Aging and Technology: What is the Take Home Message for Newspapers Readers?

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1. Introduction

Worldwide the number of older persons will exceed the number of young persons in 2050 (United Nations Department of Economic and Social Affairs Population Division 2012; United Nations Department of Economic and Social Affairs Population Division 2001), a development seen to impact many aspects of life including the equity and solidarity within and between generations (United Nations Department of Economic and Social Affairs Population Division 2001). Various documents suggest actions that have to be taken for ensuring a positive environment for aging (Second World Assembly on Ageing 2002; World Health Organization 2002): ageism, the negative social treatment experienced because of one's age, is discussed extensively as a threat to aging well (Angus/Reeve 2006).

Technologies have long been identified as having an impact on aging and the elderly: as early as 2002, the Political Declaration and Madrid International Plan of Action on Ageing states in its introduction that one should focus on "realizing the potential of technology to focus on, inter alia, the individual, social and health implications of ageing, in particular, in developing countries" (Second World Assembly on Ageing 2002: article 12). It highlights the existence of technologies that can be used to promote independence, to bring people together, to reduce marginalization, loneliness and segregation between the ages, and to generate positive socioeconomic changes. It questions the lack of access to these technologies by many old people and asks as an action item for "measures that enable older persons to have access to, take part in and adjust to technological changes should therefore be taken" (Second World Assembly on Ageing 2002: article 38).

The impact of technologies on aging and the elderly is also reflected in the amount of academic work generated on the topic[1]. Academic inquiries into technologies are, among other issues, linked to innovation and consumerism within a framework of aging (Peine et al. 2014), ageism being the negative treatment of people based on their old age (Cutler 2005); intergenerational equity (Binstock 1992); intergenerational justice (Gusmano/Allin 2014); intergenerational cooperation (Heath 2013); active aging; design of next generation portable supporting devices (Chan et al. 2014) and aging in place (Peek et al. 2014). As to specific technologies, two recent additions to the technology and aging discourse are the fields of social robotics – with application ideas ranging from health care to being companions for the elderly (Flandorfer 2012; Heerink et al. 2010; Wolbring/Yumakulov 2014; Yumakulov et al. 2012) – and home care technology, where the envisioned applications range from monitoring the elderly to the ability of the elderly to self-care (Berridge et al. 2014; Wolbring/Lashewicz 2014).

Although academics are intensively engaged with the topic of aging and technology, how does the public gain access to this knowledge – given that most academic literature is not physically accessible to the public? Even if such information is available, how can the general public know what keyword to use in an internet search engine to find the data if they are not exposed to the keyword (Wolbring et al. 2012)? Distribution of knowledge through printed media is seen as an essential part of enabling social participation (Nord 1988) and sustaining political freedom and a stable social order (Weinstock Netanel 1996). Media often set discussion agendas for societies and create the boundaries within which debate takes place (Tynedal/Wolbring 2013; Wallack 1990). Various aspects of newspaper coverage of aging have been studied, such as the portrayal of aging and the elderly (Buchholz/Bynum 1982; Matcha/Sessing-Matcha 2007), elder abuse (Mastin et al. 2007), successful aging (Rozanova 2010), nursing homes (Miller et al. 2012), constructing aging (Fealy et al. 2012), Alzheimer (Kang et al. 2010), attitudes towards aging (Hubbard et al. 2009), the elderly in the workforce (Powell 2013), construction of the subject of care (Weicht 2013), aging and healthcare spending (Gusmano/Allin 2014), and the visibility of the 2002 *World Health Organization report Active Ageing: a policy framework* and

1 | Google scholar, a database covering academic work, generated 1,950,000 hits with the keyword combination of 'elderly' and 'technology', 2,070,000 hits with 'aging' and 'technology', and 652,000 hits with 'ageing' and 'technology'.

the *2010 Toronto Charter for Physical Activity: A Global Call for Action* (Abdullah/Wolbring 2013).

