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Book Reviews

The Wealth of Networks: How Social Production Transforms Markets and Freedom

Yochai Benkler

New Haven and London, Yale University Press, 2006, xii + 515 pp., US$40.00, ISBN 0-300-11056-1 cloth

This is a visionary book written by a man on a mission. It articulates one possible answer to the question of what might come after the proprietary-based knowledge-based economy that currently exists in advanced countries. Benkler is professor of law at Yale Law School and one of the most ardent proponents of the open source movement and the information commons approach. He argues that a new form of economy might be emerging, i.e. the 'networked information economy', in which *nonmarket and nonproprietary commons-based peer production* (i.e. '*social production*') and exchange of information, knowledge and culture play a central role. This has become feasible because the capital required for social production and exchange in the networked information economy is relatively cheap and widely distributed.

Much of the book argues the perceived advantages of the networked information economy from a multi-disciplinary and liberal political perspective, and the numerous threats endangering the realisation of its potential. The incumbents of the existing proprietary-based 'industrial information economy', in particular Hollywood and the recording industry, have to loose much and only social practices and political action can prevent them from strangulating the fledgling networked information economy through over-regulation. A recurring theme throughout the book is the plea to keep open access, as much as possible, to information and communication infrastructure, to existing information, knowledge and culture, and to the creation of new information, knowledge and culture. In short, information wants to be free, needs to be free, and the resources necessary to produce and exchange it should be available to everyone.

The book is divided into an introduction and three major parts. Part One consists of three chapters that describe the technological–economic transformation making the new production practices of the networked information economy possible. Chapter Two introduces some of the basic economics of information production and innovation. It covers basic features of information as an economic good, like non-rivalry, that make it a candidate for nonmarket production, and

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some basic ideas about knowledge accumulation (like the 'standing on the shoulders of giants' argument) that indicate the dangers which overly restrictive patent and copyright laws might pose to future knowledge creation. Most of the material is well-known, but central as building blocks for the main arguments put forward in the book.

Chapter Three looks closely at social production and exchange, discussing open source software production, as well as many non-software related collaborative projects like Wikipedia, public resource computing projects like SETI@home, peer-to-peer file-sharing platforms like Napster, KaZaa, the application of sharing-based techniques to communication, e.g. Skype. They seem to reflect the state of affairs at about the middle of 2004. Many of these phenomena depend on participants having systematic excess computing capacity available. Business models that might make such excess capacity superfluous, such as 'computing on demand', or that make widespread commercial distributed computing feasible, are potentially a major threat to the core of Benkler's networked information economy. At best, they are briefly mentioned in the book. The next chapter provides answers to three puzzling aspects of nonmarket (especially peer) production from an economic perspective: why do people participate? Why now, why here? Is sharing of material and non-material resources via the Internet (computing power, creativity etc.) 'efficient'? Benkler introduces the reader to some of his specific vocabulary associated with 'sharable goods', like modularity, granularity and lumpiness. However, the discussion is not as extensive as in some of his earlier articles.[1]

Part Two is by far the largest part of the book, containing six chapters that are both descriptive and normative. They deal mostly with the social and political opportunities that have arisen due to the transformations described in Part One, but the realisations of which are by no means inevitable. It elaborates why, despite being enabled by technological changes, the networked information economy is not determined by them. Chapter Five discusses the networked information economy's potential to increase individual autonomy, thereby remedying the loss of agency that was imposed by the industrial economy. Amongst other things, Benkler discusses the advantages of commons-based wired and wireless infrastructure compared to their proprietary versions. He sees commons-based wireless systems as the primary legal form of communications capacity that does not systematically subject its users to manipulation by infrastructure owners. The networked information economy also leads to a radical increase in the number of information sources. In this context the author addresses two critical objections to his vision, i.e. quality concerns and the issue of information overload (the Babel objection). These are serious and hotly debated issues, but commons-based peer production itself is beginning to show how they might be overcome.

The next two chapters focus on the possible contributions of the networked information economy to an improved public sphere. Benkler's discussion extends the well-known debate about the democratising effects of the Internet. Chapter Six first postulates the design characteristics of a communications platform for a liberal public sphere, before critically reviewing the role of the mass media in the twentieth century and earlier. The focus is mostly on US media history, but some developments in other countries are also mentioned. The chapter should be a useful item on a media studies reading list. One shortcoming is the sometimes insufficient referencing. For example, Harold Innis, Alfred Chandler, James Beniger, Eli Noam are mentioned, but no references are provided.

Chapter Seven discusses how the dominance of the industrial information economy's mass media model is being challenged by the emerging networked information economy, and how these developments have the potential to alleviate the worst weaknesses of the old model. Citizens need no longer be passive consumers and spectators, but can become active participants. Basic communication tools like email, mailing lists, the World Wide Web, and blogs are discussed, as well as interesting case studies about the 2004 US election. This is followed by an overview of findings from research on Web typology, small world phenomena etc. Next, the argument is put forward that peer production also produces the public watchdog function in the networked public sphere, and examples of distributed political action are given. The chapter finishes with an interesting discussion of how networked communications can work around authoritarian control, using examples from the former Yugoslavia, Iran, China and, as extreme outlier or exception to prove the rule, Myanmar.

Benkler also tries to contribute to political theory. He argues in Chapter Eight that cultural production and exchange should be seen as legitimate subjects for normative evaluation within liberal political theory and that in the networked environment they are attractive developments from the perspective of such theory. A large part of the chapter is descriptive, providing many examples of new forms of cultural production. The core contributions of the networked environment to increased transparency of cultural symbols and the openness to alternative views is illustrated by a Google search for the cultural meaning of the Barbie doll. Many readers fed up with market-dominated culture will be delighted to know that there exists a Barbie Liberation Organization! Like in the case of information and knowledge production, there is the danger that freedom of cultural production in the networked information economy might become severely restricted due to the power of industrial information economy incumbents in shaping the regulatory environment.

Chapter Nine is even more ambitious. The author tries to establish the positive impacts of social production and exchange on issues of justice, economic development and human welfare. The topics covered range far and wide, from liberal theories of justice to information-embedded goods and tools, from Amartya Sen and the Human Development Index to a variety of commons-based solutions to economic development, including sector specific analyses and issues like software production, scientific publication, food security and production of and access to medicines. The basic claim that the networked information economy provides new paths to improving human welfare is well argued, but Benkler is no specialist in the vast literature on economic development, or the more specific one on the role of information, and of information and communications technologies, in development. Experts in these fields might feel frustrated by the few aspects of these highly complex issues that are highlighted by the author.

The next chapter reviews the social science literature on the effects of the Internet on social relations, i.e. on community and family. Increased individual autonomy is central to Benkler's claims about the networked information economy. He therefore needs to counter the possibility that more Internet use leads to social isolation, alienation and destruction of social capital. Again, the story he weaves seems convincing. People use the Internet mostly for strengthening pre-existing relationships and for establishing some limited-purpose, loose relationships, the later being important for social production and exchange. However, social capital experts may find the coverage of the literature somewhat selective, and a non-expert may be annoyed by Benkler mentioning, for example, seminal authors like James Coleman, Mark Granovetter and Robert Putnam, without providing references to their work.

