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BOOK REVIEWS

Sonia Livingstone, *Young People and New Media*. London: Sage Publications, 2002.
278 pp. ISBN 0761964673 (pbk)

Reviewed by HELEN KENNEDY
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Young People and New Media draws on an extensive research project carried out in 1997–1998, which aimed to update Himmelweit et al.'s (1958) study of family television. As such it is a thoroughly empirical book, a fact that is central to one of the author's main arguments: that in the realm of new media, populated as it is by mythical discourses about technical possibilities and potentials, it is important to look at real users and real uses, to look at actual experience, problematic though this contested concept may be.

Although the book is clearly located within the context of 'old' media, Livingstone identifies four ways in which media can be seen as 'new' in her research. First, the multiplication of personally-owned media – what is new here are the social contexts of the use of media. Secondly, the diversification of media forms and contents. This point links to the first – the multiplication of familiar media goods leads to increased flexibility regarding the way in which media can be combined and, in turn, an increased individualization in the combination of different media. The third 'new' theme is convergence, not just of technologies, but also of previously distinct social realms, such as home/work, entertainment/information, education/leisure. The final characteristic of 'new' media, according to Livingstone, is the expansion of interactive communication. All of these themes are discussed in detail in the chapters that follow.

The first of the empirical chapters draws heavily on the quantitative material that the young people and new media research project generated, in order to explore the relationship between access and use. In particular, Livingstone is concerned to critique the slippage that is often made between these two concepts. As she points out, policies designed to ensure access will not necessarily result in increased use. For this reason, detailed data about children's media access *and* children's media use are needed. What is interesting in the data that she presents is the discrepancy between access and use that she identifies – some young people do not use media to which they have access, and some use

media to which they do not have access, for example, by frequenting the more media-rich houses of their friends. This is an important point, in a field where policy rhetoric frequently misses out on these not-so-subtle distinctions.

The main body of the book addresses three distinct contexts in which the relationship between young people and new media is played out – leisure, the home and the family. Chapter three, which focuses on leisure, stresses the need to avoid media-centrism by looking at non-media use as a key context for media use within everyday life. What most characterises contemporary leisure, argues Livingstone, is its individualization. Similarly, in the chapter which focuses on the home, Livingstone identifies a contemporary loss of public leisure and public leisure spaces, of street-corner culture, so that leisure and everyday life are increasingly privatized and take place within the media-rich home, where there is a shift from family television to bedroom culture. This trend is simultaneously a result of the multiplication, privatization and diversification of media in the home and a response to the fact that leisure increasingly takes place in the domestic environment, so that the home increasingly needs to accommodate the tastes of a range of family members. The defining characteristic of the contemporary family which forms another context for young people's new media use, according to Livingstone, is the democratization of cross-generational family relationships. The 'democratic family', she claims, replaces the 'traditional family'; now, the family comes together around the television – not the traditional location of the dinner table – when the discourses of individualism are not serving to underpin the pursuit of diversified leisure.

The most disappointing discussion in this thoughtful book is the final chapter. 'Changing media, changing literacies', claims Livingstone, focuses on changing media contents as well as changing media contexts, and on interactivity as central to the 'newness' of new media. This is the chapter, therefore, in which the reader might most expect to find a discussion of new media such as the internet, computer games and multimedia, and while this is indeed, in part, the subject of this chapter, it is not handled with the confidence displayed elsewhere in the book. The discussion here is dependent on a rather limited and eclectic range of sources – McMillan (2002) on definitions of interactivity, Kress (1998) on the visual turn, for example – without engaging critically with their claims. In this somewhat confused chapter, more questions are raised than answers provided about new media as distinct from the old. Livingstone finishes the chapter with some thoughts on the implications for policy of the findings of her research – an important topic, but not one which clearly fits with the rest of her discussion in this chapter. What is most disappointing here is that this chapter fails to deliver a thoughtful discussion of genuinely new media. Notwithstanding Livingstone's defence of her own approach to the new earlier in the volume, a book called *Young People and New Media* creates in this reader at least the expectation of more and better

reflection on the new. Nevertheless, the strengths of the book should not be forgotten – in particular, the stress on the contexts of young people’s new media use, the distinction between access and use, and the presentation of detailed empirical material of the kind that is often missing from new media studies.

