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Book Reviews

Conversations with Manuel Castells

Manuel Castells and Martin Ince

Cambridge, UK, Polity, 2003, vi + 174 pp., US$19.95, ISBN 0-7456-2849-4 pbk

Manuel Castells is one of the best-known sociologists in the Western world—perhaps one ought to add now, in view of the fame of his most recent work, in the world as a whole. Born and brought up in Spain, he was forced for political reasons to complete his studies in Paris, where he also taught for many years. In 1979 he moved to the United States as a professor of sociology at the University of California at Berkeley, where he has been ever since (though in the most recent move, not recorded in this book, he has accepted a position at the University of Southern California). But Berkeley, while providing a home and a base, has by no means circumscribed his activities, which have been truly worldwide. He has held visiting appointments around the world, he has been adviser to several governments, especially in Latin America but also in South Africa, Finland, China and in post-1991 Russia, and he has served on many UN advisory bodies. He has also maintained strong contacts with his native Spain, both as a government adviser and as research professor at universities in Madrid and Barcelona. If there is a global sociologist today, he is truly Manuel Castells.

Oddly enough, the one place he is probably least known is his adopted home, the United States. This perhaps has something to do with his formerly Marxist sympathies. But it probably has more to do with the generous and encyclopaedic cast of his thought, which is not likely to win him many friends in American academia, especially in departments of social science. His early work on urban sociology and urban social movements found a ready echo in American sociology, leading to his invitation to Berkeley and the winning, for instance, of the C. Wright Mills Award for his book *The City and the Grassroots* (1983). But in his more recent work, most notably in the much acclaimed trilogy *The Information Age* (1996–2002), he has turned to scanning the major social changes in the world on the vastest possible canvas, and with the most comprehensive range of intellectual tools. This has proved uncomfortable to many American academics, who regard this sort of exercise as unprofessional and unsound. The enthusiastic reception that *The Information Age* has received almost everywhere outside America has not really been echoed within the country—a sad comment on the state of American social science.

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In the moving last chapter of this absorbing book of conversations with Martin Ince, Castells recalls the circumstances of the composition of this work, when he was diagnosed with kidney cancer and thought that he might die in a few years (happily this did not happen and he continues to thrive). 'So I tried to put together, in a form as coherent as possible, everything I knew about everything, without limits, but with care, since these were my last words . . . What I really tried to do was to find the key threads of social change in the society I saw emerging worldwide . . . And I wanted to do so from a multicultural perspective, and from many countries, because I had traveled so much, lived and committed deeply in so many societies, that I wanted to relate to all the people I have known around the world. I wanted my analysis to serve people in Catalonia and in California, in Russia and in France, in Chile and Quebec, in China and in Japan' (p. 149). The ambitiousness and generosity of such an enterprise sufficiently explains why it disconcerts cautious academics. It also explains why there has been, in other quarters, such a warm and heartfelt reception to this magnificently conceived and executed work, one of the great triumphs of modern social science and fit to be compared with the famous classics of nineteenth-century sociology.

The conversations recorded in this book, it needs to be stressed, are no substitute for reading *The Information Age*. The richness of detail, the amplitude of the discussion, the refinements of theory that are possible in a large-scale trilogy obviously are absent here. This is not the 'Plain Man's Guide to *The Information Age*', though there are valuable pointers to that work and some important points of clarification. But while we get less than in that work, we also get more in other directions. In a relaxed, personal style, shot through with penetrating and often amusing comments on a host of matters, Castells ranges widely over his life and thought. We learn of the reasons—political dissidence—that took him to Paris, and of the enormous importance of the fact that he was taken under the wing of the influential Paris sociologist Alain Touraine ('my entire intellectual life, my career, and my life, were shaped and protected by Touraine', p. 12). It was Touraine who not only turned the young Castells towards urban sociology, but who also found him appointments abroad when his radical politics—'the May '68 movement was an extraordinary experience, one of the most beautiful of my life' (p. 13)—got him into trouble with the French government and forced him into renewed exile. And it was Touraine who engineered his return to France and secured his appointment at the Ecole des Hautes Études en Sciences Sociales, the pinnacle of the French social science establishment.

But the bulk of these conversations deal not with Castells' personal life, fascinating as that is (there are several moving tributes to his Russian wife, Emma Kiselyova), but with his intellectual contribution, particularly as that relates to *The Information Age*. There is a helpful clarification and qualification of the concept of 'the spaces of flows', which Castells considers 'fundamental' to his whole theory (p. 55). This, the realm of information, communication, and of the global network of places connected through information technology and the global elite, is conceptually opposed to the 'space of places', the concrete, territorially based localities where 'most people build their meaning and live their lives' (p. 58), where they construct their identities. But more than ever Castells now wants to insist not on the opposition but the co-existence of the space of flows with the space of places. Zapatista rebels in southern Mexico and anti-globalizers everywhere—those who might want to insist on the claims of place—are as adept at using the space of flows as are the global elites seeking to escape national barriers and controls.

Castells seems generally to assume that, with the information age, we are entering a new phase of social evolution, similar perhaps to the transition from pre-industrial to industrial society. But, pressed as to the question of novelty, he once again, as in *The Information Age*, expresses his impatience. 'Frankly, the question of newness, which I am asked again and again, is a boring one, and I would say not very productive. I think it is obvious that global electronic communication from many to many, in real time or in chosen time, is a new technology, and a new organizational form—indeed, a new medium of communication. But ultimately, I do not care if it is new' (p. 23). But should he be so indifferent to the question of novelty? Can one get a perspective on the present that is not historical? To my mind J. R. Beniger's *The Control Revolution* (1986), which investigated the nineteenth-century origins of 'the information society', had a lot to teach us about how to understand the motivating forces of contemporary society when those earlier seeds had more fully germinated. Might that not also be true of Castells' claims for the information age? Certainly it is odd to hear a former Marxist disclaiming the importance of the long-term historical view.

Social movements, long one of Castells' concerns, continue to receive prominence, with the anti-globalization movement—'a global anti-global movement', dependent on the Internet and the global media—especially singled out as comparable in its significance to the working-class movement of early capitalism: a source in each case both of opposition and of constructive debate on the shape of the new society. The Green movement too, treated at length in volume two (*The Power of Identity*) of *The Information Age*, comes in for renewed commendation, as 'the most direct linkage between the local and the global in the proposition of alternative models of society' (p. 64). But Castells is now also careful to stress the 'regressive' character of some contemporary social movements, such as the Al-Qaeda and the international terrorist movement. 'Social movements are not the expression of good versus bad, but a key mechanism through which societies change, towards different goals, towards different institutions' (p. 62). In the second edition of *The Power of Identity* (2004)—published after these conversations—Al-Qaeda comes in for sustained treatment. One might also add that, writing in September 2002, Castells offers some remarkably prescient thoughts on the consequences of the likely American invasion of Iraq. The war 'may trigger very serious, unpredictable chain reactions . . . The USA simply does not know what it is starting, because, fundamentally, it has decided on fully-fledged unilateralism, building its security exclusively on its military strength' (p. 103).

