020

An interesting description of the successful experience made at the Centre for Doctoral Training at Imperial College London. The book is short but very instructive for those who have a direct responsibility in doctoral training but also for PhD students, and anyone in industry involved in collaborations with university research. The story of the Centre also provides a clear example of the extremely competitive environment of contemporary science. Not always very successful initiatives are sufficient to guarantee success in getting funded.

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Emer. Prof. David Bacon, University of Liverpool.

*5.0 out of 5 stars* How not to carry out reviews of grant proposals.  
Reviewed in the United Kingdom on 29 January 2020

The title may sound general, but this is very much about a particular form of PhD, for it is the story of the rise and fall of a Centre for Doctoral Training (CDT) at Imperial College, London. The author played a key role in establishing the Centre and leading it to success. It was founded in 2009 with support from the UK Engineering and Physical Sciences Research Council (EPSRC), but the death knell sounded in 2018 when the EPSRC judged the CDT's proposal for a further five years of support to be unsuccessful.

In the EPSRC's own mid-term review of the CDT in 2017, it was judged to have achieved the highest of four assessment categories. However, because the 2018 call was for funding bids from existing centres and ones newly proposed, the EPSRC decided that, in order that all proposals would be

judged using the same process and criteria, the outcome of mid-term reviews was not to be made available for peer review. Hence, the very detailed and positive assessment from just one year earlier was excluded from consideration.

How it was thought that this would lead to ranking based on quality, both proposed and proven, is beyond me. What a ridiculous way for the EPSRC to proceed. I could feel Prof. Sutton's hurt as I read the book. It will be interesting to see whether his experience, now written for wide appreciation, has an effect on policy and procedure further down the line.

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Mike Finnis

5.0 out of 5 stars Must read if you care what a PhD is about  
Reviewed in the United Kingdom on 28 January 2020

I read this little book in a short evening, and I strongly recommend it to any students currently thinking about study and research for a PhD, as well as to academic staff at universities, and wider interest groups such as funding councils and policy makers in science and engineering. It contains a detailed analysis of what was wrong with the traditional 3-year UK PhD degree, which let down high proportions of students and employers, and which in my own opinion fell short of the educational value of the PhD of other countries that I'm familiar with. The book describes the 'best practice' aspects of a "New Route" 4-year PhD, launched in 2009 by the creation of 50 different Centres for Doctoral Training, or CDTs, funded by the Engineering and Physical Sciences Research Council (EPSRC). A PhD education may now include for example communication skills, public engagement skills, business awareness and entrepreneurship. But the author soon leads us much further than a discussion of the skills that have been recognised as lacking in the traditional UK PhD.

In the context of a detailed case study, namely a CDT in theory and simulation of materials (TSM) at Imperial College London, known as the TSM-CDT, Sutton goes on to describe key educational principles that were adopted and the creative measures that were taken to implement them as the new style of PhD evolved. Sutton himself conceived, initiated and was the first director of the TSM-CDT, which was launched in 2011, based partly on his experience of the PhD in North America. The need for students to be properly educated in TSM at the research level was also established by statements gathered from eminent scientists in academia and industry. My own involvement in the TSM-CDT as one of its many lecturers and research supervisors has given me first-hand experience of how the programme and environment of a PhD was optimised to the benefit of all interested parties, including students, the research community, business and industry. The first year includes taught courses, and a short research project, at which point the student-led aspect of the new PhD becomes apparent, e.g. when the students may interview potential supervisors before making a well-informed decision on which field of study to choose in their main PhD research, secure in the knowledge that their funding is assured whatever their choice. This contrasts with the traditional PhD experience, in which a student would commit themselves with little prior information to guide them about the real nature of a research project, and often no real choice after committing to a supervisor, who controlled the funding. A crucial element of the new-style PhD is the formation of a cohort of students joining in each year, which establishes a network for mutual help, promoted by the nature of the tasks with which the students are challenged during their year of coursework. They are encouraged to collaborate in problem solving, and indeed some tasks such as software development, or writing a grant proposals, have been designed as team projects. At their own initiative, one cohort organised an international conference ("Hermes"), the success of which induced subsequent cohorts to do the same. Former students who have joined companies or founded their own startups have written testimonials to the value of this new-style PhD, some of which are reproduced in this book. Evidence for the success of the TSM-CDT has mounted, such as the metrics of increased collaborations between departments, institutions and industry, as PhD projects were jointly supervised and industries were fed with appropriately skilled students to employ. This success was confirmed by reports of the international advisory board and mid-term reviews by EPSRC.