Part Three of the book consists of just two chapters, a long chapter detailing the battles over the institutional ecology of the digital environment, and a concluding chapter summarising the main arguments made in the book. Chapter Eleven provides an overview of how law and policy are being shaped in response to the developments discussed earlier in the book, and how this affects the production, use and exchange of information etc. Numerous struggles shape the institutional setup in which the different production and exchange modes compete. For the potential gains in autonomy, democracy, critical culture, justice, human development etc. associated with social production and exchange to be realised, the institutional setup of a society has to create space for these activities so that they can become more than fringe practices. Benkler is correct to emphasise the co-evolution of law, technology, behaviour and social practices, but I was disappointed to see no references to the large institutional economics literature that exists on this topic. As in many parts of the book, Benkler uses interesting and sometimes colourful examples to make his points. For example, he discusses how the law dealt with an artist's video showing US president George Bush and British prime minister Tony Blair lip-synching a love ballad, and the legal treatment of shopbots.

To sum up, the book should be of interest to a wide readership, i.e. anyone concerned about the future of the knowledge-based economy, and economic, social and political alternatives to the current market-dominated model. Benkler makes the reader look at advanced capitalist economies and societies in a new way. The book, although sometimes repetitive, is full of interesting facts and new perspectives on the networked information economy and its struggles with the industrial information economy. Whether social production and exchange of information, knowledge and culture will be able to secure enough space to warrant the label networked information economy and society remains an open question.

The breath of topics covered and the multi-disciplinary nature of the book imply that often only a selective review of the literature is given. This is counterbalanced, if not more than compensated, by providing the broader picture which would not be visible from a narrower disciplinary perspective. Somewhat more surprising is the neglect of some prominent US based researchers who have worked on a number of the major issues raised in the book. For example, Paul David isn't mentioned anywhere, despite his prominent work on open science and open source. Benkler definitely comes across as a man on a mission who is more concerned with getting his basic message onto a big canvas than providing an academic tome that aims at a representative coverage of the relevant literature.

The phenomena associated with the networked information economy highlighted by Benkler, and the hypotheses put forward, deserve further theoretical and empirical analysis by others based in a variety of disciplines. Some readers might interpret Benkler's networked information economy to foreshadow a new form of (information-based) socialism. However, the industrial information economy and the networked information economy are just two extreme cases, leaving many in-between possibilities. For example, an alternative not properly explored in the book is that social production and exchange, or something similar, might increasingly be taken up by commercial businesses, producing new synergies between proprietary and non-proprietary modes. Elastic Compute Cloud, the new venture by Amazon.com which is spearheading that company's latest transformation, comes to mind, as do many examples of peer-production within companies. Alternatively, what emerges might transcend both capitalism and socialism, constituting a shift to a truly new type of socio-economic system.[2] There is a need to relate Benkler's work

to the institutional economics literature on varieties of capitalism etc. to which it contributes. There is also a need for empirical research, for example on the relative economic efficiency of social production and exchange systems for information, knowledge and culture, over market-based systems, and for specific studies of the motivational factors underlying social production and exchange projects.

True to his mission, Benkler has made the book, and many of his other publications, available for free on the Internet. The interested reader is referred to the *Science Commons* reading room of the *Creative Commons* website at http://sciencecommons.org/resources/readingroom.html, which links to Benkler's website at http://www. benkler.org/. Many of the references used in the book are also available from *Science Commons*.

Notes and References

1. I recommend the following publications to anyone interested in Benkler's economic methodology: Yochai Benkler, 'Coase's penguin, or, linux and *The Nature of the Firm*', *Yale Law Journal*, 112, 3, 2002, pp. 369–446; and Yochai Benkler, 'Sharing nicely: on shareable goods and the emergence of sharing as a modality of economic production', *Yale Law Journal*, 114, 2, 2004, pp. 273–358.
2. For an example of a search for the latter, see Geoffrey Hodgson, *Economics and Utopia: Why the Learning Economy is not the End of History*, Routledge, London, 1999.

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Solar Revolution: The Economic Transformation of the Global Energy Industry

Travis Bradford

London, MIT Press, 2006, xvi + 238 pp., US$34.00, ISBN 026202604X hbk

Alternative Energy Resources: The Quest for Sustainable Energy

Paul Kruger

New Jersey, John Wiley & Sons, 2006, xix + 248 pp., UK£42.50, ISBN 13:978-0471-77208-8 hbk

The Science and Politics of Global Climate Change: A Guide to the Debate

Andrew Dessler and Edward Parson

Cambridge, Cambridge University Press, 2006, ix + 190 pp., US$34.99, ISBN 0521539412 pbk

A Refreshing Re-look at Renewables

When *Scientific American* (September 2006) has a full edition devoted to it, when Ice Age II 'The Meltdown' entertains our children, and when the weather remains the

most talked about topic of human conversation, it is timely that there has been a rash of books about climate change, alternative energy technologies, and what to do with the challenge of implementing a 'carbon constrained economy'.

The three books listed above cover renewables for a variety of audiences, with some overlap and complementary relationships between the chosen subject matter. Two are about the technologies likely to transit us from a fossil fuels economy to an energy economy based on renewables. All three cover climate change. This field is ripe for PhDs that relate science and technology in action to the challenges that arise when science meets policy and politics. It is of interest to look at the already evolving reflections on the 'controversy', while we are in the thick of the debate itself. Consensus seems to be building, not just for recognition of the 'climate problem' but also with regard to the need to act now. Yet, incommensurable positions are revealed when it comes to how much money to invest and in what. Bradford's *Solar Revolution* and Kruger's *Alternatives* help guide some of this thinking, while Dessler and Parson's *Guide* tours the territory, introducing the players and the challenges.

Interestingly Bradford, for all the pro-solar stance that he takes through his book, claims he did not start off with the premise of the 'inevitability of solar' but with an attempt to view the broader momentum of the energy industry and how it might be shaped by the influence of future trends. Having noted this, the book is not a 'little red book' on the merits of solar, so much as a walk through the issues facing it, the technical and financial barriers still against it, and finally an exploration of its 'inevitability'.

Bradford does ask the obvious and engaging questions such as 'is there enough solar energy to meet our needs?' or 'shouldn't we focus on more immediate alternatives?' He may shock some with the response that we can hardly afford to forgo the 'enormous wealth effects' of accelerating into the solar paradigm, which is not the usual pitch. Bradford argues that developments in silicon-based photovoltaic technology point the way towards a cost-effective solar energy. Certainly, if one looks at Australia's latest overnight billionaire—who is sustained by wealth created from supplying a solar revolution occurring in China—one can see where Bradford is coming from. And the wealth that could be unleashed from a huge reservoir of energy, which remains ineffectively tapped, could reshape economic development in the decades ahead.