It is remarks such as this, on everything from the rigidity of Japanese institutions to the observation that America is a conservative, poorly educated society that nevertheless, as a frontier, immigrant society, is at the same time a font of creativity and innovation, that make this book so stimulating and such a constant source of pleasure. Castells shows himself here a commentator on the contemporary global scene of real insight and penetration. If he were so inclined, he could turn himself into a US 'public intellectual' of the type once epitomized by Noam Chomsky, and on the same basis of professional authority. But perhaps he prefers to let his work speak for itself, backed up where necessary by conference appearances across the globe. Indeed he is, unusually in these disillusioned times, a passionate defender of universities and the academic life, in particular the resources and the intellectual independence afforded by the large American research university, within which he has found a home for so long ('I could never have written my trilogy from Paris or

Madrid', p. 133). Again and again he returns to the creativity of this institution, and offers it as a model to other countries as the necessary basis of their playing any significant role in the information age. Castells finds much to criticize in the US—'huge social problems', the 'pitiful state of public services', the appalling medical system, the collapse of secondary education but he remains resolute on the unique intellectual qualities of its best universities. It is reassuring, and even endearing, to hear this unfashionable defence of an institution that in its home country has come in for such a battering, as swept by market forces or political kowtowing. One hopes he is right; certainly there is not much else on the horizon to cheer about.

Krishan Kumar
University of Virginia, USA

Technology and Social Inclusion: Rethinking the Digital Divide

Mark Warschauer

Cambridge, MA and London, MIT Press, 2003, xii + 260 pp., UK£21.95, ISBN 0 262 23224 3 hbk

The jacket notes for Mark Warschauer's book say that it is about 'new technologies and social inclusion' but in fact, the book focuses only on the Internet as 'new' technology. The author's own introduction states that the purpose of the book 'is to examine the relationship between ICT and social inclusion', taking as its starting point the concept of a 'digital divide' (p. 1). Warschauer's basic argument is that 'meaningful access to ICT (information communication technologies) comprises far more than merely providing computers and Internet connections. Rather, access to ICT is embedded in a complex array of factors encompassing physical, digital, human and social resources and relationships' (p. 6). Thus, in his view, the digital divide is marked not only 'by physical access to computers and connectivity, but also by access to the additional resources that allow people to use technology well' (p. 6). For Warschauer, the 'bottom line is that there is no binary divide and no single overriding factor for determining such a divide. ICT does not exist as an external variable to be injected from the outside to bring about certain results [but] rather, it is woven in a complex manner into social systems and processes' (p. 8). Warschauer draws on a definition by Stewart (2000) to define social inclusion as 'participation in the determination of both individual and collective life chances' (p. 8). From this the book takes as its central premise that 'the ability to access, adapt, and create new knowledge using new information and communication technology is critical to social inclusion in today's era' (p. 9). Behind all of this, of course, is the unstated, and largely unexamined premise that the Internet is a necessary, good, and useful tool for social inclusion.

In the first two chapters of the book, Warschauer sets out some of the historical and theoretical framework behind the issues of technology and social inclusion. Chapter 1, 'Economy, society and technology: analyzing the shifting terrains' is, in large part, Castells[1] and other 'information society' writers revisited. Warschauer states that 'while notions of cyberspace fade away, real-life applications of e-commerce, e-governance and Internet-enhanced learning thrive' (p. 12). He maintains that the informational economy is closely related to global economic

stratification, both within and across countries (p. 18). He includes various tables and statistics to illustrate this global economic disparity. Although some of these statistics are over 40 years old (e.g. the World Development Report, 2000/01, p. 18) and thus pre-date the Internet—economic disparity is scarcely a new phenomenon—they do serve to illustrate that there has been a steady shift of emphasis. Thus while we do not perhaps have an all out Information Society as envisaged by Daniel Bell, at the same time, as Warschauer shows, the exports of developing countries often 'tend to be predominantly low-value primary commodities whose market value has steadily fallen in the past two decades whereas the exports of the wealthy countries are based on high-technology and high-knowledge goods and services whose corresponding market value has steadily risen since the onset of informationalism' (p. 19). And there is not just disparity between countries, but also within them, between individuals (p. 21). In this informational economy, Warschauer sees the division not as between white and blue-collar workers, but among three new categories: 'routine production workers (e.g., data processors, payroll clerks, factory workers); in-person service workers (e.g., janitors, hospital attendants, taxi drivers); and symbolic analysts (e.g., software engineers, management consultants, strategic planners)' (p. 22). The second half of this chapter is devoted to a discussion of the nature of communication in the network society, again much of which can be found in Castells and elsewhere.

In Chapter 2, 'Models of access: devices, conduits and literacy', Warschauer argues that views of ICT which see it solely in terms of *devices* and *conduits* are inadequate (p. 31). He believes that a third component, *literacy*, enables a more complete model of ICT access to be developed (p. 31). Warschauer writes that 'what is most important about ICT is not so much the availability of the computing device or the Internet line, but rather people's ability to make use of that device and line to engage in meaningful social practices' (p. 38). He writes that 'those people who cannot read, who have never learned to use a computer, and who do not know any of the major languages that dominate available software and Internet content will have difficulty even getting online, much less using the Internet productively' (p. 38). He discusses some of the perspectives on literacy, and himself advocates the understanding of literacy as 'a set of social practices, rather than as a narrow cognitive skill'. He cites Paolo Friere (1994) whose studies apparently have shown that 'literacy instruction is most effective when it involves content that speaks to the needs and social conditions of the learners' (p. 44). He draws six principal conclusions about literacy, among them that 'there is not just one type of literacy, but many types'; 'the meaning and value of literacy varies in particular social contexts'; and 'literacy is a social practice, involving access to physical artefacts, content, skills and social support' (p. 46). He then uses each of these conclusions as the basis for a model for ICT access, thus: 'there is not just one type of ICT access, but many types'; 'the meaning and value of access varies in particular social contexts'; and 'ICT use is a social practice, involving access to physical artefacts, content, skills and social support' (p. 46). He argues that like literacy access, ICT access must 'engage a range of resources, all developed and promoted with an eye toward enhancing the social, economic, and political power of the targeted clients and communities' (p. 47). Where literacy access is dependent upon physical, digital, human and social resources, so effective ICT access is likewise dependent.

In Chapters 3–6, Warschauer explores each group of resources, physical, digital, human and social, that he believes is critical to effective ICT access and interaction.

