

Information and Communication Technologies: Bugs in the Generational Ointment

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Abstract: The uses and impacts of information and communications technologies (ICTs), are not smooth, linear or fairy-tale like in dusting society with benefits. In development, adoption, uses and impacts, technologies shape, and are shaped by, social relations and social structures. Generational relations are part of the processes by which ICTs become products, symbols, social glue, and social schism. A generational system of relations shapes how technologies shape us, our identities and social structures. The intricate relation of technologies to generation has yet to be explored sociologically.

In this paper, ICTs and generations are unpacked. Bugs are found in the generational ointment of ICTs that are explored in layers:

- ICTs may reconcile the impossible contradictions of generation, and of life course;
- ICTs may promote social cohesion among generations;
- ICTs may ease the transition from a labour/capital to a knowledge-based society;
- punctuated succession of technologies may lead to uneven relations of generations to technologies, to discontinuous impacts on generations.

Data from different sources are woven together to reveal the intricate patterns of relations of technologies to generations.

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Résumé: L'utilisation des technologies d'information et des communications (TIC) et les effets de celles-ci ne sont pas simples, ni linéaires ou féériques dans le sens qu'elles envoient la société au moyen d'avantages. Au cours de leur développement, de leur adoption, de leur utilisation et sous leurs effets, les technologies influent sur les relations et les structures sociales - tout en en subissant l'influence. Les relations générationnelles font partie des processus grâce auxquels les TIC deviennent produits, symboles, fibre sociale et schisme social. Un système de relations générationnelles façonne la manière que les technologies nous façonnent, ainsi que nos identités et nos structures sociales. Les délicates relations entre technologies et génération n'ont pas encore été explorées d'un point de vue sociologique.

Dans cet article, TIC et générations sont dévoilées. On trouve des bogues dans l'onguent de la génération des TIC qui sont explorés en couches:

- les TIC peuvent réconcilier l'impossible, les contradictions de génération et le cours de la vie;
- les TIC peuvent faire la promotion d'une cohésion sociale entre les générations ;
- les TIC peuvent aider à la transition d'une société basée sur la main-d'œuvre et le capital à une société basée sur les connaissances ;
- une suite intermittente de technologies peut donner lieu à des relations inégales de générations envers les technologies et à l'interruption des effets sur les générations.

Les données provenant de différentes sources sont tissées ensemble pour révéler des motifs complexes que forment les relations des technologies et des générations.

"He [Prime Minister Tony Blair] asserted that that future of the nation was dependent upon technological success, arguing that computers and the Internet were powering economic growth, and that ensuring Britain was not divided into computer haves and have-nots was fundamental to the building of a fair as well as prosperous society" (Henwood *et al.*, 2000:1)

Technologies, particularly information and computing technologies (ICTs), may be enabling to the realization of social and economic goals. They also, without question, pose complex challenges to societies. By politics and policy, ICTs are often seen as magic bullets to social as well as economic problems, as the above example illustrates¹. Yet the social impacts of ICTs remain largely unknown and unmeasured (see Castells, 1999; Franklin, 1992; McDaniel, 2000; Wyatt *et al.*, 2000), and increasingly emerge *not* as smooth, linear or fairy-tale like in dusting society with benefits.

In development, adoption, uses and impacts, ICTs are shaped by, as well as shape, *social relations*. Indeed, some scholars argue that scientists themselves are no more than social networks of heterogeneous materiality, including face to face or virtual connections with other scientists, as well as with non-human resources such as strains of bacteria, notebooks, statistics, etc. This argument is compellingly made by Latour (1988) with respect to Louis Pasteur who,

1. Similar sentiments have been voiced by political leaders in Canada and in the United States, of course. The reflection of Prime Minister Blair is particularly evocative since it was uttered just following his admission to his own incompetence with computers! (Henwood *et al.*, 2000:1).