Only towards the end of the book do we learn that in 2018, after a call for 4-page outline proposals for renewal of CDTs or the creation of new ones, EPSRC decided that the TSM-CDT among 27 other very successful ones would no longer be supported. Instead, new CDTs would be founded from scratch elsewhere. Academics and industrial partners expressed their incredulity. This was one of the

most successful CDTs, equipping PhD students as never before with the skills most desired by employes, and a student experience of enviable quality, creating examples of best practice. The decision was impossible to justify on rational grounds, two reasons surely being that referees of the new outline proposals were denied access to previous reviews of the progress of the CDTs, and the major industrial advocates were not consulted. Undeterred by this scandalous waste of public money, however, the author ends with novel suggestions about how a future CDT might look, in which industrial support would be built in from the outset.

The 10th cohort of TSM-CDT students, soon to finish their degrees, will be the last, followed by a gap in the most highly skilled workforce for UK research and development. Let us hope with the publication of this book that its history of innovation and best practice, besides the documentation of funding mistakes, will not be lost to future funders and educators.

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B Gurrutxaga

*5.0 out of 5 stars* How to train PhD students

Reviewed in the United Kingdom on 10 February 2020

This book offers a detailed overview of the reasons that led its author, Adrian Sutton, to form the Centre for Doctoral Training in Theory and Simulation of Materials (CDT TSM) with the support of the EPSRC and numerous industrial partners. Building on his own days as a PhD student in the US and on years of experience and frustration as a world-leading expert in theory and simulation of materials, Adrian Sutton spearheaded the CDT TSM to overcome the traditional limitations of UK PhD degrees, namely their narrow focus and extreme specialisation. The aim of the CDT TSM was to offer its students an intellectually and academically rich experience, via a taught component that would expose them to topics outside their comfort zone, and to prepare them for their future careers in industry or academia, with an emphasis in transferrable and professional skills entirely tailored to each cohort of students. Collaboration with industry and across different academic disciplines was encouraged and actively sought. In this way, the CDT TSM was able to address the UK's need for experts in simulation of materials, providing its alumni with the skills most desired by employers and an enviable student experience. Adrian Sutton's CDT TSM was a true world-leading example in excellence of a PhD program.

As an alumnus of the CDT TSM, I couldn't be more grateful to Adrian for having had the vision and having put the effort to create this CDT. The CDT TSM succeeded in bringing together experts from disciplines that otherwise would have remained insular, and in creating a strong community of students whose life as PhD students would have been much diminished without it. I sincerely wish every PhD student could enjoy an experience similar to the one I had in the CDT TSM.

The CDT's success in all these areas is outlined in the book, and was widely recognised by the EPSRC as an example of best practice. This makes it all the more alarming that, in its 2018 renewal bid, the EPSRC decided to defund the CDT TSM alongside 27 other top-performing CDTs. One doesn't know whether, at the end of the day, the decision to defund the CDT in TSM (alongside 27 other top performing CDTs) came down to a sudden desire to avoid the Matthew effect (which in the UK context of REFs and TEFs would be a first), or to a flawed top-down decision making system where research strategy is based on unaccountable decisions that often ignore the current academic and economic contexts. The funding environment this creates is one of fierce yet random competition, and one that in fact actively discourages both industrial participation and academic excellence. After all, why would any leading academic put the time and effort that Adrian Sutton put in creating and managing the CDT TSM, when in 5 years time it could very well be defunded? Why would any industrial partner earnestly support a PhD program as a long-term investment in talent and expertise, when it could very well be closed down in 5 years time?

I hope that this book helps create a debate that leads to the reform of the UK's PhD funding, and that it becomes a useful guide for anyone wishing to create a PhD program.

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Daniel Rathbone

5.0 out of 5 stars A good overview of why Centres for Doctoral Training provide a more rounded PhD  
Reviewed in the United Kingdom on 3 February 2020

As a former student of the TSM-CDT I was very disappointed to hear that its funding had been discontinued. In this book Adrian Sutton makes a compelling case why CDTs provide a much richer and more rounded PhD experience. That was certainly my experience at the TSM-CDT. I recommend this book to any and all who are interested in PhD education and in particular policy makers who are making decisions about future funding of PhDs.

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Aeneas Wiener

5.0 out of 5 stars A case study in how to create a postgraduate training environment worth attending  
Reviewed in the United Kingdom on 2 February 2020

This book is a compelling and useful case study on how to set up a top postgraduate research program. The writing style is authentic and inspires to action. In particular the narrative highlights how an open minded and broad range of focus areas and activities, directed toward a strong mission, leaves students anti-fragile in the face of future challenges both inside and outside of academia.