Chapter 3, in particular, is an overly long discussion—again, much of it has already been stated many times over by other authors—of the unequal distribution of physical resources for ICT access. Warschauer analyses the relative costs of computers and connections, and the lack of teledensity in many developing countries. Here, he suggests that wireless technologies may have a role to play (p. 71ff), as well as public access centres. Chapter 4, 'Digital resources—content and language', is a discussion of Internet content, much of which Warschauer believes 'does not necessarily meet the needs of diverse communities around the world' (p. 81), in large part because of 'the geographic imbalance of Internet content production' (p. 83) and also because of the problem of the dominance of English on the Web. There is a very brief discussion of health care (pp. 85–86) where Warschauer believes some of the 'most promising' ICT applications may lie. He concludes that 'physical resources (. . .) mean little without sufficient digital content that is relevant to people and in the language of their communities' (p. 108).

Chapter 5 looks at human resources, in particular literacy and education. Here Warschauer discusses 'computer literacy' (p. 111) as opposed to 'information literacy' (p. 113 ff), i.e. that which enables a reader to decide 'whether to pursue information on a particular page, follow links to other sites, or return to a search engine for another try' (p. 114). He discusses 'computer-mediated communication literacy' (p. 117 ff) or, in other words, some of the etiquette and social conventions of e-mail communication. He describes the case of a Chinese academic who, having carried out much groundwork for a research study, found that his name was to be omitted from the published research papers in academic journals. While this sort of thing is probably not too uncommon, Warschauer draws out the example at length, describing how the researcher 'had no idea of how to write an effective e-mail message protesting this situation, and following norms of oral communication common in China, he wrote a draft of an e-mail that addressed the issue only in the most circular fashion: first devoting a lengthy introductory paragraph to discussing the health of his Swedish colleague's mother'. Fortunately, some kindly American colleagues were on hand, upon whose intervention the researcher was able to rewrite the message in a 'much more direct and effective manner' (p. 118). Whatever the moral of the story, it is a pity that Warschauer could not have received similar assistance with his book, as it meanders rather all over the place, not dealing with any area long enough, or penetratingly enough, to really arouse the reader's interest. It reads instead very much as a collection of bits and pieces of empirical research from the various corners of the globe where he has travelled—Brazil, China, India and Egypt among them—some of which is ethnographic (p. 9), and thus by its nature not very recent. The overall impression is that the material has been strung together more haphazardly than thematically, and that, while Warschauer has spent some considerable time travelling and observing, he has spent rather less on the kind of hard analysis that would have caused some clearly identifiable and graspable themes to emerge. Chapter 6, on 'Social resources' touches on social capital, virtual communities, social alliances, governance and democracy, and politics, but never in any way that truly engages the reader's attention or interest. Perhaps we have heard all of this too many times before.

He does begin, in Chapter 6, to embark on an interesting discussion of social capital, which he defines as 'the capacity of individuals to accrue benefits by dint of

their personal relationships and memberships in particular social networks and structures' (p. 154). He raises the issue of whether using the Internet can extend people's social capital (p. 157). This is an interesting question. Warschauer maintains that the Internet can at times lead to 'a narrowing of social contact rather than a broadening', especially when people communicate only within their small circles (p. 159) and are unwilling, or unable, to use it to form 'new contacts and bridges with diverse social networks' (pp. 159; 197). This whole area, of social capital and its relationship to (social) technology, is a much more interesting issue than the rather pedestrian review he has produced of the resources and the recipes for social inclusion.

There has been, and continues to be, a lot of hype and rubbish written about the Internet. There remains a lot of it about. While Warschauer's book certainly does not add to the rubbish, it does not go very far to cut a swathe through it and get down to what are, after more than a decade of the Internet, any of the really pertinent and engaging issues. Let us briefly review what Warschauer has told us about the Internet and social inclusion:

1. economic, social, political, cultural and technological factors are all at play both as regards the Internet and as regards social inclusion;
2. social inclusion requires physical resources;
3. it requires good digital content which is accessible by and relevant to those it purports to serve;
4. it needs human resources, the main ones being literacy and education; and
5. it needs social resources, individuals, groups, communities and institutions who are willing and able to use ICT to develop and promote effective social interaction.

Warschauer's final conclusion is in fact, the very same point he started from, in his introduction. He simply restates that '[social] participation requires not only physical access to computers and connectivity, but also access to the requisite skills and knowledge, content and language, and community and social support to be able to use ICT for meaningful ends. The tasks are large, but so is the challenge, reducing marginalization, poverty, and inequality and enhancing economic and social inclusion for all' (p. 216). So we are back to where we began, and we are not so very much the wiser. Warschauer has not 'rethought' the digital divide in any significant way but instead, has catalogued and classified the very large issues—economic, educational, social and infrastructure disparity and injustice—which many of us anyway feel powerless to fully comprehend or to influence. Warschauer's book comes some 10 or more years after the Internet was appropriated for the public domain. Had it been published in 1993, rather than 2003, it would have provided an insightful and useful starting point. Sadly what was a promising start, remains only that.

Notes and References

1. M. Castells, *The Rise of the Network Society*, Blackwells, Oxford, 1996.

Suzanne Mieczkowska
London, Canada

Everyday Engineering: An Ethnography of Design and Innovation

Dominique Vinck (Ed.)

London, MIT Press, 2003, 247 pp., £19.95, ISBN 0-262-22065-3 cloth

Uncanny Networks: Dialogues with the Virtual Intelligentsia

Geert Lovink (Ed.)

London, MIT Press, 2003, 247 pp., £18.50, ISBN 0-262-12251-0 cloth

Prefiguring Cyberculture: An Intellectual History

Darren Tofts, Annemarie Jonson and Alessio Cavallaro (Eds)

London, MIT Press, 2002, 322 pp., £21.95, ISBN 0-262-20145-3 cloth

The three books reviewed here all come from the highly productive press of the Massachusetts Institute of Technology, which currently numbers more than 7,000 book titles in its archive. All three are edited collections that answer the publisher's remit to explore and analyse the edges and frontiers of technology in everyday life, but they do so in radically different ways. Below is a brief review of each book, in order of personal preference, beginning with the most enjoyable, and concluding comments that address the three titles.

The *Everyday Engineering* collection, edited by Dominique Vinck, was originally published in French by Les Presses Universitaires de Grenoble, and it is the Institut de la Production et des Organisations Industrielles in Grenoble that enabled the empirical work on which the book is based. The editor sets out with a very specific purpose: to take the reader into the everyday working lives of engineers struggling with advanced technological processes and machinery. As the editor argues in the introduction, testimony from such individuals is rare. The accounts that provide the raw empirical material of the book give insight into engineers working with software, wall construction, a waste container, an aluminium die, a paint atomizer, an axle, and a furniture machining assembly. As the editor suggests in his introduction, our interaction with and even awareness of technologies such as these (and doubtless many others) is characterized first by faith, trusting that they will operate as they have been designed to, and second by ignorance, as we observe them briefly and then move on, having dismissed the technology as incomprehensible, perhaps dull, and belonging to specialists.