As someone who has moved from a pro-solar stance to a state of scepticism over its short- to medium-term economic applicability over the past few decades, I found myself convinced by the basic and simple tenets of Bradford's book. We may well be on the edge of a silicon revolution in which photovoltaic power redefines the planet's patterns of energy consumption. While the developing world does not represent the whole picture, Bradford could have placed more focus on the less industrialized regions. Notwithstanding difficulties with obtaining relevant data, it could be argued that far more exciting, indeed quantum, leaps in technology use are occurring there—as opposed to the more data rich and detailed but relatively steadier economies of Germany, Japan and the US.

Whereas Bradford claims that developments in photovoltaic solar power herald a second silicon revolution, Kruger argues that we are on the edge of a hydrogen-nuclear revolution, where nuclear energy supports the production of hydrogen and the 'hydrogen economy'. Possibly solar, nuclear and hydrogen will evolve together, and Kruger with his broader perspective on alternatives would note this as highly likely—with all three synergistically re-enforcing one another by the mid-century and beyond.

As a tech-text book, Kruger's is as good as it gets as a condensed 'nuts and bolts' guide to the terrain. Don't expect depth, although there are sufficient formulas and equations and graphs and data that will mind boggle anyone half allergic to a quadratic equation or sine curve (Boltzmann equations, Ohm's law, the Carnot cycle … they're all in there). He covers tidal, geothermal, wind, solar, biomass, nuclear fission and fusion options, as well as the status quo. There is a good and useful list of references after each succinct chapter. This book might most suit undergraduates as well as those wanting a semblance of a more technical dealing with the issues—and the background logic to them—versus a more discursive treatment of the topic.

Kruger's style is also unique and refreshing: each issue is addressed in blunt and straight-talking terms. Although Kruger's premise that the 'hydrogen economy' will supersede the carbon economy may be debated for some time yet, as might the assumptions that are implicit in his technical arguments about a hydrogen cell transport-driven sector and a centralized fusion or fission generation capacity to feed it, his view on energy demand needs to be engaged with.

Too often, there is talk that the only sustainable path forward for the world of humans is to limit energy use and drive efficiencies in use to cap demand. Kruger states, up front and straight, that there is a predictable, almost certain future of world energy demand: it is going up up up to feed, not only the insatiable desire of the existing developed world (although this still continues), but also the 80% of the world population whose energy consumption levels are nowhere near the likes of those who read publications such as his book. In his typical stirrer style, Kruger states what he calls Axiom 2, upon which much of his life's work, and this book, is based: 'Fundamental human goals include the desire for (1) a *pleasant habitat* defined here as a clean and safe environment and (2) a life of *comfort and ease*, defined here as abundant energy on demand'. According to Axiom 2, everyone is an environmentalist (p. 5).

At this point two related arguments could be made, and should be made, as a counterweight to the Kruger case. One stems from the inefficiencies of power transmission, while the other concerns the very nature of how energy flows in differing cultural and engineered environments. Both weigh heavily on how much energy per unit of work needs to be generated for future needs. Compare for example centralized power generation with all its consequent losses (greater than 80% by the time it travels from being dug up in a pit to being delivered to your laptop computer battery) with the new way of leapfrogging grid distribution by going solar, utilizing units that are localized (solar on roofs in China, biomass generators in Sweden). Coming back to Bradford: 'the old cost-of-generation metric does not work reliably anymore […] when comparing potential forms of electricity generation' (p. 125).

Even so, Kruger still points out what is possibly the less aesthetically desirable, but nonetheless most likely, course in the coming decades: a mixture of more localized, non-centralized systems combined with a *massive* increase in centralized, mega-sized generators. Kruger argues that the latter will feed the growing need for battery and hydrogen cell refuelling among other demands. His arguments and (quite plausible but often ignored) assumptions of 'inevitability' must be faced by those involved in policy setting and political agendas, as well as those in scientific and engineering fields. It is no use simply being theoretically correct about these things.

And that brings us to our last book, which is an important read for those involved in policy setting as well as those interested in a still fresh and steaming

review of the science and politics (or is it the politics of science?) of the climate debate. A very careful, calm and calculated understanding of this issue is vital to constructing reasoned judgments about the economics of the technological innovation outlined in the first two books above. Andrew Dessler and Edward Parson's *The Science and Politics of Global Climate Change: A Guide to the Debate* will assist those who want to develop their perspective on climate change. Although it is brief (hurray some will say) and does not weigh in heavily on technical details, this could be a consequence of the book's intended audience and the need to translate technical science into more digestible bites for the 'policy rat on the run'.

All of the books are reliable reads. But how might they fit into your library or resonate with the interests of scholars who work in these domains of study? Bradford's book is fresh and punchy and provides a modern view on solar possibilities, one that combines a financial perspective with a vision of what may, rather than will, lie ahead in the coming two decades. It is short on technical details and more into persuasive argument with the added weight of finance as an ally, which (for obvious reasons) has hitherto been little utilized by the solar sector. Kruger's book sits in the mix as a short and dense technical overview of the field of energy and energy generation by a technically and academically qualified expert. Both these books, of course, have the requisite broad-context overview—reflecting on the shift from ancient to modern times and the concomitant trends in energy use, along with a review of the broader field of energy generation, before delving into their own pet areas.

Possibly because we are still in the thick of the climate change debate, Dessler and Parson's comes across as a short-lived text for the more specialized student of 'science in action' or those policy people who need an overview to guide them through the science of the debate, without taking the time to dig deep. Those wondering what to do if they work in policy or politics, or simply wish to be informed, would be best served by picking up Bradford's book for the light it will throw on modern solar possibilities and where we are heading. While those who have the inclination and capacity to digest a brief, but dense, account of all the technological options in our bag could venture into Kruger's book. Certainly, those whose digestive juices respond well to technical information, or those who feel the need to grasp the technological fundamentals, might find that Kruger's book is the pick for the reference library or the undergraduate's ideal companion.

Possibilities projected by Bradford's view of solar and Kruger's view of hydrogen take us into the next decade and beyond, where we might see more clearly that the fossil fuel era was a blip—albeit a major blip. All three books highlight the ever-present chant that 'diversity' among energy sources and applications is the key to a sustainable and profitable future. However, the present focus needs to recognize that we are far from realizing the desired degree of diversity. Indeed, we are so overly weighted to the centralized transmission of fossil fuel generated energy that much has to be done to achieve a balance of diversity appropriate for a sustainable future for the planet. Here's to more of the educative and visionary publications of the likes of Bradford and the scientifically informative of the Krugers of the world. Perhaps attempting a Guide to the Debate, while Rome burns, is simply too challenging a task while debate remains hot and evolving by the minute. It will certainly have its interested parties—if for no other reason than that the topic is hot—and there is a need to take a removed and calm look at things.

