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Disabled E-Nation: Telecommunications, Disability, and National Policy

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ABSTRACT   *This article considers questions of technological change, innovation, and communication from a disability perspective. Using a critical social perspective on disability, we offer an Australian case study to analyse disability in national telecommunications policy. In doing so, we critique the systemic lack of incorporation of disability in national visions, policies, and programmes. Accordingly, we argue for a cohesive, and genuine commitment to incorporating disability considerations in all areas of information and communication technology policy and scholarship.*

Keywords: disability; accessibility; telecommunications; Internet; nation; technology; policy

A World Bank study estimated the number of people in the world with disabilities in 2000 to be roughly between 250 and 550 million.[1] In Australia, the most reliable estimate indicates that 19% of the population—or one in five people—lives with a disability.[2] Hence, people with disabilities are a sizable group of the population. There have been many, if fragmented, initiatives regarding people with disabilities, especially in the area of information and communications technologies. Yet why has there been little systematic incorporation of disability into national policy, and few scholarly studies of technology from a disability standpoint?

In this paper we aim to foster critical consideration of this area by showing the fruitfulness of discussing questions of technological change, innovation, and communication from the perspective of disability. Our framework here draws on at least two important literatures. Firstly, we are informed by approaches from science and technology studies, pointing to the social shaping of technology.[3] Secondly, we draw upon the emerging literature in what is called critical disability studies.[4] Diverse and interdisciplinary in its constitution, disability studies critiques the dominant understanding of disability via the medical model, where disability is believed to be located in the individual's deficient, sick, or abnormal body. It also opposes the allied, and historically anterior, charity discourse of disability, according to which the person with disability is to be pitied and controlled by benevolent

institutions.[5] As it has emerged in the United States, Canada, the United Kingdom, and Europe, critical disability studies proposes instead a social approach to disability. British theorists of the social model, for instance, propose a distinction between an individual's impairments (the bodily dimension) and disability which is socially produced (as in the barriers society unfairly creates for the person with impairments, for instance). Our approach seeks to go beyond classic social model accounts by recognising the wide range of disabilities; by acknowledging the interaction among gender, sex, race, class, and age in the social relations of disability; and by seeking to understand the important cultural dimension of disability.

While there has been little work to date by technology scholars on disability,[6] just as surprisingly there has also been a paucity of work by critical disability scholars on technology.[7] Here we seek to contribute to this work by focussing on national contexts and discourses, where governments seek to grapple with telecommunications and its now inextricably associated networked digital technologies.

Disability Offline

Paradoxically the telephone was invented by Alexander Graham Bell for Deaf[8] people, an aspect of history rarely acknowledged or reflected upon in a world where history is predominantly written using non-disabled and non-Deaf constructs.[9] Throughout the late nineteenth and the twentieth centuries, people with disabilities were rarely considered in the development of telecommunications.[10] From its introduction as a communications device primarily used by business or wealthy domestic subscribers, the phone became part of a nation-building project in most countries, complementing cultural technologies such as the mail, press, telegraphy, radio, and eventually television.[11] Telephony as a national project was symbolised in the dominance of postal–telegraphy–telephone (PTT) organisations in most Western countries.[12]

Availability of telephone services to all the citizens within the boundaries of the nation-state was an important goal of mid-to-late twentieth-century telecommunications policy especially, and was referred to by many countries as 'universal service'. Despite this implicit policy of inclusion, we would argue that in fact people with disabilities were systematically excluded from this nation-building project, and the notion of citizenship it entailed. In Australia the first serious effort by the then Telecom to systematically understand and meet the needs of Australians with disabilities did not occur until the early 1980s.[13] Little action was taken by the national carrier until 1988 when the first dedicated Disability Programs branch was established.[14]

In the mid-to-late 1980s and early 1990s, this nation-building project in its classic phase was displaced by the widespread introduction of competition and the growing technological complexity of advanced, intelligent telecommunications networks.[15] Notionally at least, a person with disability become a customer to be served alongside any other, but what became evident was that the new competition in telecommunications was saddled with contradictions. Thus there remain significant issues facing people with disabilities in a competitive market, including tension between the availability of accessible equipment at affordable prices, on the one hand, and the need for people with disabilities to be 'taken into account as the telecommunications networks expand and develop, not out of charity but in recognition of their status as informed and discerning members of the customer base'.[16] The introduction of competition, we suggest, has inaugurated what can be termed

a 'corporate' discourse on disability, whereby those controlling and operating tele-communications companies seek to *manage* the problem of disability.