The purpose of this collection then is to open up not the technologies themselves (although a reader with a curiosity about the processes of each technology will be rewarded), but to make the human interaction with such technologies a more transparent process. As the editor convincingly argues, and as the individual contributions demonstrate, such a project is best approached through participant observation—leading to accounts from those working with the technologies, gathering data as they work. The data gathered in and around Grenoble come primarily from mechanical engineers studying for higher degrees in philosophy or sociology to put alongside previous doctoral degrees in natural science or engineering; each participant observer is supervised by academics from both the social sciences and sciences. Thus, the empirical setting is defined by the engineering and technology involved, while the analysis of data is founded on sociological studies of science and technology.

The book may be seen as a sophisticated treatment of the human–object–social network nexus in a number of senses. First, the reader is guided gently through complex technological processes and contexts with just the right amount of detail. Without this, it would be difficult to empathize with the everyday world of the engineers; with a surfeit of it, the analysis would be squeezed out. The contributors to this collection provide well-judged treatments of both the technology and the social science analysis. Second, this collection is theoretically sophisticated. Individual chapters and the epilogue treat recent work in science and technology studies in some depth and with rigour. Third, this collection is sophisticated in the sense that it presents multiple worlds of work in an accessible way that nonetheless emphasizes their complexity—a rarity in any academic writing, and especially difficult to achieve in ethnographic studies.

Assessing the contribution of this volume to the social sciences field that it is located within is rather more difficult. Since the publication of Bruno Latour and Steve Woolgar's seminal work[1] on methods that scientists use to control and maintain their social and theoretical contexts, there has been a steady stream of ethnographies that seek to open a wide variety of work-related black boxes. It is doubtful as to whether this volume adds anything to that area theoretically, perhaps as a result of the structure in which each chapter has a different author who deals with a different technology and setting. However, the diffuse and difficult to gauge nature of the theoretical contribution may also be an outcome of the rather ambitious scope of the theoretical underpinnings of the various empirical projects represented. The epilogue by the editor makes passing reference to concepts drawn from science and technology studies, ethnomethodology, classical and reflexive anthropology, actor-network theory, and philosophy of science, among others. Although science and technology studies is by definition a relatively broad church, to draw on such a range of theoretical perspectives is to invite contradiction and confusion.

Such a result would be a great pity, as this is a wonderfully written and useful book. It will undoubtedly provide a resource that all teaching major/minor or combined degrees in engineering and business should refer students to, as well as a source text for students on both pure science and technology studies courses. If the aspiration to encourage students studying engineering or natural sciences to critically analyse their own and others' workplace practices is indeed to be achieved, then books such as this one are invaluable. It combines a profound understanding of the work being accomplished, with analytical perspectives that allow those actually working with the various technologies to accept processes that are human and unpredictable as well as scientific and rational.

The *Uncanny Networks* collection edited by Lovink also sits within a series concerned with technology, guided by Leonardo, the International Society for the Arts, Sciences and Technology (ISAST). Per the foreword, this association has only two aims: to document the work of artists and scholars thinking about the intersection of science/technology and contemporary arts, and to create fora where representatives of different cultures (such as engineering, science, art) can meet and come to an understanding of each other and each other's work. Previous contributions to the series examined the design of information technology (IT), the development of cyborgs, the management of innovation at Xerox, and the conjunction of artistic creativity and electronic hardware. In this volume, Geert Lovink, an independent theorist of contemporary media, provides edited interviews with as wide-ranging a group of people as anyone could hope to meet,

all concerned in some way with ways in which information technology and the Internet in particular affect everyday life. As part of this inscription project, Lovink also undertakes to interview himself as an 'embedded participant' in understanding cultural production across political, economic and technological territories.

It is suggested in the foreword that the 35 interviews can be located according to their primary academic concern. Thus, some deal with media theory, others with the sociology, economics, or cultural theory of IT, yet others with 'theoretical ontology relating to an architecture of media' (p. xiii), and finally with the use of new media art as a means of s(t)imulating political action. Lovink himself argues that the eclecticism of his collection reflects the increasing variety of stakeholders in both the Internet and the technology that underpins it. We are, he suggests, 'moving away from the narrow world of the male, geek culture and its libertarian visionaries' (p. 3). As with any developing social and cultural practice, this move to become outward facing brings attendant inward facing difficulties, such as the attentions of large commercial organizations, governments, professions and professionalizing bodies, and unpleasant or amoral individuals. It is the interconnection of these institutions and individuals that Lovink really wishes to represent in this collection, theoretically if possible, anecdotally if not. In this respect, Lovink's broader projects and this collection are more journalistic than academic, more easily categorized as contributing to our understanding of technology, IT and media through provision of information than significant theory.

This is not intended as a criticism of the collection. It is important to receive the book as Lovink intends it; as a printed smorgasbord of theories, ideas, stories, claims, assertions, denials—linked only by a concern for contemporary technology and media. The book also has a further contribution, although it may be an involuntary one. Lovink has something of an academic background in media theory, although he appears to spend more time bringing established theorists together than actually developing his own theoretical approach. This book thus forms part of a broad project that Lovink is pursuing from a position somewhere between the online arena and academia, between the computer screen and paper-based theoretical publications. The interview, he argues, provides a means of linking these worlds in a way that supports conferences (Internet-based and hotel-based), mailing lists, online for and other methods of community building. This is somewhat ingenuous, as the tone of many of the dialogues tends towards the polemical rather than the analytical, even when such prominent theorists as Bruno Latour and Gayatri Spivak are represented.

The eventual location of this book is also rather problematic, something that the editor would no doubt welcome. It is perhaps easier to outline what the book is not: it does not provide a contribution to theorizing the virtual world, nor much that is novel in an empirical sense. The collection does not really take either an informed or neophyte reader very far into the networked world that the editor claims to inhabit. Thus, the collection does not, as far as I can see, have a clear audience or home. I am not aware of any taught courses that it could contribute anything new to, nor any theoretical insights that cannot be found elsewhere in more considered form. In addition, the majority of the interviews can already be found on the Nettime website, and all have been previously published somewhere on the Internet. In this, it is a rare edited collection, in that it brings nothing novel to the world, either in terms of content, form, or theory. In comparison to *Everyday*

Engineering (reviewed above), which is a collection based on convincing empirical material combined with clear and relevant theory, *Uncanny Networks* contains neither of these, nor anything else of equal value to convince a reader/purchaser to invest in it.