As a former student of the program--and since then employer to several of its uniquely skilled graduates--I can attest first hand to the quality and effectiveness of the educational methods pioneered by the people described across these pages.

Finally, I found especially the earlier chapters to be a rare 'behind the curtain' view into how to develop a founding vision with the propulsive force necessary to successfully incept into the world a new academic research direction.

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Ben K

5.0 out of 5 stars Excellent account of an excellent PhD programme  
Reviewed in the United Kingdom on 2 February 2020

This short read brought back many happy memories of having attended the PhD programme described therein. In his personal account Sutton sets out clearly and persuasively what made this a unique and impactful programme to have taken part in. I particularly enjoyed the descriptions of thought, planning and ingenuity that went into the genesis of the Theory and Simulation of Materials Centre for Doctoral Training.

Also interesting are process failings Sutton identified that lead the TSM CDT to lose its funding. The book concludes on an optimistic note with a proposal for an alternative funding model for future programmes. Rethinking the PhD should serve an example to funders and policy makers looking for ideas on how to put together an exceptional programme for PhD education.

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Amazon Customer

5.0 out of 5 stars A really insightful book about the new PhD  
Reviewed in the United Kingdom on 3 February 2020

I benefitted enormously from my studies as a PhD student of the TSM-CDT and so it was great to revisit those experiences in the advice given here. This is a really insightful book for anyone interested in the best practise for how to create and run a PhD programme.

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Thomas Swinburne

*5.0 out of 5 stars* How to train postgraduates

Reviewed in France on 3 February 2020

I am a beneficiary of the TSM-CDT which Prof. Sutton did so much to instigate, and whose inexplicable closure lead to the writing of this powerful book. As is clearly and concisely described, the truly interdisciplinary environment of both the MSc training year and the diverse interests of my peers on the same program gave me an invaluable sense of orientation in the research landscape. I remain incredibly grateful to have been a participant, and hope that this book will help prevent future mistakes in the funding of postgraduate training.

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Professor Alexei Kornyshev

*5.0 out of 5 stars* A new way of training PhD students, fit for 21st Century

Reviewed in the United Kingdom on 12 April 2020

This small book is written by a theorist, Professor Adrian Sutton, FRS, specializing in applications of theoretical solid state physics to material science and engineering. Professor Sutton is an internationally renowned figure in physical material science with pioneering, seminal contributions to understanding the interplay between the electronic structure and stability, structural and physical properties of materials. But the book itself is not about any specific aspects of physical material science. It is about the way of breeding new generation of scientists who will be working in this area.

The book tells us the story of an interdisciplinary Centre for Doctoral Training in Theory and Simulation of Materials (TSM CDT), which was founded by Adrian Sutton in 2009. The Centre is set in South Kensington Campus of Imperial College London. It is linked to Physics Department of Imperial and gives PhD degrees in Physics, but several London institutions are associated with it (e.g. UCL), as well as other Departments of Imperial – Materials, Chemistry, Chemical Engineering, Mechanical Engineering, etc, with project proposals and supervisions coming from them.

This CDT will still run the next two years, but then it is to be shut done, due to the termination of funding; why this has happened to this highly CDT is a separate issue, a mystery, intensively discussed in other reviews of this blog.

Presenting the full story of TSM CDT as a founding Director, the author describes it as an model example of what a modern PhD course in applied physical sciences could be (actually, any modern PhD course in exact sciences), and what difference it can bring for growing each year a new cohort of students, trained in a completely new way, to meet the challenges of the 21st Century.

I am not going to disclose any further details about it – just read this excellent book! I just want to note that being myself involved in teaching, recruitment, and scientific supervision of students of TSM CDT, and thinking that I am familiar with all the ideas underpinning its functioning, I learned for myself many important new facts about it. In particular I learned about the fate of its PhD graduates, whose further development, as well as scientific achievements during their studies, are the main criteria of success of such enterprise.

The book will be invaluable for anyone who cares about professional preparation of scientists and looks into new, up-to-date scenarios of their training. It contains a lot of practical ideas that could be taken on board by those academics who could be thinking to create such centers in their Universities, as it unravels the anatomy of perhaps one the best possible models for it. The author also compares the TSM model with other models of postgraduate training in the UK and worldwide, so it will be relevant not only for British readers. It will be interesting for undergraduate students, thinking about postgraduate courses; they will get a flavor of new models of PhD training and research (which that kind of CDTs could, ideally, offer), and how much the students could benefit from being admitted to such CDTs, for their future careers.

Although there is a lot of insider information in the book, it goes far beyond it. As much as “One

Hundred Years of Solitude ” of Gabriel Garcia Marquez is not just about a Colombian town of Macondo, the book of Professor Sutton is much more than the story of one particular CDT.