Latour argues, exists *only* as a network. Callon and Law (1997:170) see material heterogeneity and social relationality as the first principle of the sociology of science and technology:

... the sociology of science and technology makes this argument. Entities — human, non-human, and textual — aren't solid. They aren't discrete, or clearly separated from their context. They don't have well-established boundaries. They aren't, as the jargon puts it, distinct subjects and objects. Instead, they are sets of *relations*, for instance, in the form of networks.

In examining the development, adoption, uses and impacts of ICTs, social relations indeed emerge as a paramount focus. The relations of worker/employer, government/citizen, network/firm, male/female, among others, have been explored sociologically with respect to technologies and technological changes. Despite growth in research on the uses and impacts of ICTs, the intersection of ICTs with generation has received scant attention, particularly generation as a social relation, and even less to generation as a system of social relations that shapes technologies and is shaped by them.

Plato wrote about the invention of letters by relating a conversation between Socrates and Phaedrus. Here, Socrates tells the story of Theuth's invention of letters for King Thamus:

Theuth said, 'This invention, O King, will make the Egyptians wiser and give them better memories: I have discovered a remedy both for the memory and for wisdom.' Thamus replied, 'O most ingenious Theuth, the parent or inventor of an art is not always the best judge of the utility or inutility of his own inventions to the users of them...For this discovery of yours will create forgetfulness in the minds of those who learn to use it; they will not exercise their memories, but trusting in external, foreign marks, they will not bring things to remembrance from within themselves. (Plato, translated by Irvine, 1996:2)

Plato understood in about 400 B.C. that technologies are relational in interactions with users, and also generational in terms of what we learn and what we forget from our collective pasts. Perhaps with no technology more than with the invention of letters, that preserve collective memories and connect generations, is the generational relationality of technology more apparent.

Age and Information

Information is emerging daily about uses of technologies along social dimensions (OECD, 2001). Statistics Canada (2001), for example, finds that people using the Internet are younger, have higher incomes and more education, and are more likely to be city-dwellers than non-users. They are also more often male and Anglophone in Canada. Yet, this overview masks remarkable new trends in Internet use. For example, the fastest growth in Internet use in Canada is among seniors, with the second fastest growth among the 55–64 group (Statistics Canada, 2000). Overall internet use, however, among

seniors, is low (11.2% for 65–74, 5.2% for 75+ with men's use higher than women's).² This compares to 84.5% of Canadians aged 15–24.

Further unpacking ICTs use by age, we see in Table 1 that types of Internet use vary by age, although use of e-mail is most common among all ages. There is less use of all kinds by older people. However, there is less difference between older and younger in other than e-mail use, with the smallest (but still significant) differences by age occurring in goods purchasing and on-line banking. These are highest for those aged 25–44. Playing games and use of chat services are most popular among the youngest.

Non-users of computers of any age do not show strong interest in computer use, as shown in Table 2. What do non-users see as the barriers? In Table 3, cost emerges as a barrier for both old and young, with lack of skills/training coming a close second amongst older groups. Lack of time matters to the middle aged, as well as to older groups. Lack of need is mentioned more by older men while lack of access is noted by older women. Self-admitted fear of technology figures far down on the list with fewer younger people than older admitting to this. In data not shown here, the few differences are found between men and women on barriers to computer use, except that women worry more about the cost.

When levels of technology (other than computers) use is unpacked by age, as in Figure 1, low level use is overwhelmingly higher among older age groups. So strong was this tendency that the ratios of low to high use could only be graphically shown on a logarithmic scale.

Who has had computer training? Surprisingly, as shown in Table 4, only a small proportion in *any* age group. About ¼ in the younger age groups (up to age 44) report some training. After age 55, the numbers dwindle, with less than 1% of those aged 75 and over having had some computer training. Differences by sex are very small in each age group, but greatest among the older groups. In the age groups 35–44 and 45–54, women are slightly more likely than men to have had computer training.