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Mark Warschauer, *Technology and Social Inclusion, Rethinking the Digital Divide*.
Cambridge, MA: MIT Press, 2003. 272 pp.
ISBN 0 262 23224 3 (hbk)

Reviewed by JAN STEYAERT
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Here is the good news: if you decide to read up on the digital divide issue but find yourself limited for time, look no further – stick to this book. Its 220 pages (plus references) will bring you up-to-date and are the perfect cure against what can now be described as the simplistic analysis of the digital divide during the boom years of internet.

To launch his quest against this simplicity, Warschauer opens with three intriguing vignettes of bad practice of technology-based initiatives in the area of social inclusion. All three of them clearly convey the book’s key message: access is a multi-layered and complex issue, not to be reduced simply to having a computer with internet connection. To quote the author: ‘access to ICT for the promotion of social inclusion cannot rest on providing devices or conduits alone’ (p. 47). Yet, providing such ‘thin’ access has been the cornerstone of many digital divide policies throughout the world.

Warchauer argues extensively and convincingly that access involves several layers, including devices, conduits and literacy, upon which he later expands and groups under physical, digital, human and social resources (chapters 3 to 6). The many historical comparisons with earlier media innovations seem to allow the reader to skip pages, but bear in mind that it is just these apparent sidesteps that ground this analysis and enrich the author's material.

Another noteworthy observation about Warchauer's book is his balancing of a global and national perspective, drawing on data from the US as well as India, China and Egypt. While most studies either focus on the Western world (e.g. the US Government *Falling through the Net* series, see <http://www.ntia.doc.gov/ntiahome/dn/>) or on the huge gaps between North and South (e.g. see reports by the United Nations Development Program at <http://www.undp.org/>), this book integrates both levels smoothly.

Warchauer is not content with describing and analysing the digital divide. He also reflects on the policy options which are available to bridge the divide, including increasing the affordability of computers and telecommunications and provision of public internet access points, the so-called 'community technology centres'. His coverage of computer-enhanced education is especially refreshing.

So far, the good news. Amongst all that, there is also the uneasy feeling of missed opportunity. For one, in his preface Warschauer informs us that most of this book was written in 2001. How can it be March 2003 before it has been made available through MIT Press? In a time where one senses both an urgency in tackling the digital divide, as well as communication happening at the speed of light, why is it that book publication is such an agonizingly slow process? It is not just that some of the quoted data are out of date (e.g. p. 27: 500 million people globally online, now estimated to be beyond 700 million) or missing some key publications (e.g. the US *Falling through the Net* series, see reference above), more importantly, some more recent developments remain uncovered in this book, such as the widespread introduction of unmetered access (cable, DSL) and emerging new platforms such as wireless connections. Equally, with increased diffusion, his remarks regarding the English language as dominating content are rapidly losing value.

This is another demonstration of how the old technology of printed press fails to meet the efficiency of modern media. Fortunately, Mark Warschauer combined the strength of both media and published full papers online long before this book came out (if you 'Google' his name, you will find them).

Another missed opportunity is that the book ceases analysis at access. Despite this concept gaining considerable depth here, there remains a gap between access and social inclusion. Inbetween the lines, the notion remains that once people have access (in all its dimensions), social inclusion will be achieved. If only it were that simple. There is a world of difference between getting someone connected and providing them with enriched educational settings, with full labour market opportunities or enlarged civic engagement. Having said

that, given the richness of this book, I can only encourage Warschauer to expand his horizons and I eagerly await his next writings.