The third collection, *Prefiguring Cyberculture: An Intellectual History*, edited by Tofts, Jonson and Cavallaro, aims as the title indicates to 'prefigure' cyberculture. This collection stands apart from the other two inasmuch as it leans more towards cultural analysis of cultural theory. It is less concerned with the materiality of machines, computers, or digital technology, and more taken up with analysing the historical and cultural location of representations of contemporary life. The book is presented in four main sections, with an introduction and coda. Section one deals with robotics, artificial intelligence and cyborgs (loosely defined as a mechanical or electronic organism—practically, an entity that is a combination of human and non-human). The six essays in this section range over Descartes' separation of thought and body, Mary Shelley's *Frankenstein* novel, Alan Turing's meditations on the potential of computers to attain intelligence, the science fiction writer Philip K. Dick, and Donna Haraway's seminal 'manifesto' exploring feminism and technology. This is evidently a disparate set of texts, which the editors suggest are bound together by their consideration of what it is to be human. Section two moves from this point to explore virtuality and simulation as manifest (*sic*) in 'webworlds and cyberspaces'. This section again considers literary representations of how people and machines come together, such as William Gibson's iconic *Neuromancer* novel and James Joyce's infamously obscure *Finnegan's Wake*. Other contributions here examine Plato's metaphor of the cave and the history of cognitive science. Again, the disparity of theoretical and cultural references is somewhat daunting, particularly in a section that purports to be working towards mediating some of the 'otherness' of virtuality.

From here, the collection moves into a third section that stands apart from the rest of the book. It consists of 10 short 'artists' statements' on cyberculture, from a varied group of academics, artists, programmers, and polymaths combining all of these roles and more. The stated aim of this section is to offer original thought and work that both illustrates and extends the theory and argument in the rest of the book. Poetry, photographs, brief essays, website references, montages—this section is a shock of colours, unusual words and neologisms, ideas and commentaries on cyberculture (while simultaneously constituting it, as the editors note).

Finally, section four takes as its topic the 'postmillennial' future. While the first two sections of this book aim to locate contemporary society and technology within historical contexts, and the third to present current practice, this final section focuses almost exclusively on what is yet to happen, yet to be. Within that remit, the contributors continue to be conscious of the past, incorporating analyses of previous attempts at 'futurology' such as Alvin Toffler's *Futureshock* and a variety of utopian and dystopian visions (such as Thomas More's *Utopia*, Francis Bacon's *New Atlantis*, and Samuel Butler's *Erewhon*). Again, the diversity of thought and practice in this section is difficult to summarize, but all agree on one point: that the future is (a) always already happening and (b) unimaginable.

Prefiguring Cyberculture ends with a coda that serves as a warning from the past relating to imagined futures. Its subject is Eero Saarinen's 1950s designed and 1960s constructed airport terminal building near New York City, commissioned by the now bankrupt TWA. Saarinen's corporate sponsored buildings from that period are renowned for their purity of design; the architect himself was equally renowned

for his lack of concern with the inhabitants of his spaces or the longevity of the materials.[2] As the author of the coda in this collection points out, the airport terminal is now in a state of, well, terminal decline. In part, this is attributed to changes in technology; the terminal was built for propeller driven air travel, not wide-bodied jets, and it is this that forms the basis for the warning from the past, in the present, about imagining the future. The relationships between passengers, pilots, flight attendants, and aeroplanes are explored as exemplary, microcosmic of all human–technology–business interfaces. The coda, with its mixture of cultural theory, empirical illustrations, anecdotes, abstruse theoretical terminology and more everyday language provides a fitting end to the collection.

Unlike the previous two volumes reviewed here, it is much more difficult to locate this one. If *Everyday Engineering* can be mentally shelved as a useful sourcebook and teaching aid, while *Uncanny Networks* resembles more of an attractive collection of electronically related ephemera, *Prefiguring Cyberculture* is enough of an academic text to relate to both research and teaching, yet simultaneously meaningful enough to be read as a text that might leak into everyday life—while also being unfriendly to the general reader. It is significant that there is a testimonial on the back cover of the book from Donna Haraway, an academic who has been able to inform and guide understandings of technology both theoretically and through public debate, producing some work that is remarkably difficult to read along the way. Ultimately, though, this book is too diverse, too widely dispersed, to place in a category in the same way as the other two reviewed. This leaves only one recommendation open: to obtain it through a friend or national library collection, explore it, and then to make a decision as to whether it would find a place on your own shelf.

Closing Comments

There are a number of common threads that run through all three of these books. Materially, they are all edited collections; they are all published by MIT Press; they all form part of series; and they are all beautifully produced, particularly *Prefiguring Cyberculture*. Perhaps more important, they all three share theoretical roots in the movement to understand science and technology as social practices. Within these three books, the name and work of Bruno Latour occurs and recurs as a touchstone for all interested in the work that people do in order to produce science with and through technology. Latour is cited in *Everyday Engineering*, interviewed in *Uncanny Networks*, and provided the theoretical basis for the work of Donna Haraway, the most often cited author in *Prefiguring Cyberculture*. In the context of these three books, Latour's work and opinions relating to science and IT are interesting mainly because of his resistance to the notion that contemporary technology is different from what has come before. In *Uncanny Networks*, for example, when interviewed Latour argues that there are material and social connections between moving type (a sixteenth-century technology) and moving pixels; or even between computer images and sausages, in the sense that the majority of users/consumers have no idea how either is produced . . . Similarly, the *raison d'etre* of *Prefiguring Cyberculture* is to connect past, present and future, and to re-vision information technology as within broader flows of machinery and industry. Latour's work is important for all of the many and varied analyses presented through these three volumes exactly because he dares to compare contemporary technology to other artefacts that have become banal through

usage and familiarity. Through his theoretical standpoint of arguing that science and IT are both incomprehensible if we do not take account of the human souls that bring them to exist, materially and socially, and through his rejection of any form of material determinism, Latour counters and balances other, more commonly made analyses that claim a shaping role for computers, science and IT in society. In sum, all three of these books and the embedded analyses they present are valuable and worthwhile because of their perspective on things that are simultaneously not things, at least until they are created in interaction and interpretation by people. The three volumes respond to different readerly needs, as theoretical texts, empirical demonstrations, or as detailed explorations of technology, but all three are important in their own terms and in terms of more fully understanding one of the defining aspects of contemporary life.

Notes and References

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2. S. Knowles and S. Leslie, ' "Industrial Versailles": Eero Saarinen's corporate campuses for GM, IBM, and AT&T', *Isis*, 92, 1, 2001, pp. 1–33.

Scott Taylor
University of Birmingham, UK

Information Arts: Intersections of Art, Science and Technology

Stephen Wilson

Cambridge, MA, MIT Press, 2002, xxiv + 945 pp., UK£33.50, ISBN 0-262-23209-X cloth

Wilson tells us that *Information Arts* 'takes an unorthodox look' at what art and science have to do with each other (p. 3). The boundaries between science and technology and art are weakened for Wilson because 'it can be profitably analyzed for its subtexts, its association to more general forces, and its implications'. Indeed it is true that new scientific knowledge and technology raises questions about who we are. As Wilson states: 'microbiology and genetics raise profound questions beyond science—ancient questions that cry out for artistic commentary: What is our fate . . . What is human individuality?' (p. 96).