As to the coverage of technologies in relation to aging and the elderly, one article assessed the quality of newspaper medical advice columns for elderly readers (Molnar et al. 1999). However, no analysis of how technologies as a whole are covered by newspapers in relation to the elderly and aging could be found. We therefore investigated the discourse around technology and aging and the elderly in two Canadian newspapers; one with national reach (*The Globe and Mail*) and one with local reach from the Canadian province of Alberta (*Calgary Herald*) from 1980-2013. We report qualitative and quantitative data of a study that asked two questions: 1) Which technologies were mentioned in the newspapers in regard to aging and the elderly and 2) How were technologies related to aging or the elderly covered (utility, problems, social groups linked to them, ethical issues and technology mentioned in relation to medical or social issue faced by the elderly…)?

We discuss the findings through the lens of two Canadian policy reports on aging, one being the 2009 Canadian Senate report on aging *Canada's Aging Population Seizing* the *Opportunity* (hereafter cited as the Canadian report) (Canada. Parliament. Senate. Special Committee on Aging et al. 2009) and the other being the 2013 report from the Province of Alberta *Let's talk about aging: aging well in Alberta* (hereafter cited as the Alberta report (Chief Medical Officer of Health Alberta 2013) and through the lens of an older document that proposed various actions the 2002 Madrid International Plan of Action on Ageing (hereafter cited as the Madrid action plan) (Second World Assembly on Ageing 2002), all of which mention media as an essential part of improving the situation of aging and the elderly. We chose the Madrid action plan as it was older and the state of technologies was different than when the Alberta and the Canadian report were written.

2. Method

Data Source and Sampling

To obtain quantitative data on the frequency of the term "technology" together with the terms "elderly", "aging" or "seniors", the following newspapers were searched on May 25, 2014 for the years 1980-2014 (table 1): *The Globe and Mail* (Canada, national reach), *Calgary Herald* (Canada, local reach)

and the *Canadian Newsstand Complete*, a collection of 300 Canadian newspapers. We accessed *The Globe and Mail*, the *Calgary Herald* (Canada) and the *Canadian Newsstand Complete* through Proquest databases, which in turn we accessed through the University of Calgary.

To obtain qualitative and quantitative data on the discourse around aging and technology, we investigated *The Globe and Mail* and the *Calgary Herald* from 1980-2014. Using the keyword combination "elderly" and "technology", we obtained n=935 *The Globe and Mail* articles and n=365 *Calgary Herald* articles. Using the keyword combination "aging" and "technology", we obtained n=2225 *The Globe and Mail* articles and n=1167 *Calgary Herald* articles. We used the spelling "aging", as that was the dominant spelling over "ageing" in the Canadian newspapers. Articles identified were downloaded as PDF and imported into Atlas-TI (May 25, 2014), a qualitative data analysis and research software.

Data Analysis

The research questions we investigated were the following: 1) Which technologies were mentioned in the newspapers in regard to aging and the elderly and 2) How were technologies related to aging or the elderly covered (utility, problems, social groups linked to them, ethical issues, etc.). We employed deductive and inductive coding strategies. As for deductive strategies, we used the Word Cruncher function of Atlas-TI to generate a hitcount of all the words evident in the newspapers, and we analyzed the list of words for relevance to our research questions. We also employed an inductive and iterative coding strategy, in which articles were read and themes relevant to the research questions were identified as reading progressed. When we started reading the articles, we realized that most articles did not really cover technologies, as they related to aging or the elderly, but had by chance both terms in the same article. Therefore, we employed the co-occurrences function of Atlas-TI where the software searched for all the incidents in which both terms appeared in the vicinity (same paragraph) of each other. We searched all of *The Globe and Mail* and *Calgary Herald* articles for the mentioning of aging and technology (n=222, n=126 relevant) or elderly and technology (n=56, n=53 relevant) in the same paragraph in order to obtain more relevant content[2]. All paragraphs

2 | We searched for paragraphs that co-contained the terms abil* and aging (n=57); abil* and elder* (n=17); abil* and technol* (n=43); cost and tech-

identified by the software were read by both authors and coded with the research questions in mind to increase reliability, and differences were resolved during our discussions.

Limitation

We did perform an in-depth content analysis of only two English language Canadian newspapers. As such, our findings are not generalizable for Canada or other countries: our data cannot be used to judge other media types either, as we focused on newspapers. We also used the term technology to identify articles and not terms of individual technologies. However, we content that our data can be used to guide future research in this area.