Adrian Mackenzie, *Transductions: Bodies and Machines at Speed*. London and New York: Continuum, 2002. 231 pp. ISBN 0 8264 5884 X (pbk)

Reviewed by JULIE DOYLE
University of Brighton

Donna Haraway's *Cyborg Manifesto* (1991) paved the way for more complex interrogations of the intimate syntheses between bodies and technologies, attentive to how social realities of gender, race, sexuality and class inscribe these relations. Mackenzie's study is equally concerned with disrupting essentialist distinctions between humans and technologies, yet his focus is upon a deconstruction of corporeal and technological matter, rather than how these are culturally inscribed. Engaging with Martin Heidegger and Bruno Latour, Mackenzie's concept of transduction brings together more specifically the anti-essentialist theories of Judith Butler and Haraway, and the lesser-known writings of Gilbert Simondon. *Transductions* argues that technical ontology, like that of the body, can be read as series of iterated temporal and spatial processes. However, impressive in its attention to the ontological syntheses between bodies and technologies, this focus also constitutes its main limitation. Mackenzie's deconstruction of matter lacks an engagement with the social inscription of bodies and technologies, particularly given his indebtedness to Butler and Haraway, whose understandings of embodiment are culturally and politically grounded.

Transductions is concerned with how human collectives are constituted – or *transduced* – through technical mediations, with bodies and time as chosen points of reference: bodies because they are represented as under attack or liberated by technology; and time, because it is perceived as being speeded up by technological development. By analysing individual artefacts, which include a pre-hominid hand tool, a 17th-century pendulum clock, a brick, and a genomic database, Mackenzie offers generalized assertions about the corporeal and temporal processes which characterize their technicity. Simondon's analysis of the interactions between mould and clay which constitute the technicity of a brick, are represented by Mackenzie as evidence of a transductive process. One

of the main concerns of a transductive approach is the disruption of distinctions between matter (technical or corporeal) and form (information or meaning); distinctions which need reconceiving as performative relations that are 'continuous, variable processes of matter-taking-form' (p. 50).

Mackenzie's desire to redefine how we *think* about technology is a welcome approach. However, there are a number of limitations, in particular his use of non-exemplary technologies, such as supercomputers and nuclear weapons systems, to make generalized assertions about their constitutive role within human collectives. The notion of human collectives is also problematic, overlooking the complex specificities of cultural conditions that actively shape the production and use of technologies and, more specifically, the human bodies within these collectives. Similarly, his isolation of the chosen artefacts from their embeddedness within social realities is problematic, and while Mackenzie chooses the body as one of his main points of reference, he never engages with how bodies are culturally marked by, and materialise through, discourses of difference. There is a danger that through his concern to break down ontological difference, he fails to take into account the way in which cultural differences actually inscribe and condition human collectives.

Transductions intends to disrupt reductive historical differences. Chapter 2 examines pre-hominid axes and 20th-century thermonuclear weapons as examples of the limits of discourse and of how human collectives are conceived and represented. As representative of technologies at the limits of signification, comparisons are made between the pre-modern and the modern, Mackenzie arguing that durability, complexity and speed in composition and use, condition these technologies. An historical continuum is offered, where technical and human elements are folded into a network of signification, and differences are marked by variations in technicity rather than ontology or history.

The technical mediation of time is explored in Chapter 3 through the pendulum and atomic clock. The concept (or matter) of time and its experience within a human collective is argued to be dependent upon the technical object (or form) through which it is mediated. Chapter 4 examines further the notion of time and speed through an analysis of a performance piece, *Ping Body*, by Stelarc, involving the artist connecting himself to several computers so that delays between the production and reception of information within a computer network could be mediated through his body and visualized onto a screen. The analysis is intended to demonstrate the participation of bodies within technical ensembles and of the degrees of indeterminacy which constitute the infrastructures of technical operations. However, the choice of a constructed performance to make assertions about the more general imbrication of bodies within technologies cannot so easily do the representative work that Mackenzie wishes.