This massive book really acts as a catalogue of contemporary technology arts, although it does attempt bravely to interpret their significance. After the opening chapter's overview, the next six chapters consider contemporary art related to Biology, Physics, Mathematics, Robotics and Kinetics, Telecommunications, and Digital Information Systems/Computers. Each chapter comprises an introduction to the particular scientific realm and latest research directions. It then presents a summary of the artists' productions in that realm. Wilson acknowledges the difficulty of categorization, particularly what high-tech art is, and it remains unsatisfactorily defined. In general, his discussion of what art, science, and technology *are* is unexceptional, and their traditional separate relationship (the C.P. Snow thesis) is referred to. Ultimately, Wilson would simply like to present 'the best of research inspired art' (p. 30).

An unfortunate feature of the book is the mediocre quality of the graphics, all black and white, with grainy, below par resolution. As a visual display it is quite disappointing. The level of analysis is also relatively simple. For example, contentious statements are presented without modality: 'Medical institutions police sexuality' (p. 80). Art has a role to interpret and to re-articulate society and humanity. However, the overwhelming impression from this book is that artists are simply using technology not so much as a subject and the basis of interpretation, but as little more than the medium itself. It is as though a century ago art focused on the crayon or the paint-brush rather than on the landscape, the human body, or, say, Guernica. There is an overwhelming impression of artistic indulgence with little to say. Take, for example, one of the kinetic sculptures of Gregory Barsamian, *Putti*, where 'spinning figures of cherubs . . . turn into helicopters and back again into winged babes' (p. 390). We are asked 'Do the cupids become helicopters first or do the whirlybirds turn into ministering angels . . . It conjures up the loss of innocence, the encroachment of police states, the buzz of Valkyrian war machines' (p. 391). It does? Did I miss something? Frankly, this is pretentious artistic interpretation where (mostly) boys are playing with toys in the name of art.

An area of considerable contention is the way in which technology and science impact on the body, testing the boundaries of life and death, sex and conception. Kathleen Woodward's concerns with the impact of biotechnologies on women and reproduction and the implicit ageism of biotechnologies aimed towards youthfulness, and Margaret Morse's interest in 'body loathing and machine desire' (p. 151)—the most extreme form of which is the extropian (using technology to overcome genetic and biological limits)—are a tiny portion of the interest in biotechnology's impact on culture and values. Yet the artistic response to this seems limited and technophilic. Stelarc's work (pp. 157–160) is typical, and the self-commentary is even more troubling. His statement that 'the body has become profoundly obsolete . . . Technology is what defines being human' is deeply disturbing because it holds the human body in contempt. This mood certainly surfaced in the Biology section, and some of the claims appear pretentious: one work is said to provide a 'multisensorial, full-duplex sensory interface, the installation networks the human' (p. 169).

Pretentious shallowness is especially evident in the limited art emerging from the field of Physical Science research. Given that this field has researched superconductivity, anti-matter, and chaos among other things, and given that physics has tended towards the metaphysical, art is visibly outsmarted by science. Shawn Brixey's *Alchymeia* (p. 225) is merely gadgetry whose interaction with the audience provides trivial outcomes. At the other extreme, that of simplicity, Richards and Gonzales's *Wave Organ*, where waves activate sounds in pipes attached to a jetty (p. 239), raises the question 'so what'?

Another realm of science that blurs the boundaries of the human and the non-human is Robotics and Kinetics, which are a source of fascination for many. Yet, as Wilson rightly points out, we live in an age in which the machine is ubiquitous. However, with Robotics, the humanoid features of shape, cognition, and autonomy prompt interesting questions like those raised in *2001: A Space Odyssey*. Even the scientists themselves are cautious about the potential (p. 383). Again there seems little in the book to suggest that art has much to offer in interpreting these possibilities. For example, Margaret K. Apostolos's telerobotic dance performances (p. 426) come across as little more than a toy. Nevertheless, there are some, such

as Kenji Yanobe (pp. 442–443) who use robotic art to challenge our fascination with this topic.

Wilson, who has previously published a book on this topic, looks more comfortable in the Digital Information Systems/Computers chapter; certainly he is more expansive, using a whopping 250 pages. It embraces questions about the complicity of computer-generated art in the technology and economy in which it is produced. Simon Penny, for example, asserts that 'An artist cannot engage technology without engaging consumer commodity economics', and Peter Weibel warns of yielding to techno-fascination (p. 649). One of the silliest claims made is that of McKenzie Wark who asserts that 'Electronic artists negotiate between the dead hand of traditional institutionalized aesthetic discourses and the organic emergent forms of social communications' (p. 651). This simplistic binary and the arrogant dismissal of music, art and literature that is not of the moment is astonishingly conceited and boorish. Yet such claims are not critiqued, simply presented.

This book is a massive undertaking, and one that is worthwhile because it provides a compendium of contemporary art, art media, and topics related to current science and technology. Given the relative banality of much of the art, one wonders ultimately whether it deserves such attention. Necessarily, the analysis has to be moderately superficial. Wilson attempts to provide a range of critiques in each of the art themes, but the quality is uneven. It seemed evident to me that science and technology has been far more articulate and critical about itself than the artists, and much of this problem, it appears, comes about as artists confuse the medium and the message in their attempt to be contemporary.

Bernard McKenna
University of Queensland, Australia

The Skeptical Environmentalist: Measuring the Real State of the World

Bjorn Lomborg

Cambridge, Cambridge University Press, 1998 (12th reprint 2004), 515 pp., $28.00, ISBN 0 521 01068 3 pbk; US$75.00, ISBN 0 521 80447 7 hbk

Measuring the Real Level of Environmentalist Skepticism . . .

Reviewing Lomborg's now reasonably well known and debatably notorious book a number of years after it was first released and now in its 12th impression, enables a test of time. Should this book take the mantle as a text for students and researchers alike on matters of development policy and the environment in its various guises? If it does, hopefully this will be for the deeper message behind Lomborg's much publicised shake up of ingrained (pessimistic) views on the (real) state of the world and the environment.

Lomborg's most radical message is perhaps one which is too often caught up in the wash of controversy about his style and pitch on other issues. To cut straight to the chase, though not finding it until page 330, Lomborg proposes developed world governments spend above their (mostly unmet) UN pledge of 0.7% of GNP on developing world development, in addition to liberalising and reforming the extreme and persistent trade protectionism of agriculture and textiles.

In doing so, argues Lomborg, more people of the world will experience true development, economically, socially, and, wait for it (because they will have to) eventually environmentally, which in turn is good for everybody. Failing to do so will see a fracturing world, where the wealthy developed world fritters investments on poorly prioritised 'environmental projects' to alleviate its growing environmental conscience (aka complex). Meanwhile the developing world will be choked by lack of attention combined with onerous environmental regulations only now being imposed in areas which can afford it—the developed world.