Beliefs/Meanings and Generational Systems

Generational systems are more than age categories. Generation *per se* has been sociologically undertheorized as both a structural dimension of social stratification and as a lens through which to observe and analyze the social and social change (Becker, 1990; Elder, 1994; McDaniel, 2001a; 2001b; Turner, 1998). Generation has long been acknowledged as both sociologically enticing and perplexing, the conundrum of which has resulted in distorted understandings

2. Based on analysis of the 2000 General Social Survey, Cycle 14, Statistics Canada.

Table 1. Types of Internet Use* by Age

<i>Type of Internet Use</i>	<i>15-24</i>	<i>25-34</i>	<i>35-44</i>	<i>45-54</i>	<i>55-64</i>	<i>65-74</i>	<i>75+</i>	<i>Total</i>
E-mail	68.2%	58.3%	54.7%	47.3%	30.1%	10.9%	4.7%	46.7%
Search for information about goods and services	56.6%	51.6%	46.9%	39.0%	24.4%	6.9%	2.6%	39.3%
Access news site	38.7%	38.0%	35.6%	29.2%	18.2%	6.3%	2.8%	28.9%
Search for medical/health information	27.6%	32.7%	31.2%	25.9%	16.2%	5.8%	2.3%	24.2%
Access info on Canadian gov't programs/services	29.1%	30.7%	26.5%	21.4%	11.8%	2.7%	0.7%	21.5%
Play games	47.8%	22.8%	17.0%	10.3%	6.3%	2.8%	1.0%	18.6%
Chat service	49.5%	19.1%	10.8%	7.3%	3.4%	1.1%	0.2%	15.8%
Purchase goods & services	14.6%	19.1%	15.3%	12.8%	7.7%	2.3%	0.6%	12.5%
E-banking	9.4%	18.7%	17.1%	13.2%	7.6%	1.8%	0.4%	12.0%

* Have ever used, with the exception of e-mail, which is use in last 12 months.

Variables "agegr10", "A9", "H1", "H7", "H4", "H10", "H19", "H27", "H15", "H25"; data weighted (N=24,566,317); percentages measure proportion of all respondents (not just those who use the Internet).

Source: Statistics Canada. 2001. *2000 General Social Survey, Cycle 14: Access to and Use of Information Computer Technology*.

of social change becoming part of the sociological lexicon (Alanen, 1994). Mannheim (1968[1952]:311) recognized that:

If we speak simply of 'generations' without any further differentiation, we risk jumbling together purely biological phenomena and others which are the product of social and cultural forces: thus we arrive at a sort of sociology of chronological tables which uses its 'bird's-eye perspective' to 'discover' fictitious generation movements to correspond to the crucial turning-points in historical chronology.³

When set in the economic paradigms of contemporary western societies, the muddled but crucial concept of generation transpires into the iconography of actuarial justice (McDaniel, 2002), where birth cohorts are boxed and labeled (Baby Boomers, Gen Xers, Greedy Grannies and Geezers), then defined as competing interest groups.

Turner (1998:303) argues "the importance of generation as a feature of social stratification" and sees generation, in the public arena, as a neglected sociological dimension. Generation as a sociological construct involves complex

3. It is of interest to note that this was written in 1952, long prior to contemporary debates about intergenerational equity, "generational accounting," or generation identity signifiers, i.e., Boomers and Gen Xers.

Table 2. Non-Computer Users who are Interested in Using a Computer by Sex and Age (totals in 000s)

Age	Male	Female	Total
15-24	42.1%	48.1%	44.9% (128)
25-34	45.7%	45.2%	45.4% (418)
35-44	44.8%	44.6%	44.7% (553)
45-54	28.7%	27.0%	27.9% (396)
55-64	20.6%	19.2%	19.8% (303)
65-74	10.6%	10.5%	10.5% (185)
75+	5.3%	4.6%	4.8% (68)
Total	25.7% (1024)	22.5% (1025)	24.0% (2050)

Variables "sex", "agegr10", "usecomp"; data weighted; coverage=respondents not using a computer (n=9870; N=8,530,682).

Source: Statistics Canada. 2001. *2000 General Social Survey, Cycle 14: Access to and Use of Information Computer Technology*.

social relations, social structures including relations of ruling, and social meanings. Alanen (1994:37) argues for the development of a "generational system of relations" analogous to a gender system, premised on relations of ruling. With this lens, generational issues of interest to sociology are those "that concern the organizing, managing, regulating, and occasional 'modernizing' of the generational system, from the standpoint of those belonging to the hegemonic generation...whose business it is to do the ruling" (Alanen, 1994:37).

