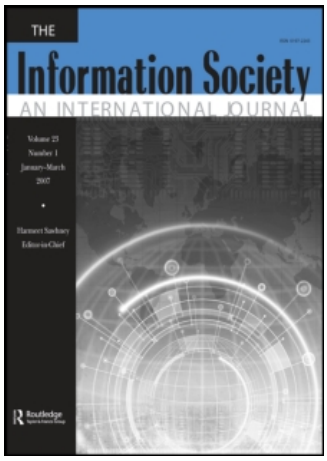

The Information Society
An International Journal
Publication details, including instructions for authors and subscription information:
http://www.informaworld.com/smpp/title~content=t713669588

Engaging the Business/Industrial Sector in Accessibility Research: Lessons in Bridge Building

To cite this Article: Neufeldt, Aldred H., Watzke, James, Birch, Gary and Buchner, Denise , 'Engaging the Business/Industrial Sector in Accessibility Research: Lessons in Bridge Building', The Information Society, 23:3, 169 - 181
To link to this article: DOI: 10.1080/01972240701323580
URL: http://dx.doi.org/10.1080/01972240701323580

The Information Society, 23: 169–181, 2007

ISSN: 0197-2243 print / 1087-6537 online
DOI: 10.1080/01972240701323580

Routledge
Taylor & Francis Group

Engaging the Business/Industrial Sector in Accessibility Research: Lessons in Bridge Building

Aldred H. Neufeldt

Community Rehabilitation and Disability Studies Program, University of Calgary, Calgary, Alberta, Canada

James Watzke

Technology Centre and Dr. Tong Louie Living Laboratory, British Columbia Institute of Technology, Vancouver, British Columbia, Canada

Gary Birch

Neil Squire Society, Burnaby, British Columbia, Canada

Denise Buchner

Community Rehabilitation and Disability Studies Program, University of Calgary, Calgary, Alberta, Canada

This article examines challenges of engaging the business/industry sector in research on the use of information technology to enhance accessibility for people with disabilities in two areas of common interest—to employment and to public and retail services. The data presented arise from the joint effort of two research teams who independently encountered challenges in engaging private sector firms in their respective projects. Using a case study approach, the experiences of both groups were examined for themes representing factors that inhibited collaboration between research and business sectors, and those that enhanced collaboration. Trustworthiness of themes was established by submitting them for critique and feedback to key informants knowledgeable in both business and research. From a social systems theory perspective, findings suggest that the most important differences between research and business systems reside in the meaning of communication each uses, and differences in assumptions about and value placed on factors such as pursuit of new knowledge, the importance of marketability of findings, and so on. Additional complications arise in pursuit of research related to disability. Factors to build on when seeking research collaboration include an understanding of the language and culture of business systems, and the very real possibility of developing disability research into secondary goals that business systems typically pursue once the prime need for profitability has been at addressed (the notion of *satisficing*). Implications for communication between disability research and business systems are identified.

Keywords business research, collaboration, cooperation, disability and accessibility, disability and employment, information and communication technology, new economy, research context

Received 15 September 2006; accepted 30 November 2006.

We gratefully acknowledge support for this research through the Disability and Information Technology (Dis-IT) Research Alliance funded by Canada's Social Sciences and Humanities Research Council through an Initiatives in the New Economy grant.

Address correspondence to Aldred H. Neufeldt, Community Rehabilitation and Disability Studies Program, University of Calgary, Calgary, AB, Canada T2N-1N4. E-mail: aneufeld@ucalgary.ca

INTRODUCTION

This article has an immediate purpose and a broader purpose. The immediate purpose is to examine challenges to engaging the business/industry sector in research on the use of information technology to enhance access for

people with disabilities.[1] At a broader, conceptual level the purpose is to explore a neglected aspect of research—the nature of the relationship between the research enterprise itself and the context within which such research takes place from a systems theory perspective. In turn, such analysis may provide some indication of challenges faced by both private sector and disability organizations in pursuing other initiatives of mutual interest.