After all we are told, our average life expectancy has more than doubled in the past century, more people are healthier, better educated, with greater access to clean water, a livelihood, modern technologies such as telecommunications . . . you get the picture. There is 'work still to be done' Lomborg is at pains to regularly point out, lest he be taken for a hyped up Anthony Robbins style positive-attitude junky (as he bitterly and regularly complains about his opposing Woody Allen style environmental hypochondriacs). It's just that we both regularly forget how good we have it, and that it is important not to overly 'worry' while important decisions regarding our future investment in our welfare and the environment are thought out and acted upon.

There is not the space to do justice to exploring Lomborg's arguments, nor the critiques in depth. Indeed the conversation that has evolved around this publication is best viewed on the World Wide Web. Starting at his own www.lomborg.org and moving through to his critics and supporters from numerous quarters, one gets a sense that there is some serious mileage left in both the issues and the issues arising for some years to come. Expect more Lomborg visits to a country near you.

And no doubt Lomborg will be tempted to further update his publication in the coming years, which it lends itself to. Statistics or references from Russia and China do appear to be disappointingly partial, while with occasional strange statements such as 'no net soil degradation' for China (quoted from an original reference), or passing over serious eco catastrophes in the former Soviet world, clearly Bjorn goes too far in pressing his point at times. Granted he is fighting in an arena where some of his opponents use equally opposing simplification punches.

Clarifying and simple portrayal of statistics is a forte of Lomborg's and given this is his profession he is in the main to be congratulated for it. Lomborg is on the environmental landscape as a reference point and deserves to be. For the minor components of his arguments which to this day appear to attract criticism he can be, if not forgiven, certainly acknowledged that his polemic, that which it is, is both a vast improvement on most if not all before him. This is particularly due to his attention to detail and transparent argument style, however much you disagree with his conclusions or his use of examples.

Put in historical context Lomborg fits uncomfortably into the genre occupied by such publications as the Hudson Institute's *The Next 200 Years* (1977) as well as the more recent Greg Easterbrook's *A Moment on the Earth* (1996). Uncomfortably because he breaks with them to project the often unwanted and certainly still unheeded message about the need for investment in politically more difficult areas, while also because he uses extensive data and analysis in his arguments, in a refreshingly open way. His publication however is also unique in its scope as well as the depth to which he plumbs the issues.

The bibliography and footnotes have a large number of Web references, democratising in Lomborg's view the information, and giving this publication a

unique feel to it which Lomborg hopes will involve a broader populace with an aversion to use of the printed text on real paper (which continues, last I experienced it, to be many students as well)! Such referencing Lomborg regularly invites readers to cross check his and his critics' sources—an attitude itself worth reinforcing.

Lomborg re-states his case over and again: let's focus on return on investment in our future; we are wealthy enough to choose; let's not fritter it away on less than optimal investments. Such 'less than optimal' investments continue to shock many: 'perhaps we should recycle no more than we are'; a rethink on Kyoto and the importance of global warming; keeping the use of pesticides in agriculture. All have drawn and continue to draw blood and crowds into the spectacle-hungry media spotlight.

And as he points out we all have a common 'enemy' in the way in which the media naturally portrays, indeed perhaps the way human nature takes in, information relating to their environment: piecemeal, theatrical, repetitive on minor issues, and regularly simplifying. Lomborg intimates that it is not just media, but policy advisors and scientists posing with 'new' information or facts (when they may be old ones) that are similarly guilty of such acts to progress issues in the policy domain. Clearly we all need to be wary of this—as practitioners or as consumers of such information.

Lomborg even has the odd glimmer of reflexive awareness of science in action with his claim that we need to seek the 'least myth-based knowledge'. Similarly Lomborg points to the legitimate concern of specialists from a given 'field' of expertise (e.g. global warming) self-justifying the issue itself, and its importance in the broader scheme of things.

There is no doubt that some of Lomborg's antagonists as well as natural opponents have equal if not far larger cases to answer for simplifying, dramatising and crying wolf overly so through the past decades. After all we have been told by Paul Erhlich for decades that we either are, or soon will be, well over populated. Meanwhile Lomborg spares no punches for Lester Brown, from the Worldwatch Institute from which the subtext 'the real state of the world' is ironically pitched.

Other noted scientists: David Pimentel, Jared Diamond, E.O. Wilson, and a range of others are lined up against the Litany wall which Lomborg proceeds to shoot down. The Litany Lomborg coins as the almost religious list of environmental doomsday scenarios which are rolled out, often borne less by science than presumed and assumed myths.

Al Gore for instance he lines up as having a 'scary idealization of our past and an abysmal arrogance towards the developing countries of the world'. Lomborg argues a lack of prioritisation (of *all* the issues) can 'result in the statistical murder of thousands of people'. Fighting words indeed. Lomborg correctly highlights that environmental agendas can often be caught up in broader agendas (such as anti-globalisation, or anti-free trade) rather than purely focused on the issue at hand.

Of course the only danger is that with any position taking on either side of the policy fence, hostages can be taken. And while it is clear that Lomborg guards himself as best he can, occasionally he leaves himself open. After all Lomborg's polemic is aimed at ramming home a more important point. Forgiven for this? Well he will be remembered for it, and regrettable perhaps sometimes *only* remembered for this. There is a fairly linear approach to costing proposals such as the banning, or heavy taxing, of the use of certain substances. And whether this is pesticides or CO_2 emissions, the arguments easily appear to be ones coming directly from those most at risk of being disenfranchised by proposed changes.

Lomborg's perspective is infectious and should be to a point. The world needs to be seen as a glass half full, not half empty as it too often is, ironically more by those in the developed world with access to a better quality of life than most.

If this publication does nothing more than make us, as the proverbial frog in the warming pot, smug with reassurance, then it has failed. If on the other hand, as I have a greater belief it will, this publication shakes up our sense that the world is doing nothing but degenerating in every sense, then it has put us on a new and promising journey.

Most importantly the book will be wasted if the real point is lost, which is that investment decisions need to be directed carefully as we move forward. Most particularly the investment into the developing world and a clear commitment from the developed world, where this text will be mostly read, that we can either invest more in fences at the top of the cliff, or otherwise be faced with an increasing need to invest in very unsatisfying trauma care at the bottom—prevention in such cases will always be preferable to cure. And post 9/11 perhaps this message is more vital than ever.

As purported apologist for pesticide companies, coal and oil companies, waste managers and general status quo-ists, Lomborg is easy prey. It is clearly however not his attempt, and bravely charting the dangers of being taken hostage, or worse being drowned out by a media which thrives on hype not substance, his book is worth another look. It is also a book that should be read by would-be adversaries to his position as much as by policy students and practitioners alike. Skeptical? I hope so, and no doubt so does Lomborg.

