

Indigenous Australians and the 'digital divide'

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As a result of their disadvantaged socioeconomic position, Indigenous Australians experience disadvantaged digital information access, both in terms of the distribution of information and communication technologies (ICTs) and the skills-based capabilities required for their effective utilisation (e.g., literacy and information literacy). As social, economic, and political opportunity becomes increasingly wedded to ICT access in the information society, Indigenous digital disadvantage threatens to perpetuate or exacerbate the existing inequalities constraining access.

Despite concerns such as the issue of information imperialism, Indigenous Australians have recognised the empowering potential of the Internet as an information resource, communication tool, and publishing medium. Though the policies of government and the information profession commit to maximising equity of ICT and information access, Indigenous digital disadvantage suggests the need for greater intervention and comprehensive strategies in the interests of a socially inclusive information society, of benefit to all Australians.

Introduction

This paper explores the context and extent of digital disadvantage for Indigenous Australians, and its significance in an information society where economic, social, and political opportunity is increasingly wedded to ICT access. The digital disadvantage of Indigenous Australians, stemming from their disadvantaged socioeconomic position as a colonised people, is found to comprise both inequitable distribution of ICTs and of the literacies required for their effective utilisation. The role, views, and policies of stakeholders in the issue are examined, including those of Indigenous Australians, commercial providers of ICT infrastructure and services, government, and the information profession. Although positive developments have occurred (particularly in the provision of relevant online content), greater intervention and comprehensive strategies by government and the information profession are needed to promote a socially inclusive information society, both empowering of Indigenous Australians and of benefit to all.

The significance of the 'digital divide'

The 'digital divide' refers to inequalities in access to computer-based ICTs such as the Internet, and in the capabilities required to utilise these effectively (Digital Divide Network 2004a; Lester & Koehler 2003, p.244; National Office for the Information Economy (NOIE) 2002). Within developed, post-industrial societies such as Australia, the fundamental cause of the digital divide lies in the patterns of socioeconomic stratification that shape access to all social goods (Norris 2001, pp.91–2, 234). The digitally disadvantaged include Indigenous Australians and other groups in which they are included or over-represented: those on low incomes, unemployed, without tertiary education, from non-English speaking backgrounds, disabled, or living in rural areas (Australian Bureau of Statistics (ABS) 2004, pp.118, 186, 315; Australian National Training Authority c.2000, pp.11–4; Caslon Analytics 2004; Curtin 2001; National Centre for Social and Economic Modelling c.2003 cited in Marriner 2004).

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The significance of the digital divide lies in the increasing importance of ICT access to economic, social, and political opportunity in the information society (Hendry 2000; Horrigan 2003; NOIE 2002). For example, information-based goods, services, and employment represent increasingly significant sources of wealth in an information-driven economy (NOIE 2002); the government and private sectors are increasingly shifting to online information and service delivery (Holloway 2002; NOIE 1998); and the Internet has emerged as a new site for education, social interaction, and political engagement (Curtin 2001; Norris 2001; Page & Katitjin 2000). As opportunity becomes increasingly wedded to ICT access, there is concern that existing social inequalities constraining access for the disadvantaged will be perpetuated or exacerbated (Curtin 2001; Holloway 2002, pp.52–4, 56; Horrigan 2003; Norris 2001, pp.10, 68).

The context and extent of Indigenous digital disadvantage

White colonisation has resulted in devastating impacts on Indigenous Australians, who experience multiple and severe disadvantages across literacy and education, employment, income, health, housing, law, and justice (Aboriginal and Torres Strait Islander Commission (ATSIC) c.2003; Johnston 1991). These dimensions of inequality may interrelate to impede information access, which in turn perpetuates Indigenous disadvantage. For example, the high rate of hearing impairment from the ear infection 'otitis media' among Indigenous children impedes literacy acquisition (Department of Education, Science and Training (DEST) 2002, pp.14–5; Gray et al. 1999, p.19), which in turn contributes to difficulties in accessing health-related information and services (Murphy, Murphy & Kanost 2003, pp.45–6).

One means of identifying Indigenous digital disadvantage is by comparison with the non-Indigenous population. 2001 census data indicated home Internet use at 9% of the Indigenous and 29% of the non-Indigenous population; overall Internet use at 16% (Indigenous) and 39% (non-Indigenous); Internet use for 15–17 year olds at 29% (Indigenous) and 70% (non-Indigenous); and home Internet use in very remote areas at 1% (Indigenous) and 23% (non-Indigenous) (ABS 2004, pp.637–8). Further, as Holderness (1998, p.43)

notes: 'Not all Internet connections are created equal' – many remote Indigenous communities battle narrow bandwidth (Huta 2003, p.2).

Indigenous digital disadvantage may also be considered as a dimension of information poverty, understood as the perception of being without access to needed information (Bannerman 1996, p.251, drawing on Chatman 1996). Indigenous commentators Dodson (1993, p.3) and Fourmile (1989, p.3 cited in Moorcroft 1993, p.27) note that much of Indigenous people's sense of powerlessness has stemmed from lack of access to information about matters that control their lives. Indigenous digital disadvantage impedes access to information required for needs such as negotiating with mining companies (O'Faircheallaigh 1996, pp.188–92), preparing native title claims (Aboriginal and Torres Strait Islander Library and Information Resource Network (ATSILIRN) 2001a; Smallacombe 1997–1998, p.4), and tracing family histories for the 'stolen generations' ('Information for the *stolen generation*' 1997; Smallacombe 1997–1998, p.4).

Finally, digital disadvantage must be assessed in relation to information *production* as well as consumption. Digital disadvantage constrains Indigenous capacity to utilise the Internet as a tool for unmediated global publishing and interactive communication – critical for a diversity of needs such as disseminating Indigenous perspectives, challenging mainstream misrepresentations of Indigeneity, forming global political alliances, maintaining community relationships, and engaging in e-commerce and cultural production (Dyson 2003, pp.6–9; Kamira 2002, p.3; McConaghy 2000b, pp.48–52; Page & Katitjin 2000; United Nations Permanent Forum on Indigenous Issues 2003, p.1).