In some respects these purposes are quite pragmatic, but, as is often the case, the simple masks complexity, in that this question of relationship between the disability and private sectors on matters one would think of mutual interest seems no better understood today than two or three decades ago. In contrast, over the same period considerable progress has been made on other fronts: perhaps most notably on gaining acceptance of disability as a social and civil rights as opposed to a personal issue. This agenda has been central to advocacy efforts of the disability movement since the mid-1970s (see, for instance, Enns & Fricke, 2003; Steinstra & Wight-Felske, 2003), and has contributed to the adoption of antidiscrimination legislation in a growing number of countries and, within this past year, agreement on wording for an international *Convention on the Rights of Disabled Persons* at the United Nations.[2]

An example of progress in areas pertinent to this article that seems stubbornly resistant to change is that of employment of people with disabilities. Recent data on labor-force participation in Australia (Australia Bureau of Statistics, 2003) and Canada (Statistics Canada, 2003) compared with similar data reported previously (see Barnes, 1991; Neufeldt & Mathiesson, 1995) shows little change, with participation rates of working aged disabled persons remaining at 25–30% that of nondisabled people.[3] Indeed, American research suggests that in the U.S. disability employment rates decreased during the 1990s when contrasted with the nondisabled population (Houtenville & Burkhauser, 2004). Such lack of progress is particularly notable given that considerable effort has made in those same countries to pursue policies and practices intended to overcome barriers to employment (e.g., O'Day & Berkowitz, 2001), with support not only from disability nongovernmental organizations (NGOs) and government but also from leading private-sector firms (e.g., White, 2003, gives examples from Canada). Clearly there are complexities to the interrelationship of disability interests and those of the private sector that are not well understood. With this in mind, our two research groups adopted an alternate approach to that often used. Rather than seeking to involve the private sector based on arguments of social responsibility, we sought to engage it with a view to the mutual benefit of a collaborative approach.

There are various reasons why a collaborative approach to applied research on enhanced accessibility holds promise. First, both researchers and business/industry leaders understand that important innovations emerge in response to problems encountered in "the real world." That is a desired result of applied research. Second, there are many examples of where innovations responding to issues of accessibility have benefited a much larger public, including such universally used inventions as the typewriter, the telephone, and, more recently, the electronic keyboard emulating acoustic sounds (Jacobs, 2005). In other words, there is a business case for collaboration—the possibility of a substantial return on investment. Third, applied research can contribute to significant marketing and public relations benefits for firms involved, promoting a "good corporate citizen" image (Conference Board of Canada, 2004). Finally, since mainstream industry rarely has disability expertise in-house, a collaborative approach holds the promise of gaining such expertise at minimal cost.

Given such reasons, one would think it would not be uncommon to find examples of collaborative research involving business/industry and the disability sector. However, a scan of literature reveals few documented examples. Virtually all accessibility research of a collaborative nature involves organizations either in public or nongovernmental sectors.[4] Consequently, when our two research groups independently encountered challenges in engaging private-sector firms in their respective projects, particularly as contrasted to similar research with public and nongovernmental-sector groups, a joint decision was made to critically examine these experiences to learn about how research and business sectors can more optimally relate to and benefit from each other—a variant of the adage that "if life gives one lemons, make lemonade out of them."

Of the little that is published pertinent to this topic, primary attention has been given to describing differences in culture constraining collaboration between the world of business/industry and that of researchers and/or service providers in the disability field (see Dewa, 2000; Peck & Kirbride, 2001). In an analysis of the problem, Neufeldt (2004) likens the challenge to one of bridging two different systems of thought, building on Luhmann's (1995) theory of social systems that argues they are defined by communication that has meaning to its members rather than by organizational structure.[5] In simplified terms, this perspective of business and research systems holds that their respective boundaries by which one knows who is a member are established through the language used and related implicit assumptions. Accentuating the difference is the proposition that each social system narrows its meaningful communication into a "zone of reduced complexity" that helps members distinguish between their own system and the larger environment, which is seen as infinitely complex and chaotic. The main criterion guiding communication (and hence the meaning and reproduction of the system) is of a binary nature—communication is either

"business" or "not business," "research" or "not research," "disability" or "not disability." From this perspective there is little or no room for understanding other systems construed as not part of one's own system, but rather part of the complex environment.