Andrew Monk
Beerburrum, Queensland, Australia

Intangible Management: Tools for Solving the Accounting and Management Crisis

Ken Standfield

San Diego, CA, Academic Press, 2002, 261 pp., UK£27.50, ISBN 0126633517 pbk

When selecting a book to review for *Prometheus*, I found this title attractive in two ways. First, the reference to 'intangible' aspects of organization—perhaps this book will focus on areas of management that are commonly neglected, those that cannot be measured? The summary on the back of the book refers to emotion, sustainability, context . . . all encouraging, all identified as absent from conventional operations and knowledge management texts. So far, so good. Second, the subtitle at least acknowledges that there is a crisis of some kind in how management and accounting in particular are currently accomplished—again, rather unusual and encouraging. This double attraction then provides the first impression of the book.

Unfortunately, first impressions are too often unreliable. From the first page of this book, wherein the reader is promised that application of the concepts outlined subsequently 'may make you the next Bill Gates' (p. xix), *Intangible Management* provokes despair rather than fulfilling promise. Before returning to my reasons for reaching this conclusion, some comments about the nature and content of the book might help to put the problem in context.

There are 16 short chapters after the preface, which serves to list the key terms of the book and locate them within the author's perspective on the world. To understand the book it is necessary to accept that technological, social and political changes are taking place; to accept that managers have not noticed these changes; and to accept that this book, the accompanying website, and the author's International Intangible Management Standards Institute in San Diego, provide tools and a philosophy to cope with the changes and to profit from them. Following the template for management presented in this book will prevent managers from being 'boiled alive' as the water temperature around them changes imperceptibly, increase the precision of a manager's 'success radar', upgrade a manager's engine and put more gas in the tank, and increase her quality of life. Not small claims, but consonant with the ambition of the author.

The theory underpinning the author's managerial framework is presented in the first half of the book. There are a number of steps in the argument. First, we are told that the global economy has passed through an Information Revolution, the third such shift after the agricultural and industrial revolutions. This has resulted in the creation of the Knowledge Age and knowledge workers, who cannot be managed according to industrial norms. Second, based on research carried out by the company formerly known as Arthur Andersen accounting and consultancy partnership, the author claims that accounting relevance (i.e. to what degree balance sheets explain market value) has fallen to less than 15%. The other 85%, 'nonaccounting value', may be defined as 'intangible value'—value in need of quantification and measurement in order to enable management of 'it'. Third, the author outlines in detail 'the problem with accounting', concentrating on how international accounting standards ignore intangible or non-financial transactions (knowledge, relationships, emotions, and time). This leads us to the final step of the argument, which is the extended demonstration of how to measure (and implicitly, although this link is never made explicitly, manage and control) intangible assets in order for a company's performance and potential to be judged.

It is difficult to represent such a complex book in a way that does justice to its internal logic and coherence. The author is attempting to accomplish numerous ambitious aims: to present a convincing theoretical argument, to provide a complete managerial system, to convince the reader that she should engage with both intangible measurement and the author's institute. If any of these aspects of intangible management are questioned, however, then the entire structure begins to resemble a house built on, and of, sand. The second part of this review is an attempt to question two areas that are fundamental to this book and the attendant managerial initiatives that constitute intangible management: these are the technologies involved in the audit processes necessary to measure and manage organizational intangibles, and the programme or ideology that underlies this approach.[1]

Contemporary audit processes have been extensively analysed using these notions by Power.[2] He argues that any audit programme should be broken down into its technological (operational) elements, and also its programmatic (normative) elements. This twin approach provides us with a means of critiquing both the nuts and bolts of the audit process, and the philosophy that it is a manifestation of. The notion of technologies then refers to the mechanics of audit, the concrete tasks, that auditors actually do in organizations in order to produce an audit. Alongside this, exploring the programmes or ideologies underlying an audit leads

the analysis towards examination of the ideas and concepts that are the reason for the existence and use of the audit technologies. As Power emphasizes, this dual approach allows for analysis of both the functional and the institutional, symbolic, or disciplinary effects of the audit process.

On reading *Intangible Management*, it is clear that such an analysis would provide a useful way of understanding the book, the Institute, the managerial tools described, and the claims that the author makes to support his work. Operationally, intangible management standards proceed through the application of a series of trademarked techniques. These measurement methods enable managers to quantify time, emotion, knowledge, information, and any intangible cost or value. Complex equations and simple diagrams provide the aspirant intangible manager with (mock?) scientific means of achieving the ultimate goal, putting a figure on these previously 'absent' (i.e. unmeasured) aspects of organization. Each chapter presents propositions, warnings ('downfalls'), and brief indicators of how to proceed once the measurement process is complete. Thus, the technologies of intangible management are made to appear convincing through application of well-established norms from conventional auditing and mathematics, alongside assertions as to their rigour and relevance.

These technologies give a hint as to the programmes that lie behind the development of intangible management. As the author of this book accurately writes at the outset of his work, accountancy firms such as Ernst & Young or PricewaterhouseCoopers generate staggering sums of money from auditing the financial statements of larger organizations. The resultant reports, however, are evidently of questionable use or value to investors. It is this gap that intangible measurement seeks to fill, providing numbers on which investment decisions can be based with more confidence than merely statement of tangible assets, cashflows, and reported profit. And surely this has to be seen as a good thing? If, as Power hinted and recent accounting scandals appear to demonstrate, established accounting measures and information have value that should be measured according to symbolic aims rather than as a representation of anything approaching corporate reality, then surely the introduction of another, more accurate measurement system that addresses symbolic value is to be welcomed?

It is at this point that the aims of this book, the International Intangible Management Standards Institute, and the tools presented to 'solve the accounting and management crisis', can perhaps be understood. Management and business schools around the world, particularly in the USA, are often responsible for the generation of technologies of audit and measurement that purport to provide solutions, answers, ways of measuring and managing aspects of organizations and people that resemble a sustained programme of control or discipline on behalf of managers and investors. Intangible management is one aspect of this, in its aspirations to quantify emotion, time and knowledge; two other aspects of this programme currently being pursued include the measurement of employee spirituality[3] and emotional intelligence.[4] It is this that ought to be questioned, more than the technologies of measurement presented by the author, or the 'theory' underpinning his argument. As Power emphasizes, the rise of audit through the twentieth century reflected two trends: first, the relative decline of previous sources of legitimacy such as the state or the community, and second, a perceived need for comforters such as audit technologies to cushion us from *anomie*. The book reviewed here remains superficially attractive; it does indeed deal with aspects of management and organization that are too often absent from both

academic analysis and everyday practice. Unfortunately, however, the programme represented by its tools and arguments is only likely to further alienate both managers and organizations from both employees and society.

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Scott Taylor
University of Birmingham, UK