In the 1990s universal service in telecommunications become the subject of worldwide debate. In Australia, the legislation ushering in competition, the 1991 *Telecommunications Act*, featured a definition of universal service that mandated the delivery of standard voice telephony services throughout Australia, but explicitly separated the universal availability issues from accessibility. Accessibility was not to be provided as part of the universal service obligation. Instead, the government undertook to provide funding as one of its 'community service obligations'.[17] In a time of stringent fiscal management, no such funding eventuated for a number of years. Telecom Australia (now Telstra), the government-owned former monopoly carrier, was encouraged to continue operating its own 'concession' scheme to give people with disabilities access to the telecommunications network. Telstra did not make telecommunications accessible, however, for Deaf people and people with speech disabilities who required text telephony equipment (known in Australia as teletypewriters or TTYs). A long and at times acrimonious battle to get Telstra to provide TTY relay services at affordable rates for the Deaf and people with hearing and speech disabilities was required before this aspect of universal service was given any attention.

Just as disability was not included in the 1991 *Telecommunications Act*, so too tele-communications was explicitly left out of areas named as being important and worthy of disability standards in Australia's 1992 *Disability Discrimination Act* (indeed the then government sought to have telecommunications exempted for a period of time). Eventually, however, a Deaf man, joined by Disabled Peoples' International (DPI) (Australia), the then umbrella organisation for people with disabilities and their organisations, successfully launched an action against the then Telecom Australia in the Human Rights and Equal Opportunity Commission (HREOC) (*Scott, DPI v Telstra*).[18] This decision required Telecom to provide accessible tele-typewriters. It also eventually resulted in a change to government policy, with the requirement in the *Telecommunication Act 1997* that the functional requirements of people with disabilities be included in universal service provision. This act broad-ened the definition of the standard telephone service to include another form of voice communication that is equivalent to voice telephony, if voice telephony is not practical for a person with a disability. The incorporation of disability into the legis-lative framework was strengthened with the 1999 *Telecommunications (Customer Protection and Service Standards) Act.*

The Australian case has its parallels, *mutatis mutandi*, with other Western coun-tries, where questions of disability and technology have now become more widely discussed with social changes and debates over liberalisation.[19] What is common to these different national histories of telecommunications networks, but also the crucial international frameworks of the International Telecommunications Union and other forums, is that disability only slowly emerged as an important facet of technology development, innovation, and policy.

Disability, Information Superhighways, and Broadband Dreaming

It is an irony that at roughly the same time that great changes to nation-states inten-sified in the late 1980s and early 1990s, and their powers were apparently waning, the importance of national visions emerged in the arena of information and commu-nications technologies. National governments sought to fashion a consensus on how

the state, corporations, schools, universities, and non-governmental organisations would together create a utopian future through information superhighways.