While this theory has its critics (e.g., Mathur, 2005; Viskovatoff, 1999), a main contribution is its emphasis on the centrality of the meaning of communication to social systems. From this perspective, problems of collaboration between business and outside researchers on addressing accessibility issues faced by people with disabilities can be framed as one of bridging language differences, a communication and interpretation issue.

This social systems theory framework contextualizes the questions examined in this article: What are the assumptions underlying language of both business and research systems of thought that characterize their boundaries? How do these contribute to the prospects of collaboration on disability accessibility research? What intersystem strategies enable a bridging of these systems so that meaningful communication takes place?

APPROACH

A case study approach was used, with experiences of the two research projects representing cases that could be examined to address the questions of interest. A brief description of each is provided next.

To analyze the case experiences, a stepwise approach was used. First, a one-day meeting of the two research teams was arranged for the purpose of identifying and describing the issues encountered. The day began with each group describing for the other the purposes of their respective projects, the methods of data gathering, the intended business/industry groups from which data was to be gathered, and approaches used to seek the engagement of firms. Examples of the nature and kinds of responses from private sector firms to such approaches were highlighted, giving attention both to situations where the approaches led to engagement and those where problems were encountered. Thereafter, a preliminary analysis was made of common and distinct themes. Second, notes from this meeting were prepared in written form, shared with each other and refined. These provided the opportunity for further analysis of factors that influenced engagement between the research groups and the business sector. Third, these preliminary findings were presented for comment and feedback at an annual institute of the Disability and Information Technology (Dis-IT) Research Alliance (Neufeldt et al., 2005) attended by other researchers interested in disability and information technology along with interested participants from disability, business and government sectors. A panel of experts representing the various perspectives was invited to provide critical commentary on observations presented, as were members of the audience, thus providing a validity check. The final step was to incorporate the feedback from these discussions, and finalize our observations for this article. This "triangulation" of critical examination of the observations derived from the case reviews established a sense of trustworthiness characteristic of qualitative research methodologies.

Brief Description of the Two Cases

Of the two research projects (cases) being considered, one focused on innovative uses of information and communication technologies (ICTs) to support employees with disabilities in the work place, the second focused on personal-use ICTs (or PICTs) in the retail and public service environments. While the focus of each project was distinct, what they had in common was their interest in innovations of an ICT nature that either emerged out of or involved the private sector, on the one hand, and potentially impacted the accessibility of people with disabilities to employment and/or public places, on the other. A university-based group led one[6]; the other was led jointly by a nonprofit society specializing in service delivery and research and development (R&D) of electronic technologies of significance to persons with disabilities and an applied research center from Canada's largest polytechnic institute of technology.[7] Both are part of the Dis-IT Research Alliance examining implications of the New Economy for people with disabilities.[8]

Employment Theme Case. The employment theme project sought answers to the following questions: What innovations that make workplaces more accessible are arising in the "New Economy?" What is the potential of such innovations for broader use both with and beyond employees with disabilities? What market implications, if any, are there for the innovations that are found?

A "snowball" technique was chosen as the preferred method of finding appropriate exemplars of business/industry to engage in the study. Step 1 was to identify and interview key informants for the purpose of identifying employers reputed as open to hiring employees with disabilities and in some way engaged in the knowledge economy. Key informants chosen were knowledgeable of employment issues and held key positions in disability advocacy organizations, job-matching agencies, government departments with an interest in employment and disability at provincial and federal levels, and so on. These sources had proven effective at identifying "good practice" programs in previous projects (Neufeldt et al., 1999). Once good practice employers were identified, step 2 was to contact such employers by phone to arrange interviews on approaches to employment, accommodations & innovations. Step 3, the interviews, pursued questions on

policies in recruiting employees with disabilities and on soft and hard technologies used to enhance accessibility of the workplace, and invited interviewees to identify and describe one or several examples of best practice, with particular emphasis on discerning innovations that might have been developed to enhance work capability and worksite experience. If exemplars of "good practice" merited more detailed examination, step 4 was to pursue a follow-up interview that drilled down to employee-level experience involving interviews with employees, human resources (HR) personnel, and others as appropriate.