Much more analysis will be needed, along with the recommended actions, before we see some renewably fuelled light at the end of the climate change tunnel.

A 'do nothing' response is now recognized as no option (however much you could be excused for thinking otherwise when watching actions, and lack of actions, of politicians and other principal players). To be sure, there are evident gaps, if not anomalies, in our understanding of the risks we are now facing if we remain wedded to the prevailing paradigm of 'dig it up or suck it out and burn it'.

At least the incommensurabilities are not so much about whether we should act, nor whether an excess of carbon pollution threatens our hoped for fair-weather horizon. Rather, the issue is how to act and the degree to which we should invest in and pay for this now. In their own way, each of these three books throws light on the broader topic and, importantly, each reflects on positive possibilities for progress. But achieving Kruger's Axiom 2, in our own twilight years and the years of our descendents to come, involves action—and choices.

By way of postscript, I must declare my own involvement with a company, producing biomass for energy. My coloured lenses suggest that progress lies in a carbon constrained economy, with a carbon trading system and mandatory renewable targets, along with incentives for investment in new science and technology that promotes the discovery and development of more effective and promising sources of renewable energy.

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Blink: The Power of Thinking without Thinking

Malcolm Gladwell

London, Allen Lane, 2005, viii + 277 pp., UK£25.50, ISBN 0316011789 hbk

The Wayward Mind: An Intimate History of the Unconscious

Guy Claxton

London, Little, Brown, 2005, xi + 401 pp., UK£12, ISBN 0316724513 hbk

I was recently running a seminar on knowledge management as part of an MBA programme. Over the lunch break, a senior manager from a telecoms company mentioned *Blink*, Malcolm Gladwell's recent book. An equally senior manager from a large London law practice said that, in his opinion, Claxton and not Gladwell had got it right. A heated discussion ensued on the nature of the unconscious mind and it turned out that everyone at the seminar had read or read about Gladwell's book and more than half had read or read about Claxton's. So what, you might think: good media relations by their publicists! The fact is that the year before I was treading on thin ice even raising the possibility that senior managers might want to know more about the unconscious mind. So, what is it about these books that has made the unconscious mind acceptable?

Undeniably, both books are extremely well written and researched. They will make you smile, even laugh out loud, and provide you with anecdotes that you can relate to an appropriate captive audience. The preface to *Blink* describes Gladwell

as an 'author, journalist, cultural commentator and intellectual adventurer' and the book has a journalistic, adventurous feel to it, with colourful descriptions of people and events and excellent sound bites. 'Blink' refers to rapid cognitive processing done in the blink of an eye—the first two seconds. 'Thin slicing' is our ability, in our area of expertise, to take a small amount of knowledge about a situation and make very accurate decisions. There is a 'secret life of snap decisions', which Gladwell explores using examples from sports coaching, sales, marriage guidance and Pentagon war games. Claxton is described as an 'internationally renowned writer, consultant, lecturer and academic … he has a double first in Natural Science … and a doctorate in Psychology'. Not surprisingly then, *The Wayward Mind* is structured following a chronological and thematic approach to the development of attitudes to the unconscious mind. Claxton draws on a huge range of disciplines including art and literature, sciences and theology, which could easily confuse and lose his readers. However, he has a lightness of touch in his writing that brings to life his subject: for example, in the Middle Ages,

> People had a body, a mind and a spirit or soul, though precisely what the relationship was between these ingredients was unclear, and you didn't ask. Very clever holy people argued about this, and they told you what the answers were (p. 89).

Claxton shares with Gladwell an ability to choose headings that make you want to read on: 'The Beast in the Basement' captures the early psychological approach to madness and its connection to the unconscious mind, repressed desires and sex. Gladwell's 'Seven Seconds in the Bronx' heads up his chapter on the disastrous consequences of inappropriate 'thin slicing' and making the wrong snap decisions. In many ways that is where the similarity ends: although both books are about the unconscious mind, they take a very different perspective on what it is all about.

Gladwell's focus is on decision-making and in particular the 'power of knowing, in that first two seconds' (p. 16). He intends to put that power under a microscope so that we treat our intuitions more seriously. He believes that this would create a fundamental change in the world, including in the way that wars are fought, products are sold and people are counselled, trained and interviewed. In particular, he explores the difference between rapid decisions that are accurate and those based on prejudice and stereotype which are inaccurate. The notion of 'thin-slicing'—'the ability of the unconscious to find patterns in situations and behavior based on very narrow slices of experience' (p. 23) is central to this book. Examples of accurate 'thin-slicing' include art experts who knew within the first few seconds of being in its presence that a statue bought by the Getty Foundation was a fake; professional gamblers who, under test conditions, picked up that a particular deck was loaded within seconds; a tennis coach who could predict double faults before the ball left the racket; and researchers who can study a couple interacting for a few seconds and predict accurately whether their marriage would last or not. He links this ability to the idea that every Morse code operator has a 'fist'—a particular way of spacing or stretching out the dots and dashes that is unique to them. In World War II, the British used this knowledge to enable them to track the different German Morse code operators around Europe. Although their interceptors couldn't understand the German code, they could identify the individual operators from their 'fist' and track the movement of troops from this. So using this analogy, Gladwell believes people work out the 'fist' that is important in their work and 'thin

slice' based on their particular version of it. In some cases, people know what the 'fist' is—for example, Gladwell quotes John Gottman's work on successful marriages in which he has identified that contempt expressed by either party when discussing an issue of importance to the couple is a predictor of marriage breakdown. Gottman and his researchers therefore 'thin-slice' for that 'fist'. In other cases, people—the tennis coach, for example—cannot identify the 'fist' although they can still thin-slice with accuracy. Gladwell puts this ability to thin slice, without knowing on what you are thin-slicing, down to the fact that this part of your mind is behind 'The Locked Door'. (Interestingly, Claxton would almost certainly take issue with him on this.)

The analogy of a locked door leads Gladwell into a discussion about the 'dark side' of snap decisions and the role that prejudice and stereotyping can play in snap decisions. He cites the example of US President Warren Harding, who was apparently tall, dark and handsome and very popular with the voters but a disastrous president. He explores how our current ability to capture and analyse huge amounts of information can make us miss the obvious and overwhelm our ability to 'thin slice'. An intriguing example is the Pentagon war game, in which the Blue Team, who had enormous processing and analytical capacity and superior forces, suffered a defeat at the hands of the Red Team, who worked out what the Blue Team would least expect them to do and did it. The climax of his discussion of the dark side is the chapter entitled 'Seven Seconds in the Bronx' about the killing of Amadou Diallo, an unarmed black man entering his home apartment block, by four white plain clothes police officers, who thought he was armed. This is powerfully written, thought provoking and deeply unsettling. However, strangely enough the very concepts of 'thin-slicing' and 'fist' that Gladwell introduces, leave the reader feeling instinctively that he hasn't thin-sliced accurately and has muddled several fists into one. Surely there is a difference in process between the snap judgements made by people with expertise in a certain field; the taken for granted opinions shaped by popular culture, advertising and political marketing; and the responses of people in a fight or flight situation fearful for their life?