Stakeholders in the issue of Indigenous digital disadvantage

In addition to Indigenous Australians, major stakeholders in the issue of Indigenous digital disadvantage include commercial providers of ICT infrastructure and services, and those policy-making agencies responsible for serving the 'public interest', or stake of the whole community in the benefits of information access equity (Houghton & Eyre 2003b, pp.6–7): government, public schools, libraries and other information services, and the information profession.

Indigenous digital disadvantage: significance and challenges for the information profession

As indicated by policies such as the ALIA core values statement (Australian Library and Information Association (ALIA) 2002), public library service is informed by a social equity philosophy, providing free information access to the whole community in the interests of a socially inclusive and democratic society (Harboe-Ree 1996, pp.374–5; Hendry 2000; Houghton & Eyre 2003b, p.6). Public libraries are seen as helping bridge the digital divide by providing free public Internet access for all (Hendry 2000; International Federation of Library Associations and Institutions (IFLA) 2003; Kagan 1998; Lester & Koehler 2003, pp.248–9).

A fundamental problem with this approach is that disadvantaged groups, such as Indigenous Australians, have a low rate of library use (Dodson 1993; O'Donoghue 1998). As a social equity mechanism, the principle of free universal public library service is flawed because, though funded by all, it is disproportionately used by the more advantaged members of society (Harboe-Ree 1996). Barriers to Indigenous library use have included: the white cultural perspective historically dominating collections, services, cataloguing, and indexing; lack of library Indigenous staffing, cross-cultural awareness, and consultation with Indigenous communities; limited Indigenous print literacy; and lack of services to remote areas (Dodson 1993; Moorcroft 1993; Novak & Robinson 1998; O'Donoghue 1998).

The limitations of public library Internet access provision in addressing Indigenous digital disadvantage have led to outreach initiatives, such as ALIA's 'Indigenous Communities Online' project 1997–1998, which provided online access and training to five remote Indigenous communities across South Australia, Queensland, and the Northern Territory (Nicholson 1999a). There have also been calls for greater political activism by information professionals in the cause of universal Internet service (Kagan 1998), raising the question of the role of political action in fulfilling the social responsibilities of the profession (Froehlich 1997, pp.16–9; Houghton & Eyre 2003a, pp.39–40).

Finally, the challenges of Indigenous digital disadvantage are not confined to the library sector. For example, the information needs of the stolen

generations have challenged archivists to extend the focus of their role from record custodians to information access providers (Rosly 1995; Smalacombe 1997–1998, p.4), resulting in online content initiatives such as the development of guides to Indigenous-related records and services (e.g., the *Indigenous records* webpage of the National Archives of Australia 2004).

Barriers to Indigenous digital information access

Digital divide analyses have tended to focus on inequities in the distribution of ICTs, neglecting other barriers that impede meaningful information access and use (Houghton & Eyre 2003b, p.10; NOIE 2002). While physical access to ICTs is essential in bridging the divide, technology alone remains insufficient without an awareness of its benefits, the skills to utilise it (i.e., literacy, computer and information literacies, and life-long learning capability), and the availability of relevant and accessible content (Goldman 2002; NOIE 2002).

The socioeconomic disadvantage of Indigenous Australians as a colonised people has resulted in a weak community infrastructure for digital information access – technologically, economically, and in terms of skills-based capabilities (Turk 2003, pp.49–50). Barriers to Indigenous digital information access include – but extend beyond – physical access to ICTs, to include a range of literacy and content issues.

Physical access to ICTs

One factor affecting Indigenous access to ICTs is the geographical distribution of the Indigenous population, approximately 70% of whom live outside major cities (ABS 2004, p.94). A quarter of Indigenous Australians live in small, widely scattered communities in remote areas, making cost-effective implementation of technological infrastructure difficult (DEST 2002, p.8; Huta 2003, p.1; Turk 2003, p.50). Some communities, such as those of the Ngaanyatjara Lands in Western Australia, continue to lack basic telephone connection (Goldman 2002, p.1; Huta 2003, p.1).

Rural or remote Internet users often confront higher costs, inadequate bandwidth, or poor, unreliable service (Curtin 2001; Goldman 2002, p.1;

Huta 2003, p.2). A particular concern for digitally disadvantaged Indigenous communities in rural or regional areas is the closure of face-to-face outlets, as government and the private sector increasingly shift to online service delivery (Curtin 2001; Gibson 2003, pp.240–1).

Although some form of Internet access is physically available to most Australians (Curtin 2001), relatively low income renders many Indigenous people unable to afford the costs of set-up, connection, and maintenance (Dyson 2003, p.5). Limited exposure to the technology constrains awareness of the benefits of Internet access and the development of basic computer literacy – barriers compounded by Indigenous under-representation in IT training courses and the IT profession (Dyson 2003, pp.1–2, 6, 9).

Literacy issues

Equity of digital information access must incorporate literacy – essential for Internet use, the ability to locate, evaluate, and use information effectively, and life-long learning to adapt to rapid technological change, as well as education, employment, and life opportunities in general (DEST 2002, p.xix; Digital Divide Network 2004b; Lester & Koehler 2003, p.242; Norris 2001, p.59).

Indigenous Australians experience poor literacy outcomes: national literacy benchmark results for Years 3 and 5 identify Indigenous children as the most educationally disadvantaged in Australia (Department of Education, Training and Youth Affairs (DETYA) 2000, p.3; Hanlen 2002, p.226). Poor Indigenous literacy development results from multiple factors, including hearing, health, and nutrition problems, shortage of appropriately trained teachers, and poor attendance (often stemming from schools' lack of cultural inclusiveness) (DETYA 2000). 12% of Indigenous children also approach English literacy acquisition from an Indigenous language-speaking home background – a proportion that increases to 2/3 in the Northern Territory (ABS 2004, p.118).