So, for example, the United States released their policy on the information super-highway in September 1993, *The National Information Infrastructure: Agenda for Action*.[20] Famously the United States projected its vision to the world at large, proposing a Global Information Infrastructure based on five principles, including universal service.[21] These principles were adopted in the International Telecommunications Union's 'Buenos Aires Declaration on Global Telecommunication Development for the 21st Century'. The United States spent a great deal of effort further trying to promote its views, as elaborated in its 1995 report entitled *The Global Information Infrastructure: Agenda for Cooperation*.[22] Universal service was an early focus of National and Global Information Infrastructure deliberations: the US NII Task Force included a Telecommunications Policy Committee, with a Working Group on Universal Service, to 'ensure that all Americans have access to and can enjoy the benefits of the National Information Infrastructure'.[23] In all of this, the universal service agenda provided an opportunity for disability issues to be raised, but once again these were not taken as seriously as they should have been—or properly incorporated into national or international policy. In large part in the US, as elsewhere, it was left to the disability community to pose questions and suggest strategies.[24]

In Australia, the federal government directed its Bureau of Transport and Communications Economics to undertake a large, interdisciplinary study, the Communications Futures Project.[25] It also established the Broadband Services Expert Group, with a select membership including only one woman and no representation of community, consumer, or public interest groups. Critics argued that at the time government lacked a commitment to fostering wide participation in decision making around communications technologies. The Interim Report was limited in its coverage of consumer and social policy issues, being characterised by general statements that did not take the social and cultural dimensions of technology seriously. The Final Report was something of an improvement, but gave little guidance on disability and accessibility issues.[26]

At this time matters of disability with respect to information and communications technologies were not widely understood or acknowledged around the world. In America, public awareness of disability, and industry and government action on the issues, had been lifted by the 1990 *Americans with Disability Act*. In Europe, disability as a human rights issue had yet really to develop—though there were significant initiatives on telecommunications and disability underway, such as the pan-European COST 219 work.[27] In Australia at this time, most government and corporate policymakers were actively resisting the incorporation of disability into discussions of telecommunications and new media, and there were certainly very few, if any, initiatives in the area. A key problem was that there were fewer initiatives from government, science, industry, or the disability community to give disability due consideration than were possible in larger, wealthier countries. Moreover, the telecommunications needs of people with disabilities were only just becoming part of the mainstream consumer movement. Indeed, telecommunications accessibility as a right was still being grappled with, and remained an underdeveloped concept.

Disability, Competition, and Convergence

What has happened since the late 1990s, then, with the consolidation of competition in telecommunications, the extraordinary rates of adoption of the Internet

and mobile telecommunications, and the growing convergence of technologies and industries?

In Australia, industry has still been reluctant to take issues of disability seriously when inventing, planning, procuring, or implementing technology. There have been notable exceptions, such as the formulation of disability action plans on the part of some providers, specific technology designs and policy changes, and regulatory, policy, and standard-setting initiatives.

One of the features of policy-making since 1997 has been the rise of what is called 'self-regulation', where responsibility for a number of areas of regulation has been given to industry itself. Consultative fora, including consumer representatives, have assumed greater importance because they have taken up some of the regulatory and policy-formulation roles previously played by the state and its agencies. In Australia, for instance, the Australian Communication Industry Forum, an industry self-regulatory body, was established in 1997 by the telecommunications industry and assumed responsibility for developing regulation in many areas previously governed by the government and industry. ACIF was also given responsibility for initiating regulation in areas not previously subject to any state or self-regulation. ACIF's role is to develop and administer technical and operating arrangements that promote both the long-term interests of end-users and the efficiency and international competitiveness of the Australian communications industry. This primarily involves developing standards, codes and other documents to support competition and protect consumers, as well as compliance; and the cooperative resolution of strategic and operational industry issues.

ACIF's task is quite a difficult one because it attempts to harmonise and gain consensus across a plethora of commercial providers with a bewildering array of technologies and services. It has been widely criticised, nonetheless, for its poor track record in developing codes of practice—its central regulatory contribution. One area where it has achieved some success, however, has been in the area of disability. Here ACIF established a Disability Advisory Body which uses people with disabilities as experts who work collaboratively with those designing guidelines and regulations which shape not just Australian telecommunications but how those communication systems interface with other technologies. The majority of members of the Disability Advisory Board are drawn from broadly represented organisations and chaired by a person with disability respected in industry, consumer and academic circles. It provides a key meeting place for consideration of not just current but future telecommunications issues. Examples of its work include the 2001 *Access to Telecommunications for People with Disabilities Industry Guidelines*,[28] and the *Any-to-Any Text Connectivity Options Working Group*.[29]

These isolated examples aside, by and large in Australia large and small telecommunications carriers, service providers, and content providers, have not been aware of, or interested in, considering disability as a mainstream issue. Instead, in lieu of industry shaping technology with the interests of people with disabilities in mind, the human rights law framework has been invoked on a number of occasions by complainants and the Human Rights and Equal Opportunity Commission to raise the issue of disability.