So, does *The Wayward Mind* provide some answers? In his opening chapter setting out the purpose of his book, Claxton describes current thinking:

> Taken as a whole, our current folk psychology is a jumble of different, incompatible notions that we draw on in an ad hoc way. It is a Heath Robinson machine assembled from the remains of a dozen different traditions by a bunch of clowns.

He regards it as 'time to tell a more elegant tale, one in which the different subplots of the unconscious are given greater prominence'. Accordingly, *The Wayward Mind* sets out to tell such an elegant tale. Claxton demonstrates both a chronology in the development of thought about the unconscious forces that govern us and the way in which past theories and concepts shape our current attitudes and thought.

He starts with the underworld of Ancient Egypt when the Sun God Ra entered the body of Apophis, the evil but life-giving serpent, each night to emerge the next morning, reinvigorated by his nightly challenges. Similarly, the gods beamed messages and warnings to mortals through their dreams that would help them enter the coming day renewed and refreshed. According to Claxton, such beliefs were part of the dominant belief systems of the time but also due to a human need

for security and stability—if a god controlled the weather we could seek to appease him or her no matter how capricious they turned out to be. Claxton tracks this desire for reassurance in a chaotic world from Ancient Egypt into the monotheistic religions, and what he labels the invention of the soul, where good would be rewarded and evil punished, through the Middle Ages when the Church told people what to do and think, into the Renaissance and Age of Reason and beyond. He shows how the desire for certainty and the wish to put the responsibility for uncomfortable or uncontrollable urges outside ourselves lives on in twenty-first century attitudes to the unconscious mind.

The book tracks in detail the development of three different kinds of explanations of the unconscious mind: the supernatural, physiological and psychological. In the supernatural explanation, the mind is commandeered by the gods. In the physiological, imbalance is caused by imbalance in the body—originally the notion of humours, black bile and choler and more recently the concept of changing levels of neurotransmitters and activation and inhibition in the frontal lobes of the brain. The psychological approach, which has some antecedents in pre-Christian times, but is a much more recent approach, began with the recognition that humans develop systems to aid their survival and wellbeing. Claxton is fairly dismissive of the psychological approach to describing the unconscious and in his final chapter he paints an amusing but worrying picture of the state of current thinking:

> And various versions of the unconscious, construed as the dissociate rumpus room or the locked ward of the mind, live happily on in our language. We have a super-ego to explain our guilt; an id to cause our neurosis and 'repressed traumatic memories' to account for our bad behaviour; a collective unconscious to generate the symbolism of myths and dreams. And now we have brain states as well, to help us sort out when we are puzzled by ourselves: serotonin imbalances, frontal lobe dysfunctions and (my favourite) 'minimal brain damage'—so slight you cannot see it, but definitely there, or those kids would not be so unruly (sorry, 'hyperactive') (p. 339).

So where does this leave us apart from Claxton displaying some of his prejudices? His conclusion is that rather than the unconscious being a rapid cognition processor as envisaged by Gladwell, 'the unconscious brain–body context system (brain for short) is in charge not just sometimes but all the time' (p. 340). He goes further. The brain creates two types of activity—'physical effects and mental experiences'. These are intricately interconnected: a change in the physical produces a change in the mental and vice versa. He suggests that consciousness is like a car dashboard that gives us an indication of what is going on in the car and is activated when something makes us focus on one of its indicators—these types of situations include when we have to be right, when the unexpected happens or when we are made to feel self-conscious. The rest of the time, we should relax and enable the brain–body to do its thing and get on with life.

As I began by saying, these books have done us a service in making it OK in the business world to read about and talk about the unconscious mind but have they done any more than that? Gladwell has popularised a language of 'thin-slicing' and 'fists' which is helpful in discussing quite complex concepts and Claxton has shown that our modern ideas about the unconscious aren't very modern at all and owe much to gods, beasts in the basement, the metaphors we use and the stories we tell.

Interestingly, neither author comes near to explaining what the unconscious mind is except through metaphor and analogy—ah, but isn't that the unconscious mind speaking its natural language!

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Cashing in with Content: How Innovative Marketers Use Digital Information to Turn Browsers into Buyers

David Meerman Scott

Medford, NJ, Information Today, Inc., 2005, 280 pp., US$17.22, ISBN 0910965714 pbk

Information Politics on the Web

Richard Rogers

Cambridge, MA, MIT Press, 2005, 216 pp., US$35.00/UK£22.95, ISBN 0262182424 cloth

Is a good website like art? Is it something that should engage the serious attention of a connoisseur? Or are websites more akin to numbers in an old-fashioned telephone directory: infuriatingly plentiful and only 'good' if they get you connected? According to the American writer, consultant, conference speaker and seminar leader, David Meerman Scott, 'content counts': websites have to stand out so that casual users become loyal supporters and browsers become buyers. As his own website reveals, 'Meerman' makes him stand out from many other David Scotts: it's a Dutch name that differentiates him from the crowd. And those who succeed in cyberspace need to have their 'Meerman' factors: distinguishing features—'content'—that recruit regular users. Regulars get what they came for, together with things that they did not know that they had come for: fresh ideas that encourage fresh thinking about the need to come back. The 'art' (p. 239) of fusing imaginative content with delivery could bring the cash rolling your way. What could be simpler?

In *Information Politics on the Web*, Amsterdam-based academic and 'Web epistemologist', Richard Rogers, suggests that complex forces shape the significance of cyberspace. Websites are more than fashion-shows that mushroom across the world's virtual stages; there are political questions. Does the abundance of information available on the Web place power in the hands of the receivers of this information or strengthen the hands of the ones who post the information? Politics is part of the picture. And so too is the capacity to conceptualise in worthwhile journals: Chapter 2 is adapted from a paper that first appeared in *Prometheus*.[1] Meanwhile, *Politics on the Web* won the 2005 Best Information Science Book of the Year Award presented by the American Society for Information Science and Technology (ASIST). A paperback edition appeared in September 2006.

As someone who works with businesses to develop their Internet strategy and teaches MBA students, both books caught my eye. One offered the promise of

practical insights, while the other suggested that it was possible to make sense of the Web's information politics. Let's look at each book in turn.

Scott's Concern with Content

Scott's thesis is that people use the Web to gather, read and use 'content'. Content includes a lot of things; for example, book reviews, 10 steps for a great New Year, and specifications for a washing machine all count as content. We are spending more time online and companies are spending a lot of money on websites: they want to attract users and encourage loyalty. For his part, Scott has spent a lot of effort looking at what works online; evaluating 1,000 websites, before selecting 20 case study websites that form the empirical core of *Cashing in with Content*.