Because the dominant white culture has defined literacy as a print-based, English language literacy, literacy education for Indigenous Australians is a 'contested site' (Greville 2000, p.34), involving issues of cultural domination, Indigenous language loss, and debate regarding the role of bilingual education (axed by the Northern Territory Government

in 1998) (Greville 2000; Hanlen 2002; McConaghy 2000a; McConaghy & Snyder 2000; Nakata 2002). Colonisation marginalized Indigenous culture – a non-print culture featuring oral and art-based visual literacies (Greville 2000, pp.34–6; Hanlen 2002, pp.219–20; McConaghy & Snyder 2000, pp.78–9) – and has resulted in the loss of around 160 Indigenous languages (with only 20 expected to survive) (Huta 2003; McConaghy 2000a, p.200; Nicholls 2002). As a consequence, Indigenous literacy education sustains a tension between the need to empower Indigenous people with the English language and literacy skills required to compete in mainstream society, and the need to support and uphold Indigenous culture, language, and identity (Greville 2000; Nakata 2002; McConaghy 2000a, pp.10–5).

Recent government education policies, such as the *National Indigenous English literacy and numeracy strategy 2000–2004* (DETYA 2000), are attempting to address poor Indigenous literacy within the context of wider Indigenous social disadvantage (DEST 2002, p.7). Strategies include developing stronger partnerships with Indigenous communities, culturally inclusive approaches to education practices, and school-based health programs (Australian National Training Authority c.2000; DEST 2002; DETYA 2000). The Commonwealth Government has also attempted to address low Indigenous literacy rates via the 'Books in Homes' projects, which provide free books to Indigenous and other disadvantaged school children (DEST 2004).

Content issues

Equity of ICT access cannot result in equity of *information* access for Indigenous Australians unless relevant and accessible content is available. Despite positive developments, concerns remain regarding accessibility barriers to online content and its lack of cultural diversity (Giles 2002; Goldman 2002, pp.2–3; Taglang 2004). Further concerns are raised by the Internet's role in information imperialism, seen as promoting an homogeneous, Western-dominated globalisation that both threatens Indigenous cultural and linguistic identity, and acts as a new tool for further colonisation (Hawthorne 1999, p.125 cited in Giles 2002; Houghton & Eyre 2003b, pp.15, 18; McConaghy 2000a, p.231).

Accessibility barriers for Indigenous Australians involve language and literacy issues. An estimated 87% of Internet documents are in English (Norris 2001, p.59), and there remains a lack of content written in Indigenous languages (Goldman 2002, p.2) – the primary languages of 12% of Indigenous Australians (ABS 2004, p.118). Further, the vast majority of information on the Internet is written for an audience reading at an average or advanced literacy level (Taglang 2004), representing a major barrier for many Indigenous Australians.

The global domination of Internet content by the US and Western Europe raises concerns regarding information imperialism, associated with the work of theorists such as Schiller (Giles 2002; Roach 1997, pp.47–8). Information imperialism theory argues that Western culture, media, and ICTs function as a form of colonising cultural domination, supporting the interests of US-dominated global corporate capitalism (Roach 1997, pp.47–8; Schiller 1996). ICTs are seen as promoting a Western-dominated socioeconomic and culturally homogenous globalisation that threatens the cultural and linguistic identity of groups such as Indigenous Australians (Houghton & Eyre 2003b, pp.15,18; McConaghy 2000a, p.231).

Information imperialism thinking has been challenged by ‘active audience’ and ‘resistance’ theory, which argues that audiences can and do ‘resist’ media messages and construct their own meanings from cultural products (Roach 1997, pp.50–2). A further consideration is the fact that the Internet has emerged as a site for Indigenous oppositional work – both political and cultural. Examples include: IndigiPol (2002), a closed forum for Indigenous community activists; *aboriginal genocide litigation resources* (2004), which includes online petitions; sites dedicated to the preservation and promotion of Indigenous languages, such as *FATSIL* (Federation of Aboriginal and Torres Strait Islander Languages 2004); and the *Ara irititja* database, designed to bar culturally sensitive Indigenous images from general viewing (Pitjantjatjara Council 2003).

Government, libraries, and other organisations have made significant contributions to the provision of online content for Indigenous Australians. Examples include: the Australian Government’s Indigenous portal, *indigenous.gov.au* (2002) and the ABC’s *Message stick* (Australian Broadcasting Corporation 2004); guides to Indigenous collec-

tions and services provided by the National (1995–2004), AIATSIS (2001), and various State and Territory Libraries, including family research facilities; and the *Australian Indigenous health infoNet* (2001).

Most encouraging is the growth in online content creation by, or in collaboration with, Indigenous people. Examples include: *KooriNet* (1995), which hosts a number of individual and community Indigenous sites and operates a sponsorship scheme to assist with their design; *Cadigal wangal* (Marrickville City Council n.d.), which presents the Indigenous story of Sydney’s Marrickville area; the *Nuff stuff project* (2003), involving marginalised Indigenous youth in the Northern Territory; and e-commerce site *aboriginalaustralia.com* (Aboriginal Art & Culture Centre 2000), exporting products to 76 countries.

Views and policies

The issue of Indigenous digital disadvantage has generated a range of stakeholder views and policies on the part of Indigenous people, providers of ICT infrastructure and services, government, and the library and information services sector.

Indigenous Australians

Indigenous commentators (e.g. Kamira 2002, pp.3,5; O’Donoghue 1998; Page & Katitjin 2000) have underlined the empowering potentials of ICTs, arguing that socioeconomic improvement for Indigenous people is at least partially dependent on success in harnessing information technology. Where appropriate training and support are provided, Indigenous Australians have shown a highly positive response to the Internet (Dyson 2003, pp.3–5; Hobson 1997; Page & Katitjin 2000).

The Indigenous community stresses, however, that the implementation of ICTs must occur in a context of self-determination, supportive of Indigenous cultural identity (Page & Katitjin 2000) – a requirement emphasised by the Global Forum of Indigenous Peoples and the Information Society (United Nations Permanent Forum on Indigenous Issues 2003). Other concerns include the need for culturally appropriate training and capacity building, and adequate intellectual property protection for the traditional cultural property of Indigenous communities (Kamira 2002, p.4; Page & Katitjin

2000; United Nations Permanent Forum on Indigenous Issues 2003).