3. Results and Discussion

General Coverage of Technology in Relation to Aging and the Elderly

It is well known that "newspapers are influenced by their environment, including ownership, funding, need for circulation, advertisement revenue and the readers preference for reading like-minded news." (Cheung/Wolbring 2015:82) However, the results we found with regard to the coverage of technologies in relation to aging and the elderly in Canadian newspapers are puzzling. We are living in a technological world and aging has been recognized for some time as an issue of interest to the Canadian public. Indeed this is reflected in the amount of Canadian newspaper articles that contain the words aging, elderly, seniors, elders and technology (table 1). The combinations of elderly and technology or aging and technology generate a substantial amount of articles, thus suggesting that technology is seen as an important issue as relates to aging and the elderly (table 1).

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nol* (n=31); cost and elder* (n=23); cost and aging (n=13); technol* and policy (n=20); technol* and ethic (n=31); technol* and needs (n=151); technol* and healthcare (n=35); technol* and equity (n=3); technol* and accessibility (n=66); technol* and equality (n=3); technol* and seniors (n=7); technol* and problem (n=59) and technol* and women (n=24).

Table 1: Frequency of Co-occurrence of Technology with the Terms Aging, Elderly, Elders and Seniors

Keyword	**The Globe and Mail**	**Calgary Herald**	**Canadian news-stand complete**
Technology	127793	51702	1156522
Elderly	18714	9655	278573
+technology	935	365	9646
Aging	21364	12355	293338
+Technology	2225	1167	25543
Seniors	167644	77340	2191067
+Technology	15647	5451	122146
Elders	11710	6659	162349
+technology	562	279	6198

However, upon reading the articles it became evident that very few articles engage with technology as it relates to the elderly or aging. When we searched *The Globe and Mail* and the *Calgary Herald* articles for the co-occurrence of technology and aging/ageing in the same paragraph, we found only 126 relevant articles, and we found only 53 relevant articles that covered technology and the elderly in the same paragraph. Our findings suggest that the reader does not take home the message of the pervasiveness of the impact of technologies on aging and the elderly. This underwhelming coverage does not reflect, for example, the coverage of technology related to aging and the elderly in the academic literature. The three policy documents we use as a lens for our analysis also cover technologies extensively. The 2002 Madrid action plan mentions the term tech* n=60 throughout, the 2009 Canadian report contains the term tech* n=47 and has a whole chapter on technology (chapter 9) and the 2013 Alberta report mentions tech* n=27 times and has a section called "Technologies that support older adults and their caregivers" (17-18) and a box called "technical support" (18). Interestingly, the 2009 Canadian report was only mentioned in four of the n=300 newspapers of the *Canadian newsstand complete* database, one time each, with none covering the technology aspect of the report. The 2013 Alberta report has so far not once been mentioned by the 300 newspapers represented in the *Canadian newsstand complete* database, which includes the main Alberta newspapers, as has not the Madrid action plan.

As to the general application flavor of technology (medical or social narrative), the 2009 Canadian report focuses on technology and aging within the medical narrative and not on the use the elderly can make of all kinds of technologies outside of medical health narratives, while it singles out the utility of technology in "providing new opportunities to deliver care" (8). The 2013 Alberta report links technology applications to medical and social well-being as does the 2002 Madrid action plan.

Coverage of Specific Technologies in Relation to Aging and the Elderly

As to the coverage of specific technologies or applications, the relevant newspaper articles mention only twelve specific technologies or applications more than once.[3] None of these technologies were covered before 1990. With the exception of medical technology as a term, the coverage of these technologies was so low that no trends can be obtained. As for the term "medical technology", the coverage increased from the 1990-1999 to 2000-2009 decades, but the 2010-2014 number makes it less clear whether the increase in coverage will continue.