Through this lens, the ICTs/generations conundrum becomes very much more complex. For example, although it is widely believed that men more than women, younger more than older, and educated more than uneducated, value new ideas and think that scientific advances help, the World Values Survey (see Table 5) reveals that this is not quite so (Inglehart *et al.*, 1998). With respect to the welcoming of new ideas, Canadians are more eager than Americans, with U.S. men least valuing of new ideas. Better educated Canadians value new ideas more, but the least educated Americans value new ideas most. By age, Canadians fit the expected pattern, but those in mid-life value new ideas more than younger Americans. Beliefs in the virtues of science by age are surprising: Among Canadians, younger people do indeed value science more, but not by much more, than older people; Among Americans, however,

Table 3. Main Barrier to Computer Use* by Age and Sex

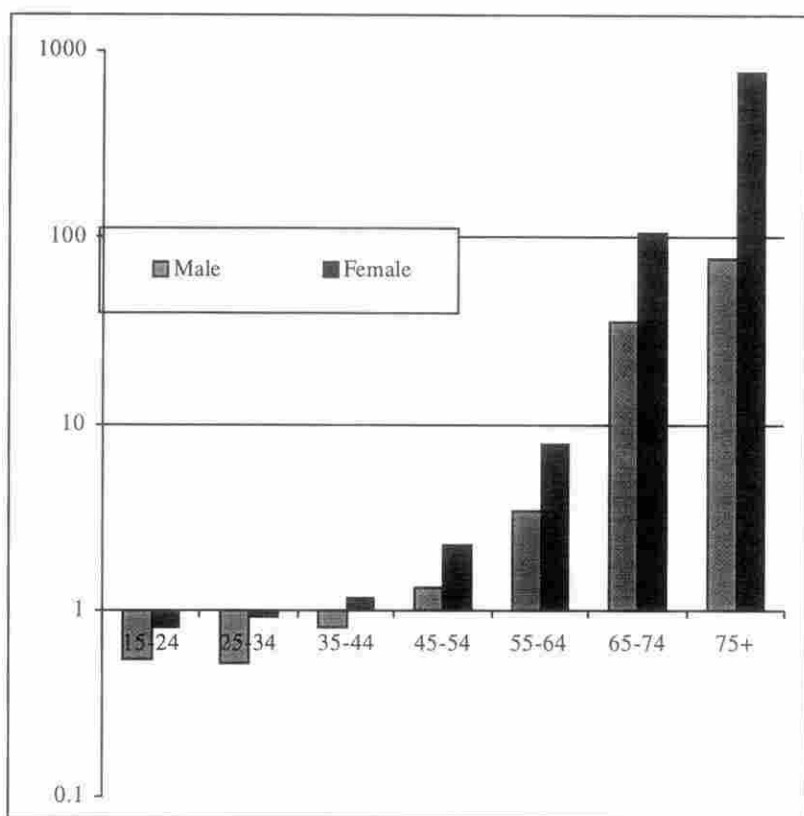
Age	Sex	Cost	Insufficient time	Lack skills/ training	No need	Access	Fear of technology	Disability	Total (N in 000s)
15-24	Male	53.2 (34)	8.2% (5)	13.4% (9)	5.5% (3)	14.0% (9)	-	-	64
	Female	61.5% (40)	2.2% (1)	5.3% (-)	7.1% (5)	8.6% (1)	1.4% (1)	-	65
25-34	Male	44.1% (95)	19.2% (42)	16.1% (35)	9.3% (20)	4.3% (9)	1.0% (2)	0.7% (1)	216
	Female	50.6% (102)	13.4% (27)	12.4% (25)	5.8% (12)	12.5% (25)	0.7% (1)	0.4% (1)	202
35-44	Male	41.6% (119)	16.6% (47)	16.8% (48)	9.0% (26)	5.6% (16)	3.8% (11)	0.2% (1)	285
	Female	39.6% (106)	22.6% (61)	16.5% (44)	7.5% (20)	5.7% (15)	1.5% (4)	0.5% (1)	268
45-54	Male	34.3% (70)	22.4% (46)	19.1% (39)	5.2% (11)	9.8% (20)	0.3% (1)	0.8% (2)	205
	Female	32.8% (63)	21.4% (41)	18.6% (36)	9.2% (18)	8.6% (16)	1.6% (3)	2.7% (5)	191
55-64	Male	25.8% (37)	22.9% (33)	14.9% (21)	14.6% (21)	7.9% (11)	0.5% (1)	0.2% (-)	143
	Female	40.3% (64)	18.0% (29)	19.5% (31)	7.2% (12)	9.0% (14)	0.6% (1)	1.2% (2)	160
65-74	Male	23.3% (19)	16.9% (14)	22.6% (19)	12.3% (10)	10.0% (8)	3.6% (3)	-	83
	Female	30.7% (31)	13.1% (13)	21.6% (22)	10.0% (10)	11.7% (12)	3.0% (3)	4.2% (4)	100
75+	Male	22.3% (6)	4.6% (1)	23.3% (7)	15.2% (4)	2.3% (1)	3.4% (1)	5.0% (1)	28
	Female	29.7% (12)	11.7% (5)	16.4% (7)	6.9% (3)	10.7% (4)	5.7% (2)	8.6% (3)	40