A particularly important case was that of second-generation mobile telecommunications, notably the Global System for Mobiles (GSM) standard, which had serious compatibility problems with hearing aids. Manufacturers, carriers, and policy-makers became aware of this in the early 1990s, but people with disabilities were still dissatisfied with their access and invoked human rights law in 2000—with

mixed results.[30] The Australian Communication Exchange has pointed out that: 'In the late 1990s, telecommunications access for people with a disability made a tremendous leap forward and the future looked positive … However, in three short years since 2000, more than half of the telecommunications network is now not accessible to people who are Deaf or have a hearing or speech impairment despite the existence of the disability discrimination and telecommunications legislation'.[31] The reference here is to the first-generation analogue mobile phone networks replaced by the second-generation GSM and CDMA digital mobile networks. Neither of these second-generation networks, however, supported the technology of choice used by Deaf people and people with a hearing or speech disability, namely the teletypewriter.[32] Thus Deaf Australians were still denied the opportunity to use mobile phones that also work as a TTY or can be wired (via cable) to a TTY to access other TTYs, as was possible in Europe.[33]

In 2003 the Human Rights and Equal Opportunity Commission belatedly sought to provide co-ordination and leadership across an increasingly fragmented, diverse, and converging telecommunications market, by releasing a major report[34] and convening a national forum. While this was an important initiative, in our observation it is not seen as central from the perspective of industry, government, or regulatory actors. One difficulty that the Human Rights and Equal Opportunity Commission faces is the steady decline of the body and its authority by the coalition government since it took office in 1996. In the disability area, the government has refused to appoint a permanent commissioner since the inaugural Disability Discrimination Commissioner retired in 1997. More recently, the government has made an attempt to curtail the powers of the Commission to initiate action on instances of discrimination—a blatant attempt to diminish its independence. In addition, there is a growing critical literature with regard to significant problems with people with disabilities actually being able to afford to initiate complaints under such legislation, especially since there has been a requirement for cases to be heard in the Federal Court.

As well as telecommunications, one prominent strand of government national policy in Australia and elsewhere has been a discourse on e-commerce. Interestingly, there was an accessibility programme of the National Office on the Information Economy (NOIE; closed in mid-2004), later administered by the Department of Communications, Information Technology, and the Arts. Established in 1998, the accessibility programme has funded nearly three million dollars of grants. The project included the Accessibility Online Resource (http://accessability.noie.gov.au/): 'NOIE has been very heavily involved over recent years in ensuring that people with disabilities have access to online information and communication services, and retains an interest in ensuring that the online environment remains accessible to all Australians'.[35] While this work, and that of the Department of Communications, may be making a small but important contribution to accessibility of communications and information technology for people with disabilities, the government's will to action is conspicuously absent where it really counts—in the genuine inclusion of people with disabilities at every level of policy regarding technology design and implementation. Thus we would add a disability perspective to other critiques of Australian policy in the area of e-commerce.[36]

Perhaps the most important work done on Internet accessibility has been that conducted under the auspices of the Worldwide Web Consortium (W3C) web accessibility initiative (WAI), the inheritors perhaps of a certain 'gift economy' often seen to characterise early Internet culture. This W3C standard-setting work

has involved a number of Australians, and has also served an educative function for Internet content and service providers and policymakers. For instance, since 1 December 2000, Australian government agencies have been obliged to adhere to basic W3C WAI guidelines. One of the first test cases regarding disability accessibility and the Internet occurred in Australia, when the Human Rights and Equal Opportunity Commission found against the Sydney Organising Committee for the Olympic Games (SOCOG) for refusing to make their Olympics 2000 website accessible.[37]