The lack of coverage of specific technologies and applications is also reflected in the 2009 Canadian report, which only mentions tele-health and electronic health records (which has its own sub chapter, 9.3.). As to these two technologies singled out by the Canadian report, telehealth or telemedicine was only once mentioned in *The Globe and Mail* in 2011, once in the 2002 Madrid action plan and not at all in the *Calgary Herald* and the Alberta report. Electronic health records were only mentioned once each in *The Globe and Mail,* the *Calgary Herald* and the Alberta report and not at all in the 2002 Madrid action plan. That the 2002 Madrid action plan does not mention telehealth might be understandable given its date, but it is surprising that the 2013 Alberta report does not thematize telehealth/telemedicine more especially in relation to home-care technologies, given that Alberta Health a government agency

3 | Robots/ robotic devices, n=5; assistive drivers or vehicles, n=8; for home/ living purposes, n=16; medical technologies, n=56; assistive technologies in public space, n=5; for anti- aging, n=10; for longevity/ living longer, n=6 technologies that assist caregivers/ nursing homes n=6 ; technology for physical activity, n=2; environmentally friendly technologies, n=2; genes and genetics and technology, n=2 and technologies specific to the aging process n=2.

had a unit on telehealth. However, in contrast to the Canadian report, the 2013 Alberta report mentions various other technology applications throughout the report such as monitoring technologies, home automation devices, medication reminders through phone or fax, sensors for detecting falls, home automation and GPS locators and internet use as social media to battle social isolation. The 2002 Madrid action plan mentions information and communication technology four times, farming technologies for aging farmers once, assistive technology linked to rehabilitation care twice, the term medical technology once, computer technology once and telemedicine once. However, academic literature shows that there are many more concrete technology applications applied to the elderly and aging. The readers of either the policy documents or the newspapers do not get an idea of how pervasive technology applications really are. Social robotics, which is an emerging field, is not at all on the radar screen yet, although the elderly are seen as a target group of consumers of both social robots (for assistance and companionship), and healthcare robots.

Themes Evident and Missing in the Coverage of Technology in Relation to Aging and the Elderly

Only one theme was covered in more than n=20 articles namely technologies and cost (n=44). Impact of technologies on the healthcare system was present (n=18) times. The following themes were only visible in less than ten articles such as, demand for technology (n=9), technology for increasing independence (n=8); adapting to technology (n=8) and n=6 articles mentioned the term problem. Many themes mentioned in the academic and grey literature around aging such as how technologies play themselves out around the aging of people from socially disadvantaged groups; ethics of technology and ageism linked to technologies (three themes whose lack of coverage we discuss further down) were hardly (three or less articles) or not all mentioned.

1 Theme present: Cost

As for code co-occurrence for technology and (aging and ageing) in the newspapers n=39 articles covered cost aspects[4]. As for the code co-occurrence results for Technology and elderly in the newspapers n= 5 were covering cost

4 | Before 1980 n= 0; 1980- 1989 n= 2; 1990- 1999 n= 19; 2000- 2009 n= 13; 2010-2014 n= 5.

aspects[5]. As to the role of technology in relation to cost and the elderly, some articles focus on technologies as ways to save money and some articles focused on technology as a cost driver with roughly even weight. Interestingly the theme of cost was mostly present in the newspaper articles published before 2002. As to the 2009 Canadian report cost is a main theme but only twice is cost linked to technology. The same is true for the 2013 Alberta report which covers cost in various areas but in regards to technology only twice; once with the focus of technology saving cost and once with the focus on increasing cost. The 2002 Madrid action mentions cost only in general and not once related to technology. Our finding suggest that although cost is a big theme it's much less discussed in relation to technology and if technology is covered the message seems to be evenly split between technology increasing and decreasing cost. We argue that the reader does not really get a good picture around the impact of technology on the topic of cost and the elderly.

In the following we give some more qualitative details on how cost was covered in the newspapers and the two Canadian policy documents. As to the coverage of the term "cost" mentioned in the vicinity of "elder*", "aging" or "seniors", one finds topics such as the cost of the elderly (Armstrong 2002), the increased cost of the pension plan (Speirs 1983), the cost of access to healthcare, overuse of drugs, and one article assumes a negative impact if a cure for cancer would appear. Related to articles covering the terms "technol*" and "aging"/the "elder*" and "cost", articles mentioned the focus of a venture capital fund on low tech products for elderly care (*The Globe and Mail* 1989), the too high cost of an artificial heart (Van 1995), and that smart card technology saves the health system money by preventing too common hospital admissions due to elderly patients receiving numerous prescriptions that can cause health problems when ingested together (Walker 1995). One article talks about a GPA tracking device for asylum seekers and immigrants, whereby they mention that the system they bought from the UK was originally used there to track elderly people with dementia (Chase 2013). Another article reports that changes in the Canadian patent law might endanger provincial drug plans for the elderly (Montgomery 1983). Various government officials are quoted with the prediction that healthcare will eat up 50% (Heyman 2002) to nearly 100% of provincial budgets (Ohler 2001) by 2012-2022 due to the aging population and cost of technology. Biotechnology and pharmaceuticals are seen as