Chapter 5 examines the entwining of technical infrastructure and corporeality through the *PlayStation*. The subjective experiences of the games player are

analysed in terms of temporality, where relations between the real player and the imaged avatar unfold through the dynamics of temporality. Acknowledging that computer games readily elicit 'gender-specific, class-bound and racially stereotypical identifications' (p. 146), and that investment of time and money in computer games is 'most prominently by boys and men' (p. 149), these observations remain at a superficial level. Similarly, in the final chapter, his complaint that 'genetic information has been effectively detached from its embodiment in species or individuals' (p. 190), is never linked to the consequences of the use of such information within human collectives to foster racist, sexist and homophobic conceptions of human identity and embodiment. While the conclusion acknowledges that 'technologies such as mobile phones, computers and transgenic organisms have meaning within symbolic systems', and that 'they participate in the signification of many things including gender, class and ethnicity' (p. 206), their role within the signification of difference remains at the periphery of his analysis. Mackenzie is thus in danger of reproducing the generalizations about human and technological relations which he is so concerned with disrupting.

Transductions thus provides a highly theorized and interdisciplinary consideration of the ontological syntheses between humans and technologies, offering a way of rethinking technology as matter taking form, imbricated in the materialization of human collectives. While impressive in its detailed analyses, its main limitation is its non-engagement with the specificity of cultural differences and the complexity of social realities which condition human/technological interaction, Mackenzie's emphasis being placed upon humans conceived as large collectives, rather than marked in culturally specific ways.

Rob Kitchin and James Kneale (eds), *Lost in Space: Cartographies of Science Fiction*. Continuum, London and New York, 2002. 211 pp. ISBN 0 8264 5731 2 (pbk)

Reviewed by MATT HILLS
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This edited collection consists of 11 rather disparate chapters. One subject that recurs across these is the space, lost or otherwise, that might be allocated to the authors of science fiction. What is the relationship between writing science

fiction and writing theory about that fiction? Whose commentaries on new media and society should we prioritize: writers' imaginative re-versionings of the cyber-here-and-now, or academics' cyber-critiques? As well as the geographies of science fiction, perhaps we need to consider the geographies of science fiction studies, as it surveys from on high, maps fields and authorial oeuvres, and seeks to dispel the possibility that its cartographies are partial, limited by subcultural interests and canonicity. For example, *Lost in Space's* selection of authors who are worthy of study is hardly surprising, taking in J. G. Ballard (Taylor's article), Marge Piercy (Morehouse), Kim Stanley Robinson (Huston) and Neal Stephenson (Kendrick; Longan and Oakes).

Dialogue between science fiction's theorists and its writers fails to materialize here. Given the absence of authors 'writing back' at theorists – although science fiction/fantasy/thriller writer Michael Marshall Smith's foreword admittedly strikes an auto-theorized, considered note – critics are left free to project favoured theories onto their objects of study. This theoretical projection is striking in Huston's study, and in Longan and Oakes's interpretation of Neal Stephenson's *The Diamond Age*. As a (mis)representation of the relationship between science fiction and theory, it takes the following form: theory, in this narrative, belongs only inside the academy and should only be used by properly accredited academics. Although science fiction writers may appear to share concerns with science fiction theorists, they are not properly licenced to use 'theory', and thus their work can be analysed for its shortcomings. 'Theory' is the province of professional academics:

There is an intriguing parallel between the future Stephenson imagines and the direction of current intellectual debates over culture, identity politics, and the subject in postmodern society. We doubt Stephenson himself is particularly concerned with these debates; indeed, we *hope* he's not. (Longan and Oakes, pp. 40–1)

Why should these critics hope that their chosen writer has not read any relevant theory? Why should they assume that, despite apparent overlaps, Stephenson *is not* interested in these debates? Because they want to criticize the 'conclusions' that Stephenson's fiction arrives at, presumably. But the assumptions here lead to a situation where theorists do not, or will not, consider the possibility that writers of popular fiction may be theorizing about possible worlds, not just fabulating. Stephenson's work is denied the possibility that it may be auto-theorizing; that it may, in fact, set out forms of cultural theory and identity politics via narrative structures and characterizations.