Scott complains that many websites do not link the company's strategic goals to its revenue goals. And important people have said that this is important. In a paper on Strategy and the Internet, Michael Porter[2] cautioned that 'the winners will be those that view the Internet as a complement to, not a cannibal of, traditional ways of competing'. But, based on Scott's commentary, many businesses are still not thinking about the way that their website can support their strategic objectives. The types of business transaction considered include e-commerce, business-to-business, nonprofits, healthcare, education and politics. Scott looks at each one in detail and tells us what they do well. Each case study gives an insight into how to manage content so that people take action, whether this means buying, subscribing, applying, joining or contributing.

Every case study includes an interview with an employee who played a large role in the website's development. At the beginning of each case study, Scott has explained the following sections:

- what's for sale;
- what's so interesting;
- why you should care.

At the end of each case study, he has a section on 'cashing in' which briefly explains what the website has achieved for the business.

One of the websites reviewed is *The Wall Street Journal Online*. Scott explains how free content sells subscriptions. Now that the days are gone when, for example, newspapers in the UK provided all their content free, it is interesting to see how *The Wall Street Journal Online* provides free content sites (such as startupjournal.com and opinion journal.com) that build the brand. Scott's research revealed that *The Wall Street Journal Online* had 712,000 subscribers each paying US$79 per year compared to the US$39 for print subscriptions. It explains how the content-rich sites encourage visitors to trust what is on offer and develop the feeling that they want to do business with the website's business. People are happy to pay when they trust the content.

In search engine marketing, it is generally recommended that websites should include valuable and useful content, if they are to stand a chance of getting a good ranking in organic search engine searches. Scott has focused on providing value to the visitors (and hence the organisation) by having valuable and useful content, although he does not pursue this to consider the impact on search engine rankings. Yet, one of the goals of many organisations is to ensure that key terms are ranked highly on search engines. And, from a user perspective, perceptions are

shaped by how easily they get what they want. It would have been good if Scott had also considered how easily potential clients might find the goods and services offered on the 20 websites that he reviewed.

The book has a chapter which gives details on the best practices for innovative web-marketers which would provide a useful checklist when developing a new website or reviewing the current website. These 'best practice' points are linked back to the book's case studies. But what constitutes 'best' at any given instant is subject to the rapid evolution of more popular ways of doing things. Scott does not mention podcasting, but this innovative technology is now commonplace. Yesterday's best practice does not necessarily tell you much about tomorrow's challenges. Leading Internet companies, such as Ebay and Amazon, do not rest on their laurels.

Rogers and the Politics of Meaningful Information

Rogers draws an analogy with medieval scholars who sought knowledge by knowing where they had to go, without necessarily knowing what they would find when they got there. This is what happens when we enter our search term into a search engine, probably Google. Based on the algorithms that Google is using at that time, pages of search results appear. Getting a long list of results is merely the gateway to more cycles of sensemaking. We have to think about analysis, synthesis, sharing and re-use—'what have I got here?' Is this website presenting us with the accepted reality? What is the accepted reality?

Information Politics on the Web resulted from research carried out during a Dutch government project, Infodrome, during which different filtering systems were developed. Infodrome began in 1999 and had three objectives:

1. developing an understanding of the social implications of the 'information revolution', which required the gathering of empirical, quantitative knowledge and information on information-related developments;
2. stimulating social awareness of the importance of having a government policy that connects to the requirements of the information society; and
3. developing insight about the priority given by relevant parties and interest groups to activities—public or private—undertaken in relation to the information society (an objective that requires understanding of the political and social valuation of knowledge, experience and insights).

Rogers reviews four instruments that he has developed to analyse what is going on. These instruments include the Lay Decision Support System, the Issue Barometer, the Web Issue Index of Civil Society and the Election Issue Tracker. The Lay Decision Support System looks at the gap between 'reality' and the official accounts of an issue. The example in the book is of a group of experts who were asked to find out, according to the Web, what Viagra is and what is it for. On the Web, Viagra comes across as a party drug for clubbers, sex tourists and others, which is not how the manufacturer views the product. The aforementioned Chapter 2 is entitled 'The Viagra Files: The Web as Collision Space between Official and Unofficial Accounts of Reality'. Rogers' second instrument, the Issue Barometer, gauges the intensity of debates on specific issues, such as the public debate on food safety in the Netherlands. Thirdly, the Web Issue Index of Civil Society identifies which issues are achieving or losing prominence. Finally, the Election Issue Tracker

measures to what extent election issues have been covered in the mainstream media.

According to Rogers, the politics at work on the Web is either 'back-end', by which he means the politics of search engine technology, or 'front-end', which encompasses the diversity, inclusiveness and relative prominence of sites that are publicly accessible on the Web. We use the Web to acquire, process and transmit data and information and to seek knowledge but we are dependent on how the search engines present websites that might meet our criteria.

Rogers looks at the politics on information on the Web and tells us that there is a lot of information available from different sources—and this may conflict with official sources. Search engines are not merely technical: they are political. Rogers has brought in Manuel Castells' concern with the 'crisis of democracy', along with the work of political analysts Lucas Introna and Helen Nissenbaum, which addresses some of the distorting influences of search engines.

Certainly, the fog of information overload creates scope for unseen manipulation. The highest position on the list of search results is not immune from the influence of sponsored listings. For example, Google generates a lot of its income from Internet marketing, which in turn supports the free searches that we do on Google. Information providers might use advanced methods to feed search engines with the basis for a high ranking and determined hackers can produce unanticipated results—for example, in the practice of 'Google Bombing'. At the time of writing, the top hit when typing 'miserable failure' into Google is a biography of George W. Bush on the White House website.

Search engines have considerable power to determine what information is placed in front of the searcher as well as monitoring the behaviour of searchers. And searchers may be blithely unaware that they are being tracked as they surf the 'front end' of the utopian information dream. We are presented with an invidious view of Big Brother watching what is happening on the Internet. There is also the well-publicised censorship of sites, which occurs in countries such as China and Saudi Arabia, but do we know if other censorship is happening with less publicity?

Art and Politics: Making Sense of Diversity

An obvious point that emerges from these two perspectives on cyberspace is the very fact that they are *two* contrasting perspectives: two books, two distinct genres and two markets. Arguably, one of the problems with the pervasiveness of Internet technology is a tendency to group contrasting themes under the cyberspace banner. If the Web is seen as a vehicle for delivery, it becomes clear that the banner 'vehicle for delivery' masks the diversity of motivations that shape the activities of its users. This review contrasts a 'recipe book' for exploiting the infrastructure to make money (in a way that is 'accessible' to busy managers, who do not have time for theory) with a much broader perspective on the Internet's political processes.

Scott's book does what it says on the tin. *Cashing in on Content* is clearly aimed at the manager who is responsible for an organisation's website strategy and for those who are interested in developing websites. It might also be relevant as suggested reading for marketing people: marketing a website's content is a route to better branding and cash.