As the web accessibility initiative example suggests, whole-of-government neglect of disability in new media is all the more surprising given that information is available. People with disabilities have been active as users of new media, especially the Internet, and world-wide in the private and public sphere have been experimenting with technologies in diverse and fascinating ways. Disability groups worldwide have been active in developing new media projects such as sign language avatars on the Internet, video telephony, multimedia accessibility, and accessible standards for digital television, to mention but a few. Over the past decade, moreover, there has emerged a great deal of detailed research and advocacy on the communications needs and expectations of people with disability. In Australia, much of this work has been funded by Telstra (especially before 1997), and by the Federal government's telecommunications consumer advocacy and research fund established under the 1997 *Telecommunications Act.*[38]

Disabling Broadband A Decade Later

In 2003–04, the role of information and communications technologies in the everyday lives of people is widely seen as more central. There has been something of a sea change in how nations are positioning themselves with respect to these technologies, in the intervening decade. Utopian visions of global infrastructure and information superhighways have receded, but national policy is still viewed as important.

In 2003 visions of Australian national telecommunications policy were once again being refracted through a discourse on broadband technologies, though perhaps seen through a glass darkly. A number of governmental inquiries were undertaken into broadband, telecommunications, and convergent communications, as well as important inquiries into the still most strategically important of Australia's companies in this area, Telstra, culminating with the January 2003 report of the Broadband Advisory Group. Rather like its predecessor, the Broadband Advisory Group proclaimed the advantages of broadband technologies. Once again, it proposed a national broadband strategy, this time to maximise '*choice* in work and recreation activities available to all Australians independent of location, background, age or interests' (p. 17). However, disability concerns were not mentioned. Perhaps this is not surprising given that the membership of the BAG, dominated by representatives of large corporations and senior bureaucrats, was even less representative than its BSEG predecessor. A number of disability organisations made submissions to the BAG, but their perspectives were ignored in the final report that concentrated instead on the virtues of early broadband adoption by Australian consumers.

The report of the Broadband Advisory Group was focussed upon broadband Internet, rather than wireless and mobile broadband. In these critical decisions regarding new mobile networks, and especially third-generation, people with disabilities were once again not being seriously considered as users of these broad-

band networks, or customers of these services. This was not only surprising given Australia's sophisticated consumer and citizenship consultative processes developed in the past decade—in which civil society has gained greater participation in telecommunications policy processes (if only precariously so),[39] it was also curious given that 3G networks, like other broadband networks, have the potential to offer interactive video—something which has long been of interest to Deaf people because they would be at last able to communicate via telecommunications in their first language, sign language (rather than having to translate into a language of the hearing community, such as English). Indeed, the potential of videotelephony for Deaf people and people with disabilities was actually the subject of a recommendation from a parliamentary enquiry. A House of Representatives inquiry on wireless broadband recommended that the 'Commonwealth develop the means to provide hearing impaired people [sic] … [with] appropriately adapted video compression and transmission technology for video communication using sign language'.[40] This parliamentary inquiry, like a number of others before it, had little influence on government policy, and so this suggestion has not been properly taken up.

The problems with Australian national telecommunications and policy were laid bare later in 2003. In May 2003, the first third-generation (3G) mobile service was launched in Australia by Hutchison Communications. In the same year, two other major carriers, Telstra and Optus, made commercial decisions not to introduce third-generation networks, as such, but rather offer extended second-generation networks offering enhanced video and audio downloads but not interactive video. Subsequently in August 2004, Telstra has announced a partnership with Hutchison to share network capacity, and so enter the 3G market. As it has been introduced, however, real problems with both 3G, and extensions to second-generation mobile technology, are with interactive video operating at sufficient data speeds to capture and convey sign language. Providers of the new mobile networks do not appear at all to have seriously learnt the lessons of how second-generation mobile networks let down disabled users. In addition to the technical and design dimensions of accessibility, Phil Harper has also noted that pricing is a key barrier, and calls for '[p]olicy discussion between Deaf consumers, government and industry … to consider how videotelephony can become an affordable and mainstream service option'.[41]