5 | Before 1980 n= 0; 1980- 1989 n=1; 1990- 1999 n= 3; 2000- 2009 n=1; 2010-2014 n=0.

the top-performing industries because of the aging population (Yedlin 2001). Articles cover politicians' views that the cost of technology and the aging population demands a health care reform in Alberta (Heyman 2002) and reform of the Canada Health Act (May 2000), as well as the fact that a shift to private systems might take place (Cattaneo 1995). However, the coverage of the topic of cost related to technology dropped sharply after 2002, with the majority of articles covering cost deriving from the 1980's and 1990's.

To compare the newspaper coverage of cost with how cost is covered in the two Canadian reports, the 2009 Canadian report mentions cost n=94 throughout its report. However, it does only mention cost twice in relation to technology, namely that telehealth and electronic health records lower the cost of the health system. No negative cost impact of technologies is mentioned. The 2013 Alberta report mentions cost n=23 in general. However, in relation to technology, it only mentions cost twice, once talking about the decreasing cost effect of technologies: "The introduction of these technologies [medication management technology, mobility technology will be of tremendous benefit to the health-care system by reducing strains on the workforce; reducing serious health incidents through prevention and assistance; lowering costs by reducing visits to emergency departments; increasing health system capacity by safely supporting seniors at home; reducing demand on continuing care; and, reducing long-term stays in acute care."(:63) At the same time, the report features a quote by the Canadian Foundation for Healthcare Improvement that sees technological innovation as a main cost driver: "Some of the best research shows that, although health-care costs will begin to rise as baby-boomers age, the impact will be modest in comparison to that of other cost drivers, such as inflation and technological innovation." (:10) The 2002 Madrid action plan mentions cost n=14, but does not mention cost with regard to technological advancements. In other words both reports have cost as a main theme but not in relation to technology.

Specific Theme: Impact of Technology and Problem Narratives around Technology

As to impact of technology n=12 articles in the *Calgary Herald* and *The Globe and Mail* state negative impact of technology on the healthcare system and n=6 articles state positive aspects on the healthcare system.

As to the use of the term 'problem' most articles saw technology as tool to fix a problem but did not cover technology as the 'problem'. The findings in the

newspapers is reflected in the two Canadian reports the 2009 Canadian report and the 2013 Alberta report and the 2002 Madrid action plan whereby technologies are mostly covered positively and not in a 'causing problem narrative'.

We posit that the reader does not receive a realistic picture of the impact of technologies as it is mostly covered in a technology to the rescue narrative.

As to the negative impact of technology (n=7) on the healthcare system the *Calgary Herald* had one article in 2013, one article in 2006, one in 2005 one in 2002 and the rest before then mentioning among others that "parents and children have to be more self-reliant if Albertans are going to have the money to provide the sort of high-tech medicine people" (Walker 1996: B3). As to *The Globe and Mail,* all n=5 articles highlighting the negative impact on the health care system were before 2001, with one article giving voice to the sentiment that the aging are not to be blamed, but increased service intensity and costlier technology instead (*The Globe and Mail* 1993). N=3 articles state that Canadians have poor access to medical/health technologies. One article wrote about the need for reasonable standard of service and maintaining a fiscal accountability over the system (Kennedy 2000).

As to the positive impact of technology on the healthcare system, the newest article in the *Calgary Herald* came from 2001, covering tele-health; one mentioned the cost savings through information technology and one focused on the saving of time through Internet and phone based technologies. Other themes present that are linked to the healthcare system but do not directly mention the healthcare system were that nurses need to upgrade their knowledge, that Canada is not great in providing access to healthcare technologies, that Canada lacks behind, that technology assessment is needed, and that wireless technology puts pressure on healthcare systems to organize patient data. As to *The Globe and Mail*, one article in 2012 and two in 2011 highlight the positive impact of technology (information technology) on the healthcare system (saving money and time).