Perhaps it's not surprising that an American book should focus on websites that belong to American-based organisations. While it is refreshing that sites such as

Amazon and Ebay have not been used on this occasion, since they are cited so frequently, more attention to websites with an international flavour might have added appeal to the book's non-American readers. Also, the book's coverage of market sectors has holes and some readers may find it difficult to transfer ideas into their own business context. These quibbles aside, Scott's 'how to do it book' seems to deliver as promised.

Meanwhile, *Information Politics on the Web* gives us access to a different genre of conceptualisation. Instead of merely categorising myriad points of detail to determine which details signal scope to 'cash in', the argument recognises a bigger picture: you have to take account of 'how the Internet is used', if you want to make sense of what its use might *mean*. It should appeal to information specialists, politicians, government, and non-government organisations who are interested in how information is presented and the impact that it can have on the recipient. Yet, to the casual reader, one who struggles to see the logic of 'web epistemology' and does not feel entirely at home with esoteric-sounding tools (such as the Lay Decision Support System, the Issue Barometer, the Web Issue Index of Civil Society and the Election Issue Tracker), the subtleties of Rogers' political argument—its content—could be overwhelmed by the detail of numerous lists and tables.

Notes and References

1. R. Rogers, 'The Viagra files: the Web as anticipatory medium', *Prometheus*, 21, 2, 2003, pp. 195–212.
2. M. Porter, 'Strategy and the Internet', *Harvard Business Review*, 79, 3, 2001, pp. 62–78.

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The Sage Handbook of Qualitative Research (3rd edition)

Norman K. Denzin and Yvonna S. Lincoln (Eds)

London, Sage, 2005, xix + 1210 pp., UK£85, ISBN 0761927573 hbk

It appears that handbooks are something of a contemporary publishing phenomenon; the company behind the one under review here carries more than 150 on its current list, varying in size and price but tending towards large and expensive. This is the third edition in 15 years of this particular handbook; the frequency of revision is remarkable, especially if we accept the editors' argument that qualitative approaches to social research continue to be marginal. With 44 substantive chapters, topped and tailed by editorial introduction and epilogue, this edition presents a very different face from the previous two. We see this in, as the editors proudly note, the 16 entirely new topics, as well as the considerable revisions to existing themes. In addition, as the editors again make clear, the approach in this edition differs from the previous two. This is exemplified by the cover illustration; this version of the handbook is represented by a beautiful photograph of a whirling dervish worship ceremony, in which followers of Sufi beliefs perform their spiritual commitment to Allah. The editors suggest that this choice of cover illustration achieves a number of things: to indicate the broader ambition of the collection in

addressing non-Western analytical perspectives; to emphasise the increased importance of performative research and social action; to symbolise the acceptance of observer-performer 'nearness' in qualitative research; and finally, to 'signal the return of the spiritual and sacred to the practices of sciences' (title page). This last point is perhaps the most controversial aspect of the two later editions of this handbook's endeavour. Even before the beginning of the collection's formal text, we are clear about the aims, scope and development of this addition to the series.

The collection then is organised into six sections. We begin by 'locating the field', in a very particular way—by emphasising the contemporary need for social engagement and action, in a 'committed, civic moral social science' (p. 34). We then move on to explore paradigms and perspectives, with a focus on controversies and tensions. The third section presents contributions on the theme of 'strategies of inquiry, ranging from the relatively conventional and well-established (case study methods, grounded theory) to the less familiar (subalternity, performance ethnography)'. The fourth, longest, section takes us into data collection and analysis, with a series of exemplary chapters providing encouragement to think of data collection and analysis more creatively than is usually the case—in particular, it is notable that visual methods and focus groups are given serious consideration. The fifth section provides us with reflections on the art and practices of interpretation, evaluation and presentation, while the sixth and final section (again following the precedent established in the previous two editions) briefly and bravely explores the future of qualitative research.

Rather than provide detailed descriptions of each section or chapter, I would like to take the intellectual content and scholarly quality of this collection for granted. There are 59 scholars involved in this project; all clearly have a profound understanding of their given/chosen topics, facility of expression in writing about them, and often provocative views. As such we can take as given that this collection is central to anyone thinking about, already working in, teaching or studying qualitative research. In the remainder of this review I would like to pursue two themes that are significant in reading the handbook: innovation and creativity in research and the potential of this handbook to support 'different' approaches to inquiry, and the (lack of) representation of management/organisational research in both the contributors and contributions.

It is notable that despite the existence of the three handbooks in this mini-series, the editors continue to represent qualitative research ['a situated activity that locates the observer in the world' (p. 3)] as subject to mainstream academic and political hostility. Methodology is firmly situated within epistemological and national politics—indeed, the editors pursue an argument that these dynamics cannot be separated. Using the example of the US National Research Council and legislation such as 'No Child Left Behind' underpinned by 'Bush science', the editors suggest that qualitative research continues to be seen as suspect from within what they perceive as 'malestream' institutions. In particular, they note that qualitative inquiry can never achieve the rigour or objectivity demanded within policy-making circles, primarily as it lacks causal models or variables to be tested. The moves towards neoclassical experimentalism that the editors identify in US policymaking and policy research may also be seen in other contexts: we might think of the systematic literature review, increasingly adopted in British management research (see the *International Journal of Management Reviews*, for example) yet rarely questioned as to whether it is appropriate to the topic or research approach; we might also think of the recent emergence in the UK of evidence-based policy

formation, which also requires so-called rigorous and objective evidence before decisions are made; or we might consider the disciplinary, normative role of the primary research-funding institutions such as the British Economic and Social Research Council.[1] As the publication of this handbook demonstrates, the editors believe that vigorous critical engagement with the world of positive or positivist science is the best way to protect and promote qualitative inquiry, and the creative or innovative potential it provides compared to 'normal science'.

The second theme that is striking in this collection, although admittedly only for those of us working in management and organisational research, is the lack of representation from our community. This is evident in two ways: first, none of the many contributors works within a business school or takes management and organisation as a central research area; and second, few research studies from within our field are referred to through the text. How are we to understand this lack? It is possible that compiling a handbook like this one is a political process; the editors work in communications and educational research, so might be expected to have little knowledge of, interest in, or contact with qualitative researchers in management and organisation studies. Or perhaps the knowledge and familiarity does exist, but the editors consider that the management and organisational research community lacks members able or willing to reflect on qualitative approaches.[2] Or, third, perhaps researchers in management and organisation studies do not engage with the community that this handbook is aimed at and draws from.

Or, most likely, we could speculate in the best qualitative tradition that there is no one reason for our lack of representation. Rather, it is the result of a complex, interlocking, entangled variety of circumstances, cultural norms and political dynamics. Whatever the explanation(s), it is certainly a lack and one that ought to give cause for thought.