Major Indigenous initiatives include the Out-back Digital Network (established 1998), a consortium of 5 Indigenous bodies funded under the Federal Government's 'Networking the Nation' program, providing a digital communications network to around 200 remote Indigenous communities across northern Australia (Cape York Development Network (CYDN)/Atwone 2003; Grope 2000). As well as Internet, the Network supports telemedicine, and video-conferencing links for purposes such as separated family and community reunion, education, and ceremonial activities (Grove 2000; McConaghy 2000a, p.6).

Providers of ICT infrastructure and services

Commercial providers are profit-driven and understand information and the technologies required to deliver it as commodities rather than social resources. Holderness (1998, p.38) argues that political intervention is required because '...the market, left to itself, will not address information inequity...'

Perspectives on the role of the private sector and of government intervention in the information marketplace relate in part to views on likely developments in the diffusion of the new ICTs. One view suggests that, similarly to earlier media such as radio and TV, Internet access will 'normalise' over time to embrace most social groups as costs decline and competition effects universal service, with minimal need for state intervention (Curtin 2001; Norris 2001, pp.30–1, 70–1). In contrast, 'diffusion' theory (developed by Rogers) suggests the likelihood of deep-seated socioeconomic inequalities continuing to constrain access, such that existing inequality is perpetuated (Norris 2001, pp.11, 70–1). The continuation of the digital divide in societies with the most pervasive Internet use (e.g., Sweden) (Norris 2001, p.86), and of Indigenous disadvantage in relation to long-established technologies such as the telephone (Goldman 2002, p.1; Huta 2003, p.1), appears to support the case for government intervention in the interest of information access equity.

Telstra, Australia's main, part-privatised telecommunications provider, has been involved in a number of initiatives aimed at improving access for remote Indigenous communities (Telstra 2004).

These include 'Networking the Nation' projects aimed at provision of standard phones (e.g., 'Island Watch' in Torres Strait) (Telstra 2004), and a two-way satellite Internet offer operating 2001–2003 in conjunction with the Australian Government, providing free computers upon acceptance of a Telstra Internet access contract plan (Department of Communications, Information Technology and the Arts c.2003).

The Howard Government's attempts to fully privatise Telstra have been a concern to those sceptical of possibilities of equity of access in a fully privatised telecommunications environment (Gibson 2003, p.240). Tanner (2004, p.34) has noted that a fully privatised Telstra would constitute a huge private monopoly effectively beyond government regulation.

Government

Via its policies, government is responsible for overseeing the operation of information flows in society for the benefit of the whole community (Houghton & Eyre 2003a, p.11). Government's ability to regulate and legislate, allocate funding, and provide leadership mean its policy decisions can significantly affect the distribution of information resources (Doctor 1994; Houghton & Eyre 2003a, p.11).

The Australian Government has identified its role in, and vision of, the development of the information economy in the broad policy statement, *A strategic framework for the information economy* (NOIE 1998). This states the Government's commitment to maximising equity of ICT access, while stressing that the private sector must drive the development of the information economy and favouring market-based regulation (NOIE 1998). In this model, government functions as a 'facilitator' (Moore 1998 cited in Lester & Koehler 2003, p.176), establishing conditions for private sector development of the information economy, but supporting equity of access via measures such as subsidies, targeted programs, public education, and public library Internet access provision (Lester & Koehler 2003, pp.176, 209; NOIE 1998).

The Government lacks a single, comprehensive policy on Indigenous Australians and the information society, making it difficult to analyse and respond to the multiple inter-related factors contributing to Indigenous digital disadvantage.

Relevant policies and strategies are scattered over a number of areas, including education (e.g., the *National Indigenous English literacy and numeracy strategy 2000–2004* (DETYA 2000)), health (e.g., school-based hearing testing (DEST 2002, p.103)), and telecommunications. Initiatives aimed at improving technological infrastructure, training, and online content for Indigenous communities include a number of projects funded from the part-privatisation of Telstra under the 5-year 'Networking the Nation' program (launched 1997), and the 3-year 'Telecommunications Action Plan for Remote Indigenous Communities' (TAPRIC) (launched 2002) (Department of Immigration and Multicultural and Indigenous Affairs 2002).

Government policies and strategies for bridging the digital divide have been criticised from a number of perspectives. Lloyd (cited in Marriner 2004, p.3) argues for government intervention to provide Internet access as a universal service. Turk (2003, pp.51–2, 56–60) has criticised the competitive, business-oriented grants-based model of remediation adopted by governments, arguing it places huge demands on the community skill base and offloads governance responsibilities onto already struggling Indigenous communities. McConeghy (2000b, pp.48, 53), on the other hand, is concerned that government promotion of ICTs to remote Indigenous communities is driven by a technological determinism that assumes the complex issues of Indigenous disadvantage can be overcome by the simple application of better technology. Finally, Norris (2001, p.91) notes that because the problem of digital disadvantage originates in deep-rooted socioeconomic inequalities, the success of government policy fixes in bridging the divide is likely to be limited.

Library and information services

By providing free information access to all as a public good, public libraries and information services represent a 'countervailing force' against social inequities arising from the information economy (Braman 1995, p.114). ALIA's policies on literacy, remote users, free access to information, and information literacy commit to this role in the interests of a thriving democracy, culture, and socially inclusive information society (ALIA 1996, 1999, 2001, 2003). However, library and information services confront the challenge of dis-

proportionately low use by disadvantaged groups (Harboe-Ree 1996), and the need for comprehensive strategies to realise policy goals (Houghton & Eyre 2003b, p.14).

ALIA's Library and information services and Aboriginal and Torres Strait Islander peoples policy aims at improving services by increasing Indigenous involvement in decision-making, promoting cross-cultural awareness, and fostering Indigenous representation in the profession (ALIA 1995). Unfortunately, however, this 9-year-old document is dated in terms of a rapidly changing information society, makes no reference to the digital environment, and does not outline specific strategies for realising its objectives.