It is understandable that technology companies are concerned about the consumer and business acceptance and take up of 3G services, especially with the very high prices paid for 3G licences internationally (though not so much in Australia). Academic scholarship and discussion has also been preoccupied with understanding the implications of the 3G licence debacle and the slow development of services worldwide. Certainly these debates are very important; however, what has yet to be addressed is the economics of denying or constraining accessibility for people with disabilities, or, the converse, of designing technology for a wide diversity of users—and what this means for national policy.

The Fate of Disability in an e-Nation

In this paper, we have argued that disability is still rarely seriously considered in discussions of technology at the national level. People with disabilities still face a long struggle to be accepted in society, as equal members of their national communities and cultures, as we have argued in our study of disability in Australia.[42] At the time of writing, the United Nations is formulating a long-overdue Convention on

the Protection and Promotion of the Rights and Dignity of People with Disabilities,[43] and we hope this international instrument will motivate disinterested national governments, like our own at present, to improve domestic human rights implementation.

We often observe that when disability is discussed, it is often to invoke a central myth of technology and disability; namely that technology, especially telecommunications and the Internet, are often presented as inherently liberating for people with disabilities. Disability can be redressed, made safe, or even neutered, by virtue of technology: 'you can lose your disability on the Internet'.[44]

In place of this myth of technology and disability, we call for a different approach. International trade rules, standards-setting activities, and the power of transnational corporations means that national actors need be all the more creative in their activities of government and policy formulation. If it is worth considering integrated and comprehensive national responses to technology, such efforts must genuinely incorporate people with disabilities, their needs, desires, and expectations. Incorporation of disability into universal service policy is an obvious place to start, as too is the pivotal importance of human rights law, policy, and practice, that puts disability at its heart.

Yet the rich and messy dynamics of technological change today mean that other approaches need to be considered also. Though we are not able to discuss this fully here, we do wish to propose that disability can be fruitfully inserted into national policy on innovation systems, technology, and economy. In Australia, there is little of this work being undertaken in telecommunications, the Internet, and other information and communications technologies, with one exception being the Smart Internet Co-operative Research Centre that is developing ways of bringing user perspectives and dialogue into all parts of the innovation, research and development cycle. What may be gained from thinking about disability and technology differently is potentially a great deal more than commonly thought.[45] Accordingly we argue for the incorporation of disability as a key consideration in national telecommunications and technology policy, yet in so doing we will need to re-examine the very disablist values which have been central to the narration of a (disabled) e-nation.

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31. Australian Communication Exchange (ACE) is 'a not-for-profit, Australian organisation dedicated to empowering those who are Deaf or have a hearing, speech or communication impairment, to obtain access to the telephone and other telecommunication networks' (see http://www.aceinfo.net.au). ACE has been the provider of the national teletypewriter relay service for Deaf Australians, those with a hearing or speech disability, and those who wish to communicate with them.

32. Theoretically, Deaf people can buy a laptop communicator, and install the appropriate software to use this with a Nokia Communicator mobile phone, or other appropriate portable digital assistant (PDA), and thereby communicate with other TTY users (as the digital phone networks support the V.21 modem standard). However, this solution is far more expensive and cumbersome than a teletypewriter and compatible mobile phone network, and so practically is feasible only for very few current Deaf telecommunications users. Thanks to Tracey Annear for this clarification.