The culture-clash of science fiction theorists and writers is referred to in Jonathan S. Taylor's contribution to *Lost in Space*. Taylor notes that J.G. Ballard responded with considerable hostility when invited to contribute to an issue of the journal *Science Fiction Studies* which was devoted to his work (pp. 91–2), viewing science fiction studies as the rigid application of theory. For Ballard,

such theorizing kills a text's openness, or is parasitic upon writers' imaginations (p. 93). Ballard implies that such theorizing is redundant, positioning his own creative work as an analytical recombination of pop cultural icons that requires no further analysis. Ballard's hostility, in short, is based on his claim to auto-theorization: for him, there is no point to science fiction studies because science fiction is already a critical study of contemporary culture.

Between Ballard's hostility to academia, and many academics' passive hostility towards their pop cultural objects of study, this book might still provoke new thought. Marshall Smith's foreword has something to tell us, I think, about getting beyond this writer/critic impasse. He writes: 'it was only recently, and with a degree of surprise, that I realized just how key both geographical and architectural concerns are to the fiction that I myself write' (p. xi). And this from a writer who is no stranger to using 'theory' as an inter-textual signpost for his readers. Good academic writing might indeed surprise and provoke writers into rethinking what they are doing, as seems to have been the case for Marshall Smith, but good fiction should also provoke academics to rethink what they are doing, suggesting that social/cultural theory regarding new media and society does not just happen in the pages of academic books and journals. As Nick Bingham observes in the brilliant final chapter of *Lost in Space*:

SCIENCE FICTION matters. Far from being . . . located safely (or otherwise) within the heads of a marginalized fandom, the 'expectations, conventions, and interpretative codes' . . . that constitute the genre have helped shape our contemporary surroundings in significant senses . . . one only has to think of the role that William Gibson's seminal cyberpunk novel *Neuromancer* played in the 'becoming real' of the Internet . . . Gibson's 'powerful vision' came . . . to influence 'the way that virtual reality and cyberspace researchers [structured] their research agenda and problematics'. (Tomas, quoted in Bingham, p. 182)

Barry Wellman and Caroline Haythornthwaite
(eds), *The Internet in Everyday Life*. Malden,
MA: Blackwell, 2002. viii + 588 pp.
ISBN 0631 23508-6 (pbk)

Reviewed by NANCY BAYM
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As the internet has become a feature of daily life in many parts of the world, it has become increasingly clear that too much internet research has

focused on the exotic at the expense of the mundane. Collections and monographs about 'virtual' or 'cyber' spaces on the internet have gone a long way toward increasing our understanding of what happens online, but have too often fostered the notion that the internet is a place apart from 'real' life. In their introduction to this rich and impeccably-grounded research collection, Haythornthwaite and Wellman argue that too much early work assumed 'that only things that happened on the Internet were relevant to understanding the Internet' and committed 'the fundamental sin of *particularism*, thinking of the Internet as a lived experience distinct from the rest of life' (p. 5). In contrast, the editors and authors in this book 'focus on the types of activities performed online, and explore how these fit into the complexity of everyday life' (Haythornthwaite and Wellman, p. 35).

The goal is ambitious and the result is timely and welcome. The book is long; its 20 contributions (written by nearly 40 researchers) span a variety of topics and use a wide range of (almost exclusively quantitative) methods including surveys, diaries, interviews and longitudinal analyses. They explore internet use in multiple national contexts, among them Australia, Canada, England, Germany, Hungary, Italy, Japan, Mexico, New Zealand, South Africa and the United States. Although most of the research reported comes from North America, the national comparisons and international analyses go a long way toward recognizing the internet as the global phenomenon that it has become. Despite its breadth, the book retains a commendably clear focus as it addresses what the editors refer to as the 'master issue' of the book, the question of whether the internet is detracting from its users' engagement in 'the real world', adding to it, or fundamentally reshaping it. In part, the book's coherence can be attributed to the editors' decision to focus on a limited variety of issues, including domestic relations, community, civic involvement, alienation, daily activities, and to a more limited extent, work and school. These self-imposed limitations are arguably one of the book's shortcomings, as the internet has become integrated into daily life in more ways than the book can do justice. However, given that the book is nearly 600 pages as it is, such criticisms are balanced by the wealth of areas the book does cover.