* Among non-computer users who have an interest in using a computer (n=2209; N=2,049,555)

Variables "sex", "agegr10", "J3"; based on weighted data; "don't know", "other" and "not stated" responses not included in table, therefore totals may not add and percentages may not add to 100%.

Source: Statistics Canada. 2001. 2000 General Social Survey, Cycle 14: Access to and Use of Information Computer Technology.

Figure 1. Level of Technology Use*: Ratio of Low to High Use** by Age and Sex



n = 25,090; N = 24,566,317; "not stated" responses are not shown.

* Composite measure of respondents' use of the following types of technology in last 12 months: telephone answering machine/service; pager; cable television; satellite dish; DVD; fax machine; cellular telephone; ATM. Low use—used 0 to 2 of the listed technologies in the past 12 months; medium use—used 3 to 5 of the listed technologies in the past 12 months; high use—used 6 to 8 of the listed technologies in the past 12 months.

** Ratio of high to low use derived by dividing number of "low level users" of technology by number of "high level users" of technology. Therefore, ratio measures number of "low level users" for each "high level user." Logarithmic scale used for figure.

Source: Statistics Canada. 2001. *2000 General Social Survey, Cycle 14: Access to and Use of Information Computer Technology*.

Table 4. Computer Training by Sex and Age (in 000s)

Age	Male % (N)	Female % (N)	Total
15-24	24.3(1940)	23.9(1871)	92.2(3811)
25-34	21.3(1703)	21.8(1703)	77.8(3406)
35-44	24.8(1977)	25.6(2005)	75.2(3982)
45-54	17.9(1428)	18.6(1455)	66.3(2883)
55-64	8.4(670)	7.4(583)	44.4(1253)
65-74	2.5(197)	2.0(155)	16.8(352)
75+	0.8(65)	0.6(52)	7.7(117)
Total	7,981 (66.0%)	7,825 (62.7%)	15,806 (64.3%)

Variables "sex", "agegr10," "train"; data weighted (N=24,566,317); percentages measure proportion of all respondents (not just those who use a computer).

Source: Statistics Canada. 2001. *2000 General Social Survey, Cycle 14: Access to and Use of Information Computer Technology*.