Interestingly, within the three newspapers (*The Globe and Mail*, *Calgary Herald*, *National Post*) only six use the term "problem" in relation to technology and aging and the elderly. A 2002 *Calgary Herald* article described the design process of safer apartments for the frail elderly and which problems the elderly face could be solved through technology (Bertrand 2003). In *The Globe and Mail,* five articles were found: themes mentioned were that one can focus on smaller problems that can be dealt with through technology in a shorter framework; that Canadians do not plan how they want to die at a time technology can keep one alive; two articles focused on problems tech-

nologies could tackle; and one mentioned diffusion of the product from being used by people with a certain problem to the usage by the general public.

As to the Canadian and the Alberta report and the Madrid action plan all three mention technologies, mostly positively with little to no negative mentioning. The 2013 Alberta report for example, states that technologies "will enable many of us to stay in our homes longer and maintain greater control over our own health" (17), that "technology also holds the promise of supporting greater safety, autonomy and personal choice, especially for those of us who want to stay in our own homes for as long as possible" (18) and that "manage personal risks, reduce social isolation and carry out the tasks of everyday living. These technologies can also serve to bring peace of mind to families and caregivers, not to mention reduce demands on the health-care system (18).

Missing Theme: Socially Disadvantaged Groups

Another finding in our study is the lack of newspaper coverage of technologies in relation to aging of people from socially disadvantaged groups such as indigenous people (n=0), disabled people (n=1) or immigrants (n=0), as well as a lack of a gendered analysis (women only mentioned n=1). This seems to fit with the Canadian and Alberta report and the Madrid action plan. Although socially disadvantaged groups are covered in these three documents they are not mentioned in regards to technologies. The newspapers analysed, the Canadian and Alberta report and the Madrid action plan leave the impression that the technology and aging interaction is a homogeneous process; however, technology has different impacts on the aging experience of people from disadvantaged groups (for example for the case of people aging with a disability see (Wolbring/Lashewicz 2014). The lack of mention of socially disadvantaged groups around technologies and aging in the newspapers might be explainable as socially disadvantaged groups are not much mentioned in relation to many aspects of aging in the newspapers (Abdullah/Wolbring 2013), which in turn might be understandable as newspapers only tailor to their majority readership and what they want to hear (Arceneaux 2011; Gentzkow/Shapiro 2010; Stroud/Muddiman 2013). However, socially disadvantaged groups are covered in the Canadian and Alberta report and the Madrid action plan and it is less understandable why no linkage is made to technologies in these three documents. As such, the newspapers and for that matter the Canadian and Alberta report and the Madrid action plan set a discussion agenda around technology and aging that does not include social-

ly disadvantaged groups and add to an uneven discussion around technologies and aging as it relates to socially disadvantaged groups.

Missing Theme: Ethics

Ethics hardly coincided with technologies related to the elderly/aging. Articles questioned the focus on the autonomy of robots and liability (n=2), what the public system should pay for, how to treat the elderly, whether to use IVF at a certain age, and issues related to life extension and high-technology medicine. Furthermore, although some articles mention the terms policy and governance – some even in the same sentence as technology – not one covers technology policy or technology governance in relation to aging or the elderly. Interestingly, both the Canadian and the Alberta report do not use the terms ethics or governance at all, and the 2002 Madrid action plan uses ethics only in relation to issues other than technologies.

This does not reflect the academic literature where ethics is an integral aspect of the discussion around many technologies that are applied to aging and the elderly. However, this finding might reflect that the public does not use the term ethics or thinks about 'ethical' constructs in abstract ways (see, for example, how parents of children with cognitive differences frame their concerns about cognitive enhancement (Ball/Wolbring 2014). Indeed Susan Sherwin, a highly influential bioethicist, believes that ethicists do not have the intellectual tools to really influence discourses (Sherwin 2011). Sherwin's identified problem might be due to the fact that ethical reasoning might not be the crucial factor, but the utility of a given ability expectation (Wolbring 2012). This, in other words, means that if we have certain ability expectations – such as independence or self-sufficiency – one will make an argument that justifies this ability expectation whereby the 'lay public' will use arguments understood by people they interact with. As stated elsewhere by the author, "this does not mean that ethical theories are not employed, but that if a certain ethical theory is employed and convinces people, it is because the ethical theory allows for living out certain ability expectations; for example, people who believe in the ability to maximize one's self interest might be open to someone promoting certain actions using the ethical theory of psychological/ethical egoism." (Wolbring 2012: 299)