Notes and References

1. S. Newell, J. Swan and K. Kautz, 'The role of funding bodies in the creation and diffusion of management fads and fashions', *Organization*, 8, 1, 2001, pp. 97–120.
2. Cf. P. Johnson and J. Duberley, *Understanding Management Research*, Sage, London, 2000.

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Patents: Economics, Policy and Measurement

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Cheltenham, UK, Edward Elgar, 2005, xvii + 310 pp., UK£69.99, ISBN 1845424816 hbk

The patent system has been recognized as a protector of national interest and a leading factor of economic growth by economists around world. However, over the past few decades, this positive view of the patent system has begun to decline due to the legal issues and the longer processing time of patents. This scholarly volume addresses the key issues related to the role of patents in a global context.

In the introductory chapter, Scherer outlines the origin of his years of research on the patent systems. He traces his fascinations with technology back to his undergraduate studies at the University of Michigan with the intention of majoring in chemistry. He also links his interest in the patent system to the reading of Joseph A. Schumpeter's *Capitalism, Socialism, and Democracy* in Shorey Peterson's economic honors seminar during the spring semester of 1954 and his decision to write on the atomic energy patent laws for the requisite honors thesis. His passion and interest in the patent field also continued during his studies at Harvard Business School as an MBA student.

Author F. M. Scherer is Aetna Professor Emeritus in the John F. Kennedy School of Government at Harvard University and Lecturer in the Woodrow Wilson School of Public and International Affairs at Princeton University. His book reproduces selected articles he has written on various aspects of the patent system over the course of four decades. The volume gives the reader the benefits of diagrams, figures and charts to illustrate the text, and it is richly footnoted, very thoroughly indexed, and fine textured throughout. Every paragraph contains specific references, examples, and notes.

The book contains a total of 18 chapters. These chapters are organized in four parts. Part I is entitled 'Economic Analysis and Policy', consisting of eight of Scherer's articles. Scherer provides an important starting point for anyone interested in understanding how the patent system functions and malfunctions in Chapter 1. Prior to 1969, most of the publications related to theorizing the relationship between the patent system which balances incentives for investment in invention and the desire for maximum diffusion of inventions was qualitative. However, William Nordhaus, Professor of Economics at the University of Michigan established a new approach for observing the relationship between R&D spending and the extent of invention by using special mathematical assumptions. Professor Scherer presents his reaction to this new mathematical approach in Chapter 2 by extending Nordhaus's pioneering work and correcting what in some cases is a significant interpretational error. According to Scherer, 'Nordhaus's original presentation was largely algebraic, but certain problems he left unsolved can be tackled more directly through the geometric approach' (p. 23).

Chapter 3 is related to a brief comment made by Scherer on a paper written by Professor Edmund Kitch. Professor Kitch argues that patents rarely lead to monopolies. He supports his argument by using the Xerox history as an example of a monopoly-free patent position in his paper. The author comments that 'Kitch has written the wrong paper' (p. 51) and 'neither theory nor evidence will support the leap' (p. 52).

Chapter 4 reproduces the author's 2002 paper, in which he demonstrates a controversial policy question in both the United States and Europe related to patent protection involving the human genome. Chapters 5–8 address the economic effects of the patent system on the pharmaceutical industry. During the 1990s, many less-developed countries were excluded from patentability because in order to join the World Trade Organization nations had to provide a high level of patent protection for pharmaceutical products. This controversial debate on the pharmaceutical patent is discussed in depth through four chapters, which originally appeared in 1995, 2000, 2002, and 2004 as individual publications. Especially the Italian experience on the patent protection of pharmaceutical products highlights this debate.

In March 1978, the Italian Supreme Court issued a court decision that pharmaceutical products should not be excluded from eligibility for patent protection within Italy. The full implementation of this court decision occurred in 1982. Sandy Weisburst, who was a Harvard undergraduate student, used the Italian experience as a senior thesis topic in 1995 under the advisement of Professor Scherer. The research result collaborated by Scherer and Weisburst is summarized in Chapter 6. In this chapter, the adaptation of Italian producers to the intellectual property regime changes of 1978 is investigated and detailed statistical analysis is presented. The authors conclude that 'the evidence supports a conclusion that the legitimization of drug product patents in Italy did not induce a marked shift in Italian pharmaceutical manufactures' strategic emphasis from emulating drugs developed elsewhere to developing innovative drugs' (p. 81).

Part II (Chapters 9–11) is called *Using Patent Data to Measure Technological Innovation.* Chapter 9 reports on a statistical study based on the relationship between inventive activity and technological opportunity, firm size, product line diversification, and monopoly power. Data compiled on patenting and R&D employment by 448 large American manufacturing corporations were used in this study. This chapter attempted to test various hypotheses derived from the work of Joseph A. Schumpeter. However, a rejection of his hypotheses for the most part was supported by the analysis.

Chapter 10 covers the extension of the 448-company database in order to analyze how inventive activity, measured by patents, affected corporations' sales growth and profitability. Chapter 11 presents

> a technology flows matrix tracing 1974 industrial R&D expenditures from their industries of origin to industries in which the use of resulting products and processes was anticipated. The distinction between origin and using industries is crucial to understanding the links between R&D and productivity growth. A regression analysis reveals high social rates of return and substantial productivity impacts from R&D attributed to industries of use (p. 106).

Chapter 12 addresses the re-test of Professor Jacob Schookler's demand–pull hypothesis with the use of the industry-linked patent data. Chapter 13 is devoted to detailed analysis of the relationship between 1974 R&D expenditures and invention patenting by 4,274 lines of business in 443 US industrial corporations. Finally, Chapter 14 is a re-visitation of the methodological problems of estimating matrices showing how technological advances flow from industries of origin to using industries.

Part III is entitled 'What Do the Measures Measure', containing Chapters15–17. Scherer, in Chapter 15, examines the difficulties encountered when one attempts to link patents to data on such variables as R&D expenditures in the industries where the patents originated. The last two chapters, Chapters 16 and 17, of Part III reflect collaborative work undertaken by Scherer and colleagues, Harhoff, Vopel, and Narin. While exploring the tail of patented invention value distribution in Chapter16 by using value estimates obtained directly from patent holders such as West German and US residents, they took the analysis of the patent value data further in Chapter 17.

The final part, Part IV, is called *The Road Ahead.* It contains only one chapter, Chapter 18, which focuses on the findings from the skewness research in a new

direction. The implication of this research is analyzed by using the attitude towards risk approach.

In sum, this book is a collection of major contributions to the important array of issues in the economics of patent system. It represents the collection of works on analyzing and modeling methodologies based on the patent data. This volume is a major contribution not only to the history of research in the patent system, but also to the understanding of a good deal of why the concept of patenting has evolved in economics in the global context as it has.

Overall, I would say this is a book for academics, practitioners who have a background in statistical analysis and econometric modeling, and advanced students interested in the concept of patenting and the analysis of patent data. But, this book is definitely not for general readers.

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