33. Australian Association of the Deaf (AAD), *Mobile Phones and Deaf People Discussion Paper*, AAD, Sydney, May 2002, p. 1, available at http://www.aad.org.au/publication/publish.htm. AAD note that in 'Europe the Nokia 9000 range includes a V.18 standard modem chip, which allows "handshakes" with various network protocols such as ASCII, DTMF and baudot (TTY)'. For a comprehensive discussion of Deaf people in Australia and telecommunications, see Phil Harper, 'Networking the Deaf nation', *Australian Journal of Communication*, 30, 2003, pp. 153–66.

34. William Jolley, *When the Tide Comes In: Towards Accessible Telecommunications for People with Disabilities in Australia*, a discussion paper commissioned by the Human Rights and Equal Opportunity Commission (HREOC), HREOC, Sydney, available at http://www.hreoc.gov.au/disability_rights/communications/tide.htm.
35. 'Access, participation and skills projects home page', NOIE, available at http://www.noie.gov.au/projects/access/index.htm.
36. See a number of chapters in Gerard Goggin (ed.), *Virtual Nation: The Internet in Australia*, University of NSW Press, Sydney, 2004, especially Richard Joseph, 'The Australian misinformation economy: rethinking electronic commerce', pp. 116–29.
37. Bruce Maguire v. Sydney Organizing Committee for the Olympic Games, 'Reasons for decision', H 99/115, Human Rights and Equal Opportunity Commission, Sydney, 24 August 2000, available at http://www.hreoc.gov.au; in the same case see also, 'Reasons for decision concerning relief', H 99/115a, Human Rights and Equal Opportunity Commission, Sydney, 18 November 2000, available at http://www.hreoc.gov.au.
38. For example, see important work undertaken by the following bodies: Australian Association of the Deaf's Telecommunications Access and Networking Project (DTAN) (http://www.aad.org.au/advocacy/dtan.htm); the Telecommunications and Disability Consumer Representation project (http://www.bca.org.au/tedicore/tedicore.htm); Blind Citizens' Australia (http://www.bca.org.au); Telstra's Consumer Consultative Council (http://www.telstra.com.au/tccc/); noteworthy publications include: Ian Wilson, *Telecommunications for the Deaf: Meeting the Telecommunications Needs of the Australian Deaf Community*, Australian Association of the Deaf, Sydney, 1994; Women with Disabilities Australia (WWDA), *Telecommunications and Women with Disabilities*, WWDA, Canberra, 1999; Tim Noonan, *Accessible E-Commerce in Australia: A Discussion Paper about the Effects of Electronic Commerce Developments on People with Disabilities*, Blind Citizens Australia, Melbourne, 1999, available at http://www.bca.org.au/ecrep.htm.
39. See Gerard Goggin, 'Telecommunications: consumers on the line', in Simon Smith (ed.), *In the Consumer Interest: A Selected History of Consumer Affairs in Australia 1945–2000*, Society of Consumer Affairs Professionals, Melbourne, 2000, pp. 95–110.
40. House of Representatives Standing Committee on Communications, Information Technology and the Arts, *Connecting Australia!: Wireless Broadband*, Commonwealth of Australia, Canberra, 2002, pp. xvi, 47.
41. Harper, *op. cit.*, p. 162.
42. Gerard Goggin and Christopher Newell, *Disability in Australia: Exposing a Social Apartheid*, University of NSW Press, Sydney, forthcoming 2005.
43. Information on the Ad Hoc Committee on a Comprehensive and Integral International Convention on the Protection and Promotion of the Rights and Dignity of Persons with Disabilities, its deliberations and consultations, is available at http://www.un.org/esa/socdev/enable/rights/adhoccom.htm.
44. Jacob Baldwin, 'The ADCNetwork consumer's guide to the Internet; or how I lost my disability on the Internet', available at http://www.adcnetwork.net.au/lost_disability.htm.
45. See Paul Miller, Sophia Parker, and Sarah Gillinson, *Disablism: How to Tackle the Last Prejudice*, especially chapter 4, 'The engine of difference: disability, innovation and creativity', Demos, London, 2004, p. 60, available at http://www.demos.co.uk/catalogue/disablism/.