**Table 5. Values on New Ideas and Science By Sex, Age and Education
Canada and United States 1990-1993 World Values Survey**

	<i>New Ideas Better</i>		<i>Scientific Advances Help</i>	
	Canada	U.S.	Canada	U.S.
Sex				
Male	32	20	59	68
Female	27	21	52	57
Age				
16-29	37	20	57	60
30-49	29	22	55	63
50+	24	19	53	65
Education				
Lower	26	23	50	56
Medium	28	20	55	63
Upper	34	19	59	67

Source: Inglehart, Ronald, Miguel Bassnez and Alejandro Moreno. 1998. *Human Values and Beliefs: A Cross-Cultural Sourcebook*. Ann Arbor, Michigan: University of Michigan Press. Adapted from V271, V304

the opposite is true, with older Americans valuing science more than younger. The value placed on scientific advances, however, among Americans is higher overall than among Canadians. In a generational systems approach, older Americans may see investment in and use of technologies as a generational transfer benefiting them, while younger Canadians may see transfers beneficial to them

from older generations in terms of educational opportunities for credentials or skills that enable scientific advances. Increased demand for ICTs may be the product of these complex intergenerational transfers then, a supply driven phenomenon whereby the transfers of educational opportunities from older to younger increase the demand for ICTs among youth (Stehr, 2001a; Stehr 2001b). This is a profoundly different theorization of the ICTs/generations relation than the usual one which sees youth as captivated by technologies which then drives the demand for skilled labour.

A middle-aged woman, involuntarily downsized, reports in an interview, "I see myself as too old to be retrained" (McDaniel, 1996). In the normal life course, she would be about halfway through her working life. She had been told in several job interviews that people her age were not up to learning new technologies. The internalization of beliefs about age and technologies, about generations who are trainable or not, has the effect of rendering human generations obsolescent in ways similar to generations of technologies. Life course becomes an uneven depreciation curve. To the extent that the image of lives as depreciating products is acted upon as real, contradictions created by the transition from labour/capital economy can be seen as reconciled. Unemployment then no longer dissolves the partnership between citizen and nation state as Marshall (1963:222) observed in his Depression-era research; it is intervened by technology so that the problem becomes seen as age or generation-related incapacity. Technology, socially interpreted, deflects responsibility to the individual, and yet individual agency is usurped because one cannot de-age, or readily switch into a more technically literate generation. The impossible contradictions of socio-economic transformation are resolved at the societal level but made more acute at the micro-level.

Intergenerational ambivalence involves "contradictions in relationships between parents and adult offspring that cannot be reconciled" (Luescher and Pillener, 1998:416). Social actors work to reconcile these contradictions, and one of the means is use of ICTs. Can ICTs reconcile the impossible contradiction of working for pay and caring for young and old for women? It is held out as a resolution: keeping close through e-mail, through regular "hits" of cell phone communication, through FAXes and Webcasts. Research remains to be done on if or how reliance on ICTs will work in families for reconciling contradictions, but it might be anticipated that the effects themselves could be contradictory: on the one hand, enabling social cohesion among generations by maintaining contact at a distance with relative ease, but at the same time, offering a transitory resolution in which women in particular have fewer choices to say no to traditional roles of kin-keeping. Some similar critiques have come from feminist research on teleworking and its imperative consequences for women.

Conclusion

Technologies, we have seen, are relational and generational in layers. Although much is now known about age in relation to ICTs, and some new knowledge even corresponds to prevailing expectations, the generation/ICTs nexus is found to be intricate with feedback loops and unexpected causalities. It is also fluid as both generations and ICTs change, but even more challenging to sociology, is that the socially mediated meanings given to both change.

Generational systems of relations shape not only how technologies shape us, our identities and social structures, but work to reinforce the hegemonic generational, and at times gendered, relations of ruling. Generational relations organize, manage, regulate, and modernize technologies, but also societies as they relate to technologies. Unpacking ICTs and generations has found bugs in the generational ointment, bugs that burrow in layers that fracture our confident understandings of technology's aura as youthful and progressive. Those bugs open gates for future research but before that, enhanced theorization. Just as the invention of letters may not have been, as Plato wisely counsels us, the remedy for both memory and wisdom, ICTs may also not be the panacea promised.

References

Alanen, Leena

- 1994 "Gender and generation: feminism and the 'child question,'" in Jens Qvortrup, Majatta Bardy, Giovanni Sgritta and Helmut Wintersberger (Editors), *Childhood Matters: Social Theory, Practice and Politics*. Brookfield, USA: Aldershot/Avebury.