Sectors from which interviews were sought included private, public, nongovernmental, and other (e.g., foundations and unions). Private-sector firms included banks, oil industry, telecommunications, trucking, service industry, and small business exemplars.

Retail and Public Services Theme Case. The retail and public services sector project sought answers to questions such as: How do emerging PICTs create barriers for people with disabilities? Do wireless connectivity standards represent potential solutions? What determinants affect the adoption of wireless PICTs by consumers/businesses? Do companies have existing policies, staff/expertise, and/or research and development (R&D) plans to create products (PICTs) that would be accessible for people with disabilities? The last is particularly germane to the purposes of this article.

Several methods were adopted to address these: consumer focus groups, industry surveys, and a PICT simulation study. In year 1, consumer focus groups helped identify which IT industry sectors to target, along with the content of surveys. Industries identified were those where barriers to retail and public service were most likely to be encountered. The industry survey included questions on background and general information on markets served and products developed; wireless technologies used; and extent to which accessibility was a consideration in company policy, product development and design, and sales and service. The engagement process involved sending surveys to key professionals from selected companies in the identified industries in advance, with hope they would complete it; follow-up phone calls to ascertain intentions of completing the survey; providing a confirmation/thank you; and a further follow-up phone call to review survey responses with the respondent. The simulation study sought to assess new wireless PICTs as a means of addressing common problems of accessibility, which, in turn, might be seen of interest to industry.

Recruitment sectors included both manufacturers and service providers of cell phones, point-of-sale debit card systems (PoS), banking machines, elevators, and automated ticket kiosks.

Engagement Strategies

To easily convey basic information on the research to prospective private-sector participants, both projects prepared brief documents in consultation with advisory-group members to ensure appropriate language for employers or industry/business. Content briefly covered the intent of the research, hoped-for outcome, potential benefit to the employer or industry/business, kind of information being requested and how it was to be obtained, and anticipated time commitment. Expectations of time commitment were modest for both projects—1 to 2 hours at most in the first phase and, if selected for a subsequent phase, perhaps another 2 hours. Confidentiality and anonymity were guaranteed, consistent with research ethics standards.

The question about participation in research was broached with firms of interest in a variety of ways, depending on what seemed the approach most likely to lead to a positive response—telephone, e-mail, face-to-face at some occasion where researcher and private sector contact were both present, and so on. Either as part of or subsequent to initial engagement, the explanatory documents were provided to the key contacts, along with requests for engagement in data gathering.

Follow-up contact was made with those firms where an initial contact gave reason to believe that an interest in participation was a possibility or where at a minimum the initial person contacted referred the researcher to another person within the organization thought to be more appropriate to considering the question. Multiple contacts were made with many of the firms in arriving at a final decision as to whether or not they would participate in the research, again using some mix of e-mail, telephone, and face-to-face discussion.

RESPONSE THEMES

Engaging business/industry in research proved stubbornly difficult for both projects, though both persisted and eventually gained their ends. Analysis of common experiences identified the following engagement challenges and enhancers, along with observations on their respective limits.

Engagement Challenges

1. Challenge in identifying firms open to considering disability issues. The first challenge encountered was to identify business/industry firms open to considering disability issues. Key informants in the employment theme project, so helpful in previous projects with nongovernmental-sector employment programs, proved to

have little knowledge of private-sector employers with a good reputation in hiring people with disabilities. This included most key informants in "job placement" organizations having direct contact with private-sector employers. Most could recount "stories" of problems in accommodation, and then typically would refer researchers to other potential key informants who, it was alleged, "had better knowledge." When the "others" were contacted, a similar experience was encountered. This experience proved to be common, and led to a change in recruitment strategy, using a mix of "cold calls" in selected business sectors and enlisting the assistance of "accommodation consulting resource firms" that worked directly with businesses seeking to meet accommodation standards.