Missing Theme: Ageism

Ageism is only once mentioned in the newspapers in relation to technology. As to the Canadian and the Alberta report and the Madrid action plan, the Alberta report mentioned ageism three times with regard to aging/elderly, but not once in relation to technologies. The Canadian report has ageism as the title of chapter 1: however, no linkage between technology and ageism is made whether in a positive or negative way. The 2002 Madrid action plan mentions ageism only once, asking the media to avoid ageism and present a more positive image of older persons.

The lack of coverage of ageism linked to technology in the newspapers and the Canadian and the Alberta report and the Madrid action plan again does not reflect data of many academic studies that show ageism exhibited in technology discourses (e.g. (Cutler 2005)).

In general, the results from our study suggest that newspapers are not a source to use if one wants to learn about the interaction between technology and the elderly/aging. However, the question is: how one does learn about it?

4. Conclusion: Missing its Mission

We conclude that the reader is not educated on key policy developments that cover aging and technology and does not obtain a useful picture of the interaction of technology and aging/elderly. The coverage does not fulfill the described role of newspapers, such as enabling social participation (Nord 1988). We posit that the information given is much too limited to allow the reader to be an informed discussant or even to know what to discuss. Newspapers do not increase literacy of the public on the topic, a problem that is not just linked to aging and technology, but that exists in other contexts as well (Wolbring et al. 2012), while newspapers are seen to set the discussion agenda (Wallack 1990). We posit that the coverage suggests an agenda that minimizes the angle of socially disadvantaged groups such as immigrants, disabled people or indigenous people. This makes the coverage problematic for disadvantaged social groups and ignores the attention that the three policy documents covered in our study state disadvantaged groups should receive. The reader also does not learn about the gendered aspect of technology, which is also a problematic issue.

Furthermore, the newspapers do not cover policy documents such as the 2009 Canadian report, the 2013 Alberta report or the Madrid action plan. This

finding is similar to another study that found that key documents about active aging, such as the 2002 *World Health Organization report Active Ageing: a policy framework* and the 2010 *Toronto Charter for Physical Activity: A Global Call for Action,* are not covered by the newspapers represented in the *Canadian newsstand complete* database either (Abdullah/Wolbring 2013). This, we posit, is a problem if the public is to be informed in a useful way on a topic that demands that the public should be alerted on policy documents.

The 2009 Canadian report sees a need for policy makers to be better informed on aging:

"Policy-makers need to base their decisions on sound evidence and a grounded understanding of the many ways people age. This will require ongoing, longitudinal research to understand the process of aging and the complex ways in which economic, social and health factors affect in which people age well or not. Seizing the opportunity of an aging population will also require a better understanding of how technological advances can be used to improve the quality of life of Canadians and to make the most efficient use of limited human resources." (155)

We propose that policy makers do not gain this knowledge through newspapers but have to access this knowledge through other sources. Furthermore, the same knowledge is needed by the public at large, but the question is where they would obtain such knowledge if newspapers are not the source of it. Policy makers have access to sources – such as academic databases – that the public does not: this suggest that there is a knowledge access gap between policy makers and the public, which we contend is problematic given the narrative that the public should be part of technology governance processes.

Although there are many problems with the coverage, the question is what to do? Are newspapers really able to regain the role they were supposed to play? Can other media such as social media fulfil this role? The answers to these questions are less clear. Social Media might allow people who are already interested to be part of, for example, certain facebook pages. However, to obtain the knowledge which might lead one to become active, social media might be too overwhelming to figure out what the issue is. Another possibility is to get involved locally on the topic face to face, although one must first be aware that there is an issue, an awareness that one might only obtain through direct experience of a problem within one's social circle. This approach also assumes one can access the local networks: this is more than problematic for many people with disabilities, including elderly with disabilities, whether they live at home or in other places such as senior homes.

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