Though the collection does not offer easy answers, most of its chapters suggest that the internet adds to, or reshapes, more than it detracts from social connection. This is seen clearly in the chapters which address the role of the internet in interpersonal relationships. The most pessimistic chapter is undoubtedly that by Nie et al. Their article revisits their widely-publicized survey study where they argued that the internet damages relations with family and creates social isolates. In their contribution here, they draw on time-diary data and find that each minute spent online 'displaces' 20 seconds with family members, seven seconds with friends, and 11 seconds with colleagues, while adding 45 seconds of time spent alone. The effect of the internet, they fear, is to lessen our 'sociability'. Notably, their definition of 'sociability' excludes time

spent online, as they continue to insist that time online is solitary. On the other hand, Robinson et al.'s chapter also uses time-diary data to compare those who used the internet with those who did not. In contrast to Nie et al.'s argument that the internet is used at the expense of time that would otherwise be spent in social relationships, Robinson et al. find that the internet is a 'time enhancer' (p. 257). According to their data, people who used the internet had considerably more free time, slept three hours less, spent less time on personal care, and spent more time alone than people who did not use the internet. Internet users also spent three times more time attending social events and reported significantly more conversation than non-users. Although the issue remains unresolved, in general, the remaining chapters come down more on the side of Robinson of this debate, suggesting that people are using the internet in ways that enhance and expand their connections rather than diminishing them.

Several articles draw on a large-scale survey that was conducted through the National Geographic website. Although the sample is self-selected, the study's internationalism and size allows for some fascinating analyses. Chen et al. and Quan-Haase et al. explore the role of the internet in sustaining relationships and clearly challenge the claim that time spent online is non-social. The internet is shown to be used primarily in long-distance relationships, and far more with friends than family, regardless of distance. These studies are particularly strengthened by the direct comparison between the internet and other ways of interacting (specifically phone calls and face-to-face interaction).

Several of the studies reported here correlate internet use with other forms of communication. Chen et al. found that the more subjects reported that they were emailing family, the more they reported interacting with them face-to-face and on the telephone. Copher et al. asked community leaders to keep diaries of 'all communications involving the transmission of information beyond a simple greeting' for one week and compared the results of heavy and light email users. They also asked subjects to complete a survey about their communication partners or 'alters'. They found that heavy email users had 'greater numbers and percentages of communications, time spent communicating, and alters than light email users' (p. 274). For personal communications, heavy email users used proportionately more face-to-face communication than light users. The book also reports on the Metamorphosis project in Los Angeles, in which Ball-Rokeach and her collaborators have been comparing internet use in several ethnically-varied neighborhoods. For this book, Matei and Ball-Rokeach looked at the formation of new relationships online. They found that Koreans and Chinese were more likely to form new relationships online than whites, Hispanics and African-Americans, but that across neighborhoods, the stronger peoples' local ties, the more likely they were to meet new people online. They concluded that 'belongers belong everywhere'. Examinations such as these clearly challenge the claim that time spent online is inherently non-social.

The volume is worthwhile alone for its contribution to our understanding of the role of the internet in personal relationships, as it demonstrates the range of influences on interpersonal internet use as well as the complexity required in considering the technology's impact on our social lives. The collection also makes significant contributions to the state of the field in other areas through its examinations of how people use the internet in the United States (Howard et al.) and around the world (Anderson and Tracey; Chen et al; Davidson et al.) and how the internet affects community involvement (Katz and Rice; Kavanaugh and Patterson; Quan-Haase et al.). Altogether, its breadth, depth and empiricism make for an immensely impressive collection which is likely to influence the field of internet studies for years to come.