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Marianne Talbot

[5.0 out of 5 stars](#) A shocking decision that will have a far-reaching - and negative - impact on UK PLC  
Reviewed in the United Kingdom on 13 April 2020

In this short written-from-the-heart book Professor Adrian Sutton, founding Director of Imperial College London (ICL), Centre for Doctoral Training (CDT) in the Theory and Simulation of Materials, describes the genesis of his CDT in 2009, the huge success it has had in the ten years it has operated, and the shock he felt, in 2018, when the EPSRC refused an outline proposal for continued funding. I taught ethics to all the cohorts of the TSM CDT and am aware of how extremely lucky the students were in having been accepted to study there.

Professor Sutton wasn't the only person to be shocked by the EPSRC's extraordinary decision. He quotes letters from captains of industry, stars of academe, former students and others who, over the years, interacted with the CDT, whose shock was just as deeply felt.

To add insult to injury, the EPSRC refused to give any specific feedback on just why it had rejected the proposal. Professor Sutton explains the selection criteria the EPSRC was openly using and how the TSM CDT undoubtedly met each criterion. He also emphasises the fact that the EPSRC had given the TSM CDT glowing reviews at each of the two mid-term reviews of the CDT, but refused access to these reviews to those peer reviewing the outline proposals. He notes also that whereas, in the initial proposal for the CDT, it was obvious which funding stream to apply for, it wasn't so obvious in 2018. He expresses regret that it seemed likely that those reviewing the proposals would not include anyone who had knowledge of, or an interest in, the theory and simulation of materials.

Having described the shock waves emanating from the EPSRC's decision, Professor Sutton describes various attempts to get the EPSRC to reverse their decision. ICL appealed the decision, several industrial partners wrote strong letters of complaint to EPSRC and Rolls-Royce even sent a delegation to the EPSRC. At an advisory board meeting in July 2018 all the industrial partners serving on the board made their dismay plain to John Hand, the Lead in Physical Sciences at EPSRC.

But the EPSRC remained implacable.

To read Professor Sutton's book is to come to understand why, until 2008, the PhD in theory and simulation of materials wasn't fit for purpose, how the TSM CDT changed that, and why its having done so is of such value to industry, to academe and indeed to the country. It is to believe, with him, that the EPSRC's decision was – to say the least – fickle, and it is to wish, against all the evidence, that the EPSRC might yet be persuaded to change its mind.

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R. Broadbent

[5.0 out of 5 stars](#) An excellent discussion of the how a PhD program should be setup and run  
Reviewed in the United Kingdom on 27 April 2020

As a member of the first cohort of PhD students in the program Adrian Sutton lays out I have a different perspective on many of the topics covered to many readers. I remember going for my interview in the days before the questions were published, my background was a joint honours degree in Mathematics and Physics, where I'd looked mainly at General Relativity, I'd not really considered a more applied field; however, the interesting topics highlighted on their website led me to apply. In the interview the passion of the panel for their subject showed through, that passion shines through in Adrian's discussion of the program.

I chose my career in Rolls-Royce as a direct result of the people I was able to meet through the PhD program Adrian describes. Whilst I naturally learnt a lot of technical skills during my PhD, the collaborative nature of the program and the skills in breaking problems down and working on them together with others were by far the most valuable. I use what I learnt from this style of PhD in my

work everyday. That collaborative working and breaking down of complex problems is something that the environment Adrian describes in the book naturally creates which is missing in many PhD graduates.

I'm very grateful to the team for creating the program the book describes and I think anyone considering a PhD or setting up a PhD program should read this book.

Dr. Richard Broadbent (CDT-TSM cohort 1)

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Peter Knight

*5.0 out of 5 stars* How we need to rethink skills provision in UK science

Reviewed in the United Kingdom on 2 June 2020

Adrian Sutton pioneered the concept of Doctoral Training Centres at Imperial, and brought enormous energy to the concept of how to prepare PhD students better for future careers, He was assiduous in developing transferrable skills training, links to the wider world of industry and technology and fostering a true spirit of cooperation especially in multidisciplinary subjects. During this time I was in a senior position at Imperial and able to assist Prof Sutton whose vision I totally endorsed. This book describes the journey Sutton took in building a wonderful scientific base for skills and training, and its very sad and quite premature demise. It's a salutary read, and lessons learnt here are germane to how we are to produce a technologically aware community of future leaders. You can read it in one sitting but will I believe have a real impact on readers and hopefully inform decision makers on how to do better in the future. It was a grand experiment and deserved so much better!