Library and information services have nevertheless implemented a number of initiatives aimed at improving Indigenous information access in general, and digital access in particular. ATSIILRN was formed in 1993 to support both Indigenous information professionals and improved services for Indigenous Australians (ATSIILRN 2001b). ALIA's 'Aboriginal and Torres Strait Islander recruitment and career development strategy' (operating 1995–2000) aimed at improving access by increasing Indigenous representation within the profession (National Library of Australia 2001; Nicholson 1999b). The *Aboriginal and Torres Strait Islander protocols for libraries, archives and information services*, developed by ATSIILRN, was published in 1995 to provide guidance for creating more appropriate and accessible services for Indigenous Australians across all areas (e.g., collections, cataloguing, staffing, and treatment of Indigenous cultural property) (Byrne et al. 1995); in 1993 the museum sector produced a similar document (Rosly 1995, pp.60–1): *Previous possessions, new obligations*. A further example is the publication in 1997 of the *Aboriginal and Torres Strait Islander thesaurus*, to replace inaccurate and Eurocentric value laden controlled vocabulary (Moorcroft 1993; National Library of Australia 2001).

Digital information access initiatives for Indigenous Australians by library and information services have focused largely on content. Examples include: guides to Indigenous resources and services by the National, State, and Territory Libraries (e.g., State Library of NSW 2004); online catalogues and indexes (e.g., MURA of the AIATSIS Library (AIATSIS 2001) and INFOKOORI of the State Library of NSW (State Library of NSW

2004); and Indigenous family history guides, services, and projects (e.g., Queensland State Archives 2004).

Though relevant content is essential, Indigenous access barriers such as disadvantaged literacy and ICT access remain. Libraries have been involved in a number of outreach programs, e.g., ALIA's 'Indigenous Communities Online' (operating 1997–1998) (Nicholson 1999a), and the Batchelor Institute of Tertiary Indigenous Education Library's online delivery of information literacy tuition to students (ATSILIRN 2001a). However, professional commitment to social equity suggests the need for a co-ordinated, ongoing strategy by library and information services to address the various dimensions of disadvantaged digital information access experienced by Indigenous Australians.

Conclusion

The digital disadvantage of Indigenous Australians, comprising both inequities in ICT distribution and skills-based capability, stems from existing socioeconomic inequalities. As social and economic opportunity becomes increasingly wedded to ICT access in the information society, the digital disadvantage of Indigenous Australians threatens to perpetuate or exacerbate their socioeconomic disadvantage. Though the policies of government and the information profession commit to maximising information access equity, greater intervention and comprehensive strategies are required to realise this goal, in the interests of a socially inclusive information society of benefit to all Australians.

References

- Aboriginal and Torres Strait Islander Commission c.2003, *Issues: Disadvantage*, ATSIC, viewed 3 May 2004, <<http://www.atsic.gov.au/issues/disadvantage/default.asp>>.
- Aboriginal and Torres Strait Islander Library and Information Resource Network 2001a, *ATSILIRN conference report: Hunters and gatherers: The collection, provision and sharing of information to communities*, ATSILIRN, viewed 26 March 2004, <<http://www.jcu.edu.au/asd/docs/conference/confstacey2.htm>>.
- Aboriginal and Torres Strait Islander Library and Information Resource Network 2001b, home page, last modified 22 November 2001, ATSILIRN, viewed 4 May 2004, <<http://home.vicnet.net.au/~atsilirn/>>.
- Aboriginal Art & Culture Centre 2000, *aboriginal-australia.com*, Aboriginal Art & Culture Centre, Alice Springs, viewed 4 May 2004, <<http://www.aboriginalaustralia.com/>>.
- aboriginal genocide litigation resources* 2004, home page, viewed 4 May 2004, <<http://www.aboriginalgenocide.com.au/>>.
- ABS – see Australian Bureau of Statistics
- AIATSIS – see Australian Institute of Aboriginal and Torres Strait Islander Studies
- ALIA – see Australian Library and Information Association
- ATSIC – see Aboriginal and Torres Strait Islander Commission
- ATSILIRN – see Aboriginal and Torres Strait Islander Library and Information Resource Network
- Australian Broadcasting Corporation 2004, *Message stick: Aboriginal and Torres Strait Islander online*, last updated 12 April 2004, ABC, viewed 4 May 2004, <<http://www.abc.net.au/message/>>.
- Australian Bureau of Statistics 2004, *Year Book Australia*, Catalogue no. 1301.0, ABS, Canberra.
- Australian Indigenous health infoNet* 2001, last modified 16 March 2004, Edith Cowan University, Perth, WA, viewed 4 May 2004, <<http://www.healthinfonet.ecu.edu.au/>>.
- Australian Institute of Aboriginal and Torres Strait Islander Studies 2001, *Library*, AIATSIS, <<http://www.aiatsis.gov.au/lbry/index.htm>>.
- Australian Library and Information Association 2002, *ALIA core values statement*, ALIA, viewed 30 January 2004, <<http://alia.org.au/policies/core.values.html>>.
- Australian Library and Information Association 1995, *Library and information services and Aboriginal and Torres Strait Islander peoples*, ALIA, viewed 23 March 2004, <<http://www.alia.org.au/policies/aboriginal.html>>.
- Australian Library and Information Association 2001, *Statement on free access to information*, ALIA, viewed 30 January 2004, <<http://alia.org.au/policies/free.access.html>>.
- Australian Library and Information Association 2003, *Statement on information literacy for all Australians*, ALIA, viewed 26 March 2004, <<http://www.alia.org.au/policies/information.literacy.html>>.
- Australian Library and Information Association 1996, *Statement on libraries and literacy*, ALIA, viewed 26 March 2004, <<http://www.alia.org.au/policies/library.literacy.html>>.