Douglas Thomas, *Hacker Culture*.
Minneapolis, MN: University of Minnesota
Press, 2002. 266 pp. ISBN 0816633460 (pbk)

Reviewed by PAUL A. TAYLOR
University of Leeds

This book is divided into three main parts: the evolution of the hacker, hacking representation and hacking law. The first two parts provide a thorough, albeit unoriginal, outline of the main aspects of hacking culture and its representation in the media. In the first two parts, theoretical issues are demurely introduced but not fully pursued. It is only in the third section that the book gets the balance right. Although giving the appearance of being somewhat tagged onto the other two parts, this final part of the book provides the most interesting integration of empirical and theoretical material. It engagingly explores the various ways in which the largely immaterial nature of hacking presents novel problems for a judicial system that is predicated upon physically-based concepts of justice.

Overall, this is a rather frustrating book. It covers many aspects of hacking culture in detail but its content tends towards replicating the dated nature of the computer on the front cover and it has a curiously selective perspective with puzzling omissions. For example, it fails to provide even a cursory mention of the overwhelmingly male nature of hacker culture, and most significantly gives a limited factual and theoretical account of the political aspects of hacking. Thus, despite describing in detail hacker culture from its early origins in the computer labs of top US universities in the 1960s and 1970s right up to the more recent

hacking events of the late 1990s, Thomas fails to mention, yet alone analyse, the rise of the closely-related phenomenon of 'hacktivism' in the mid-1990s. This gives the book a distinctly unbalanced feel and leads to such inaccurate claims as 'the first hacking incident that could be considered a *political intervention*' (p. 229) was the 'Hackers for Girlies' group's hack on the web pages of the *New York Times* in 1999. It is revealing that this claim only takes place in the book's epilogue, and depending on how you interpret the phrase 'political intervention', it rather startlingly ignores the political activities of the German Chaos Computer Club which was founded in 1984, and the various hacktivist acts that preceded 1999.

This lack of political sensibility is again evident in the frequent assertions that hacker culture represents a radical countercultural movement which is unusually resistant to incorporation by the dominant culture due to its fluid and flux-friendly adaptability. There is a strong body of thought that is deeply suspicious of the inherently conservative leanings of hacking, ranging from Andrew Ross's claim that hackers represent 'an alienated shopping culture' to Douglas Coupland's vivid fictional portrayal in *Microserfs* (1995) of the incorporation of hacking culture into the hermetically-capitalist setting of Microsoft's Seattle headquarters. Thomas omits such material and he tends to describe uncritically such ideologically-motivated hacks as the defacement of MGM's *Hackers* (1995) movie web page without any recognition of how inherently limited in political scope such actions are. He seems reluctant to acknowledge their similarity to the non-radical, self-referential activities that he previously associated with the hacking of the 1960s, where: 'Freedom and secrecy were decontextualised to the point of solipsism' (p. 15).

More positively, Thomas does use hacker culture impressively throughout the book to show how hackers 'actively constitute themselves a subculture through the performance of technology', and how 'representations of hackers in the media, law, and popular culture tell us more about contemporary cultural attitudes about and anxiety over technology than they do about the culture of hackers or the activity of hacking' (p. xx). As with the above criticisms, however, he is less impressive when it comes to taking this analysis further. While recognizing some ambivalences within hacking culture, in general Thomas does not fully examine their implications. For example, after reading this book, significant questions remain about the subcultural status of a group which is ultimately dependent upon the military industrial complex for the technological tools of its trade. Thomas describes how: 'although hackers philosophically oppose secrecy, they also self-consciously exploit it as their *modus operandi*' (p. xxi) but the failure to examine this situation further leads to the suspicion that his assertion about hacking being 'a subculture that resists incorporation by turning incorporation into opportunity' (p. 152) is less an accurate assessment of the radical potential of hacking than wishful thinking.

Overall, this book provides a thorough, if not particularly original, account of hacking culture. The relationship of various thematic strands would have been clearer with the inclusion of a conclusion to draw the various thematic threads together. The final chapter hints at a quality missing in the majority of the book, namely an ability to integrate theoretical insights with empirical descriptions. To repeat, the book's major failing is its limited way in which it deals with the political implications of hacking's relationship to new global informational structures. Finally, it inadvertently contradicts its own emphasis upon the essentially immaterial nature of hacking culture with its overwhelmingly US-centric presentations of what Thomas nevertheless supposes to be a spatially-independent culture.

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