Becker, Henk A. (Editor)

- 1990 *Life Histories and Generations*. Utrecht: ISOR.

Callon, Michel and John Law

- 1997 "After the individual in society: lessons on collectivity from science, technology and society," *Canadian Journal of Sociology* 22(2):165–182.

Castells, Manuel

- 1999 "The social implications of information and communication technologies," in *The World Social Science Report*. UNESCO: Paris.

Elder, Glen

- 1994 "Time, human agency, and social change: perspectives on the life course," *Social Psychology Quarterly* 57:4–15.

Franklin, Ursula

- 1992 *The Real World of Technology*. Concord, Ontario: Anansi.

Henwood, Flis, Sally Wyatt, Nod Miller and Peter Senkar

- 2000 "Critical perspectives on technologies, inequalities and the information society," pages 1–18 in Sally Wyatt, Flis Henwood, Nod Miller and Peter Senkar (Editors), *Technology and Inequality: Questioning the Information Society*. Routledge: London and New York.

- Inglehart, Ronald, Miguel Basanez and Alejandro Moreno
 1998 *Human Values and Beliefs: A Cross-Cultural Sourcebook*. Ann Arbor, Michigan: University of Michigan Press.
- Latour, Bruno
 1988 *The Pasteurization of France* (translated by Alan Sheridan and John Law). Cambridge, Massachusetts: Harvard University Press.
- Luescher, K. and K. Pillener
 1998 "Intergenerational ambivalence: a new approach to the study of parent-child relationships in later life," *Journal of Marriage and the Family* 60:413-425.
- Mannheim, Karl
 1968
 [1952] "The problem of generations," pages 276-322 in Paul Kecskemeti (Editor), *Essays in the Sociology of Knowledge*. London: Routledge Kegan Paul.
- Marshall, T.H.
 1963 *Sociology at the Crossroads*. London: Heinemann.
- McDaniel, Susan A.
 1996 "Family/work challenges among older working Canadians", pages 195-214 in Marion Lynn (Editor), *Voices: Essays on Canadian Families*. Toronto: Nelson.
 2000 "Capturing the elusive social impacts of technology: towards a research agenda," pages 109-121 in John de la Mothe and Gilles Paquet (Editors), *Information, Innovation and Impacts*. Norwell, Massachusetts and Dordrecht, The Netherlands: Kluwer.
 2001a "Born at the right time? Gendered generations and webs of entitlement and responsibility," *Canadian Journal of Sociology* 26(2):193-214.
 2001b "Generational consciousness of and for women," in Bryan Turner & June Edmunds (Editors), *Narrative, Generational Consciousness and Politics*. Boulder, Colorado: Rowman Littlefield.
 2002 "Intergenerational interlinkages: public, family and work," in David Cheal (Editor), *Aging and Demographic Change in Canadian Context*. Toronto: University of Toronto Press, in press.
- Organisation for Economic Co-operation and Development (OECD)
 2001 *Understanding the Digital Divide*. OECD: Paris.
- Plato
 1996 "Phaedrus," Translated by Martin Irvine. <http://ccat.sas.upenn.edu/jod/texts/phaedrus.html> (access date: September 1, 2001).
- Statistics Canada
 2000 "Plugging in: household internet use," *The Daily* 4 December 2000.
 2001 "General social survey: internet use," *The Daily* 26 March 2001.
- Stehr, Nico
 2001a *Knowledge and Economic Conduct: The Social Foundations of the Modern Economy*. Toronto: University of Toronto Press.
 2001b "The world of work in the new economy," unpublished paper.
- Turner, Bryan S.
 1998 "Ageing and generational conflicts: a reply to Sarah Irwin," *British Journal of Sociology* 49(2):299-304.
- Wyatt, Sally, Flis Henwood., Nod Miller and Peter Senker (Editors)
 2000 *Technology and Inequality: Questioning the Information Society*. Routledge: London and New York.