- Australian Library and Information Association 1999, *Statement on library and information services to re-mote users*, ALIA, viewed 26 March 2004, <<http://www.alia.org.au/policies/remote.users.html>>.
- Australian National Training Authority c.2000, *Partners in a learning culture: Australia's national Aboriginal and Torres Strait Islander strategy for vocational education and training 2000–2005*, Australian National Training Authority, Brisbane, QLD.
- Bannerman, C 1996, 'A well-informed society: Travelling the information superhighway', electronic version, *Australian Academic and Research Libraries*, vol.27, no.4, pp.250–260, retrieved from APAFT database.
- Braman, S 1995, 'Alternative conceptualisation of the information economy', *Advances in Librarianship*, vol.19, pp.99–116.
- Byrne, A, Garwood, A, Moorcroft, H & Barnes, A (comps) 1995, *Aboriginal and Torres Strait Islander protocols for libraries, archives and information services*, electronic version, ALIA for ATSILIRN, Deakin, ACT, <<http://www.cdu.edu.au/library/protocol.html>>.
- Cape York Development Network (CYDN)/Atwone 2003, *Promoting development in Cape York*, CYDN/Atwone, viewed 23 March 2004, <<http://www.cydn.com.au/section/4.html>>.
- Caslon Analytics 2004, *Caslon Analytics profile: The digital divides*, March 2004 version, Caslon Analytics, Canberra, viewed 27 March 2004, <<http://www.caslon.com.au/dividesprofile3.htm>>.
- Chatman, EA 1996, 'The impoverished life-world of outsiders', electronic version, *Journal of the American Society for Information Science*, vol.47, no.3, pp.193–206, retrieved from Wiley InterScience.
- Curtin, J 2001, 'A digital divide in rural and regional Australia?', last reviewed 27 September 2001, *Current Issues Brief 1 2001–02*, Commonwealth of Australia, viewed 23 March 2004, <<http://www.aph.gov.au/library/pubs/cib/2001-02/02cib01.htm>>.
- Department of Communications, Information Technology and the Arts c.2003, *Two-way satellite Internet offer*, Australian Government, viewed 4 May 2004, <http://www.dcita.gov.au/Printer_Friendly/0,,0_1-2_3-4_114677-LIVE_1,00.html>.
- Department of Education, Science and Training 2002, *The national report to Parliament on Indigenous education and training, 2001*,
- Department of Education, Science and Training, Canberra. Department of Education, Science and Training 2004, *School education publications by subject*, last updated 19 March 2004, Commonwealth of Australia, viewed 25 March 2004, <<http://www.dest.gov.au/schools/publications/subject.htm>>.
- Department of Education, Training and Youth Affairs 2000, *The national Indigenous English literacy and numeracy strategy 2000–2004*, Commonwealth Government, Australia.
- Department of Immigration and Multicultural and Indigenous Affairs 2002, *Indigenous community initiatives funded by Networking the Nation*, Joint media release from the Hon Philip Ruddock MP and Senator the Hon Rod Kemp, viewed 4 May 2004, <http://www.atsia.gov.au/media/ruddock_media_02/r02024.htm>.
- DEST – see Department of Education, Science and Training
- DETYA – see Department of Education, Training and Youth Affairs
- Digital Divide Network 2004a, *Digital divide basics*, Digital Divide Network, viewed 26 March 2004, <<http://www.digitaldividenetwork.org/content/sections/index.cfm?key=2>>.
- Digital Divide Network 2004b, *Literacy and learning*, Digital Divide Network, viewed 26 March 2004, <<http://www.digitaldividenetwork.org/content/sections/index.cfm?key=4>>.
- Doctor, RD 1994, 'Seeking equity in the national information infrastructure', electronic version, *Internet Research: Electronic Networking Applications and Policy*, vol.4, no.3, pp.9–22, retrieved from Emerald Fulltext.
- Dodson, M 1993, 'Cultural issues and library services', *Infobridges: Linking Australia and Asia: 2nd conference of the reference and information service section*, ALIA, Darwin, NT, pp.1–5.
- Donovan, M & Heitmeyer, D 2000, 'To get the black point across: Linking technology to Aboriginal voices', *Australian Indigenous education conference*, Edith Cowan University, Perth, WA, viewed 26 March 2004, <<http://www.kk.ecu.edu.au/sub/schoola/research/confs/aiec/papers/mdonovan01.htm>>.
- Dyson, LE 2003, 'Indigenous Australians in the information age: Exploring issues of neutrality in information technology', electronic version, *New paradigms in organizations, markets and society: Proceedings of the 11th European conference on information systems (ECIS)*, <<http://www-staff.it.uts.edu.au/~laurel>>.
- Fahey, N c.2001, *Addressing information poverty: An Australian experience*, Australian Centre on Quality of Life, Deakin University, viewed 22 March 2004, <<http://acqol.deakin.edu.au/Conferences/paper/Fahey1.PDF>>.
- Federation of Aboriginal and Torres Strait Islander Languages 2004, *About FATSIL*, FATSIL, Prospect, SA, viewed 4 May 2004, <<http://www.fatsil.org/about.htm>>.