For the retail/public service sector, the challenge was similar except that there were no equivalents to job placement organizations or official labor career market information sources for persons with disabilities. Thus, the challenge was to identify (and later approach) companies utilizing PICTs that the research team believed were of relevance to people with disabilities. This turned out to be quite a "hit or miss" endeavor; that is, the "disability awareness" of a given PICT manufacturer or retailer varied considerably. Also, it is not typical for a company to identify itself as making or selling products that are disability friendly, unless the company is absolutely prepared to stand behind such statements. Consequently, researchers in this theme relied on their own expertise on PICTs and/or personal PICT industry contacts to identify candidates for the industry participant elements of the project. The consequences of this approach to engaging industry participation are outlined throughout this article.

Having a prior interest in disability issues, or even previous research-related interaction with a given organization, did not necessarily lead to a positive response. Even though sympathetic, for some the timing was not right—typically because of a recent major reorganization or other factor inducing organizational stress, leaving little time and/or energy to think about the issues of interest to either research project.

2. Indistinct access points and the "run-around." The second challenge was to find an appropriate access point to a given firm—a person in a position to make a decision about research participation. In a substantial number of cases the experience might be characterized as a "run-around"—the person first contacted would refer the caller to another who, it was suggested, was in a better position to decide about participation. It should be noted that, in many cases, the first person to be contacted at a given company or organization had a previous history or interaction with one or more of the persons from the research team making the contact. The second person, in like fashion, might well refer one to another who then referred to another and so on. Often the second or third person contacted would refer one back to the first—an indication that there seemed no fixed point of responsibility.

A variation of the "run-around" was when the person identified as appropriate promised to provide requested information, but then didn't do so even after follow-up prompts, offers to help if wanted, and so on. In such circumstances a clear "no," as given by some firms, would have been preferable since follow-up activities required an extensive amount of time.

Some firms had web-site contact points for users having problems with accessibility. These proved no better in terms of response; indeed, too often they led to no response at all—a poor reflection on firms that ostensibly had some interest in supporting accessibility of their products/services for people with disabilities.

3. The WIFM (what's in it for me) factor. For many firms neither research nor issues of accessibility faced by people with disabilities were much of a priority. Indeed, some companies had no disability policy; in such circumstances, contact persons typically didn't know what to say, a reflection of some unease about such lack of policy. Even if there was an interest and/or a policy, a typical attitude, though tactfully or covertly expressed by industry personnel, was "what is in it for us to participate?" Such an attitude was a surprise to both research groups in that it had rarely been encountered in previous experience with similar research involving governmental or nonprofit organizations.

Business respondents at the Dis-IT 2005 Institute confirmed these observations. Said one: "The WIFM factor is unfortunately very predominant. However, the good news for disability research is that it is "the right thing to do" and it usually doesn't cost the company to participate other than freeing up time (for individuals in the company to participate)."

4. Competitive edge imperative. A key issue for most firms' participation in our research was that of protecting propriety knowledge perceived as important to gaining or retaining a competitive edge. A remark from one informant in the financial services sector highlights the issue: "We have about six months lead time between when we launch our new . . . [technologically enhanced service designed to enhance accessibility] . . . and when our competitors will catch up with us ." This remark illustrates the challenge of developing and then taking advantage of a "competitive edge" in the market place, in this case by a firm seeking to increase market share by appealing to prospective customers with disabilities.

That said, the competitive edge argument was not always what it seemed. In some businesses, as in the preceding example, the nature of such knowledge was relatively clear, and the argument of protecting the information was

apparent. But in others, that was not as evident. In some, one got the impression that the argument of "competitive edge" was more an argument of convenience to dissuade research interest. In such situations the ostensible knowledge principally seemed to involve internal processes and procedures that had, at best, a distant link to competitive success.

5. Risk adverse public relations concerns. At least equal concern was expressed that research might report findings leading to "bad press." Businesses were concerned that publication of findings or other reported observations from research might identify flawed internal procedures or practices that could damage their image in the market place, or could make comments that otherwise could give advantage to competitors and others with hostile intent. These kinds of concerns meant that researchers had to reiterate the commitment to anonymity and confidentiality, and that case summaries drawing on information provided would be given to informants for review and editing prior to publication.