- Froehlich, TJ 1997, *Survey analysis of major ethical and legal issues facing library and information services*, IFLA publication, no.78, KG Saur, Munchen.
- Gibson, C 2003, 'Digital divides in New South Wales: A research note on socio-spatial inequality using 2001 census data on computer and Internet technology', *Australian Geographer*, vol.34, no.2, pp.239–257.
- Giles, G 2002, 'Fair go equality? The people's movement for reconciliation, ANTaR and critical information literacy', electronic version, *The Australian Library Journal*, vol.51, no.3, <<http://www.alia.org.au/publishing/alj/51.3/full.text/fair.go.html>>.
- Goldman, M 2002, *Net*Working 2002 extra: Bridging the digital divide*, electronic version, Australian National Training Authority, <<http://www.flexiblelearning.net.au/nw2002/extras/digitaldivide.pdf>>.
- Gray, B, Scott, D, Ah Chee, D, Wyatt, K & Bourke, C 1999, 'Literacy, numeracy, attendance and health', electronic version, *Unicorn*, vol.25, no.3, pp.17–30, retrieved from APAFT database.
- Greville, H 2000, *Walking the fine line: Transforming literacies for social change*, Gunada Press, Perth, WA.
- Grope, M 2000, *From boomerangs to bandwidth*, Govtech.net Library, viewed 4 May 2004, <<http://www.govtech.net/publications/gt/2000/jan/australiafldr/australia.phtml>>.
- Hanlen, W 2002, 'Indigenous literacies: Moving from social construction towards social justice', in *Literacies in early childhood: Changing views, challenging practice*, L Makin & C Jones Diaz (eds), MacLennan & Petty, Sydney.
- Harboe-Ree, C 1996, 'Public libraries: Questioning the canon', *Australian Library Review*, vol.13, no.4, pp.374–378.
- Hendry, JD 2000, 'Social inclusion and the information poor', electronic version, *Library Review*, vol.49, no.7, pp.331–336, retrieved from ProQuest database.
- Hobson, J 2001, *Growing the Indigenous Australian Internet*, ALIA, viewed 23 March 2004, <<http://alia.org.au/publishing/incite/2001/06/koorinet.html>>.
- Hobson, J 1997, 'Strategies for building an Indigenous Australian cybercommunity: The KooriNet project', 1997 Fulbright symposium: *Indigenous cultures in an interconnected world*, viewed 26 March 2004, <<http://www.indigoz.com.au/fulbright.html>>.
- Holderness, M 1998, 'Who are the world's information poor?', in *Cyberspace divide: Equality, agency and policy in the information society*, B Loader (ed.), Routledge, London.
- Holloway, D 2002, 'Disparities in Internet access: A case study of the digital divide in Western Sydney', *Australian Journal of Social Issues*, vol.37, no.1, pp.51–69.
- Horrigan, D 2003, 'Across the digital divide', electronic version, *The Bulletin*, 5 March, <<http://bulletin/EdDesk.nsf/All/83DC291907ABC0F4CA256CCC007AB55>>.
- Houghton, J & Eyre, G 2003a, 'INF429 Introduction to information society: Module 2: Information policies', revised edn, Charles Sturt University, Wagga Wagga, NSW.
- Houghton, J & Eyre G 2003b, 'INF429 Introduction to information society: Module 3: Social and legal information issues', revised edn, Charles Sturt University, Wagga Wagga, NSW.
- Huta, P 2003, *Australian Government Indigenous portal and online information for Indigenous Australians*, electronic version, information paper: WSIS Global Forum on Indigenous people and the information society, <<http://www.aboriginalcanada.gc.ca/cac/international/discussion.nsf>>.
- IFLA – see International Federation of Library Associations and Institutions
- indigenous.gov.au* 2002, Commonwealth of Australia, Canberra, viewed 4 May 2004, <<http://www.indigenous.gov.au>>.
- IndigiPol Forum 2002, IndigiNet Forums – The Indigi Group, viewed 22 March 2004, <<http://www.indiginet.com.au/forum/viewforum.php?f=8>>.
- 'Information for the stolen generation' 1997, *Incite*, vol.18, no.4, p.13.
- International Federation of Library Associations and Institutions 2003, *Libraries help bridge digital divide*, latest revision 28 May 2003, press release, IFLA, The Hague, Netherlands, viewed 4 May 2004, <<http://www.ifla.org/V/press/dd280503pr.htm>>.
- Jacobs, J 1998, *Democracy and the Internet*, Australian Broadcasting Corporation, viewed 25 March 2004, <<http://www.abc.net.au/ola/citizen/interdemoc/democ.htm>>.
- Johnston, E 1991, *National report: Overview and recommendations*, Royal Commission into Aboriginal Deaths in Custody, Australian Government, Canberra.
- Kagan, A 1998, *The electronic information gap*, latest revision 9 September 1998, Social responsibilities discussion group, IFLA, viewed 5 December 2003, <<http://www.ifla.org/VII/dg/srdg/srdg5.htm>>.
- Kamira, R 2002, *Indigenous peoples' inclusion in the World Summit for the information society*, electronic version, Preparatory Committees of the World Summit on the Information Society, Geneva, <<http://geneva2003.unige.ch/SP/IMG/pdf/doc27.pdf>>.
- KooriNet* 1995, Koori Centre, University of Sydney, viewed 22 March 2004, <<http://www.koori.usyd.edu.au/koorinet.html>>.

- Lester, J & Koehler, WC 2003, *Fundamentals of information studies: Understanding information and its environment*, Neal-Schuman, New York.
- McConaghy, C 2000a, *Rethinking Indigenous education: Culturalism, colonialism and the politics of knowing*, Post Pressed, Flaxton, QLD.
- McConaghy, C 2000b, 'The Web and today's colonialism', electronic version, *Australian Aboriginal Studies*, vol.1 & 2, pp.48–55, retrieved from APAFT database.
- McConaghy, C & Snyder, I 2000, 'Working the Web in postcolonial Australia', in *Global literacies and the World-Wide Web*, Literacies, GE Hawisher & CL Selfe (eds), Routledge, London.
- Marrickville City Council n.d., *Cadigal wungal*, Marrickville City Council, Sydney, viewed 4 May 2004, <<http://www.cadigalwungal.com.au>>.
- Marriner, C 2004, 'Low wages and the net just don't click', *Sydney Morning Herald*, 13 January, News p.3.
- Moorcroft, H 1993, 'The construction of silence', *The Australian Library Journal*, vol.42, no.1, pp.27–32.
- Murphy, M, Murphy, B & Kanost, D 2003, *A literature review of women as information seekers*, electronic version, Access to women's health information, Women's Health Victoria, Melbourne, <http://www.whv.org.au/Articles/market_research_one.pdf>.
- Nakata, M 2002, *Some thoughts on the literacy issues in indigenous contexts*, Language Australia, National Languages and Literacy Institute of Australia, Melbourne.
- National Archives of Australia 2004, *Indigenous records: Where to find records on Indigenous Australians*, National Archives of Australia, Canberra, viewed 7 May 2004, <http://www.naa.gov.au/the_collection/indigenous_records.html>.
- National Library of Australia 1995–2004, *Indigenous Australians*, NLA, Canberra, viewed 4 May 2004, <<http://www.nla.gov.au/guides/>>.
- National Library of Australia 2001, *Towards Federation 2001: 'Linking Australians and their heritage': Status of resolutions*, NLA, Canberra, viewed 29 March 2004, <<http://www.nla.gov.au/initiatives/alctf/meeting6/item14.html>>.
- National Office for the Information Economy 2002, *Digital divide*, NOIE, Commonwealth of Australia, viewed 23 March 2004, <http://www.noie.gov.au/projects/access/Connecting_Communities/Digitaldivide.htm>.
- National Office for the Information Economy 1998, *A strategic framework for the information economy*, Department of Communications, Information Technology and the Arts, Commonwealth of Australia, viewed 22 March 2004, <<http://www2.dcita.gov.au/ie/publications/1998/12/framework/>>.
- Nicholls, C 2002, 'Speaking out for an Indigenous Australian Languages Act: The case for legislative activism for the maintenance of Australia's Indigenous languages', *Crossings*, vol.7, no.1, viewed 8 April 2004, <http://asc.uq.edu.au/crossings/7_1/page_2.html>.
- Nicholson, J 1999a, 'Indigenous communities online: Overview of the ALIA online public access initiative project', *Adelaide 98, pathways to knowledge: Australian Library and Information Association 5th biennial conference and exhibition*, ALIA, Kingston, Australia, pp.501–504.
- Nicholson, J 1999b, *Indigenous education enquiry*, ALIA, viewed 23 March 2004, <<http://alia.org.au/advocacy/submissions/indigenous.education.html>>.
- NOIE – see National Office for the Information Economy
- Norris, P 2001, *Digital divide: Civic engagement, information poverty, and the Internet worldwide*, Communication, society and politics, Cambridge University Press, Cambridge, UK.
- Novak, J & Robinson, G 1998, 'You tell us: Indigenous students talk to a tertiary library', electronic version, *Australian Academic and Research Libraries*, vol.29, no.1, pp.13–22, retrieved from APAFT database.
- Nuff stuff project 2003, BighArt, NT, viewed 4 May 2004, <<http://www.acmi.net.au/bighart/nuffstuff/nuffsite.htm>>.
- O'Donoghue, L 1998, *Pathways to knowledge*, Australian Library Week oration 29 April 1998, ALIA, viewed 26 March 2004, <<http://alia.org.au/publishing/speeches/odonoghue.html>>.
- O'Faircheallaigh, C 1996, 'Negotiating with resource companies: Issues and constraints for Aboriginal communities in Australia', in *Resources, nations and Indigenous peoples*, R Howitt (ed.) with J Connell & P Hirsch, Oxford University Press, Oxford.
- Owen, R 1996, 'Chilling the community: Information literacy and the Hindmarsh Island bridge', *The Australian Library Journal*, vol.45, no.2, pp.120–135.
- Page, J & Katitjin, K 2000, 'IT and us: Some thoughts on Indigenous Australians, information technologies and education', *Australian Indigenous education conference*, Edith Cowan University, Perth, WA, viewed 26 March 2004, <<http://www.kk.ecu.edu.au/sub/schoola/research/confs/aiec/papers/jpage01.htm>>.
- Pitjantjatjara Council 2003, *Ara irititja*, last updated 6 November 2003, Pitjantjatjara Council, viewed 4 May 2004, <<http://www.irititja.com/>>.

- Queensland State Archives 2004, *Resources relating to Aboriginal and Torres Strait Islander peoples*, last updated 20 May 2004, Department of Public Works, State of Queensland, viewed 22 May 2004, <<http://www.archives.qld.gov.au/research/atasi.asp>>.
- Rimmer, J 2003, *Australian country statement*, electronic version, Australian delegation to the World Summit on the Information Society, Geneva, <http://www2.dcita.gov.au/~data/assets/file/12267/Australian_Country_Statement_WSIS.pdf>.
- Roach, C 1997, 'Cultural imperialism and resistance in media theory and literary theory', *Media, Culture & Society*, vol.19, pp.47–66.
- Rose, D 1996, 'Three faces of citizenship: Indigenous adult education and literacy', electronic version, *Fine Print*, vol.19, no.4, pp.11–15, retrieved from APAFT database.
- Rosly, S 1995, 'Access to archival records for Aboriginal and Torres Strait Islander peoples', electronic version, *Archives and Manuscripts*, vol.23, no.1, pp.60–73, retrieved from APAFT database.
- Schiller, HI 1996, *Information inequality: The deepening social crisis in America*, Routledge, New York.
- Smallacombe, S 1997–1998, 'Accessing personal and family records: Contesting the gatekeepers', electronic version, *Indigenous Law Bulletin*, vol.4, no.8, pp.4–9, retrieved from APAFT database.
- State Library of NSW 2004, *Australian Indigenous services*, updated 24 October 2003, State Library of NSW, viewed 4 May 2004, <<http://www.sl.nsw.gov.au/indigenous/>>.
- Taglang, K 2004, *Content and the digital divide: What do people want?*, Digital Divide Network, Benton Foundation, Washington DC, viewed 26 March 2004, <<http://www.digitaldividenetwork.org/content/stories/index.cfm?key=14>>.
- Tanner, L 2004, 'Communications for all our communities', *Australian Mosaic*, vol.5, no.1, p.34.
- Telstra 2004, *Access for everyone: Access for people living in remote Indigenous communities*, Telstra, viewed 3 May 2004, <<http://www.telstra.com.au/accessforeveryone/communities.htm>>.
- Turk, A 2003, 'Digital divide remediation: An Australian Indigenous community case study', electronic version, *Southern Review*, vol.36, no.1, pp.48–63, retrieved from APAFT database.
- United Nations Permanent Forum on Indigenous Issues 2003, *The report of the Global Forum of Indigenous peoples and the information society*, electronic version, World Summit on the Information Society, Economic and Social Council, United Nations, Geneva, <<http://www.un.org/esa/socdev/pfii/PFII3/documents/gfipis/>>.

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