It might be noted that the concern about "risk" from publication of research findings is not unique to business. Governments express similar concerns. Contract research undertaken for government typically restricts whether and how results might be published. Politicians and senior bureaucrats, too, seem concerned about damage to image that might result from publication of findings, an attitude that seems to ignore advantages associated with promoting transparency and/or the importance of new knowledge.

6. Cultural differences in approach to new knowledge. The concerns just described reflect a significant difference in cultures between research and business/industry-sector organizations on their attitudes toward new knowledge. The prime interest of most research groups is to pursue knowledge that addresses particular questions or tests a hypothesis or theory, without particular regard for market implication. And although research groups are concerned about their reputations for sound research, they typically are not concerned about adverse effects of a particular kind of finding on their image, nor are they concerned about whether findings should be kept "in house" to retain a competitive edge. Indeed, the reverse is usually true. Researchers seek to publish new findings as quickly as reasonably feasible so as to establish the primacy of their work through copyrighted publications—and, thereby, establish their reputations.

In contrast, the main research priority for business/industry organizations is to keep findings "in house" so they can be patented and subsequently used to gain a competitive edge. Since the emphasis is on pursuing knowledge for its commercial value, publication in outside professional journals then poses a risk that must be guarded against.

Engagement Enhancers

Three main factors emerged from the analysis as contributing to willingness by business to participate in accessibility research.

1. Recent commitment to enhancing accommodation for people with disabilities. Search processes for both cases led to some companies that had recently become committed to enhancing accommodations for people with disabilities. Finding a person with an overview of corporate policy was relatively easy in these companies, there typically being a fixed point of responsibility for such an initiative—for example, a diversity coordinator in the human resources department. Contact people in these companies typically were interested in sharing their corporate approaches to addressing the "disability file," speaking with enthusiasm about progress being made in introducing their corporate strategy.

A disability-friendly environment, though, did not necessarily translate to useful findings. The contact person, fairly new to the role, typically had a fairly limited range of knowledge of corporate practice in the areas of particular interest to the research projects and so would refer the researcher on. Sometimes that worked well, but at other times not. Also, newly engaged firms did not necessarily have an accumulation of experience of immediate relevance to the research projects.

In contrast, interviews with similar contacts in firms having a longer history of experience with an affirmative disability policy (up to 10 years or more), and where one might expect some significant experience of relevance, did not necessarily lead to better information. For instance, in the workplace research stream, some companies with a long-standing interest in inclusion of people with disabilities welcomed us for preliminary interviews. However, when asked to identify innovations, one common response was to speak at length of the complexity of dealing with accommodation issues based on their lengthy experience, and the difficulty of sustaining an innovative approach over time.

2. Presence of an internal champion. Firms where a senior vice-president or president had taken a personal interest in accommodation for people with disabilities seemed particularly open to the research. They would identify key contact persons, often help arrange meetings, and so on.

While this was an effective means of gaining initial engagement, it too had its limits. One is that such an engagement approach is tied to the reputation of the person. As noted by expert panel members, if the reputation of a champion is positive the research will be perceived as positive, and if the reputation is negative the research can be similarly viewed. A second limit was that when such a person either changed job roles or left employment with the firm, researchers found themselves having to start again.

3. A "bottom-up" approach through employees with disabilities. Both cases also had experiences where an employee with a disability expressed interest in the research and subsequently opened channels of communication by gaining support from supervisors, who, in turn and if appropriate, would introduce the research to others in the firm. This kind of engagement seemed particularly effective, but was limited in use since it occurred in situations where employee and researcher encountered each other somewhat accidentally.

A bottom-up approach as a strategy also has other limitations. One is that seeking out employees with disabilities as the first point of contact poses issues of an ethical nature. How would one find such individuals without violating confidentiality principles? How would one introduce the research without being manipulative or coercive? Second, employees also come with similar attributes as those of "internal champions," so an engagement strategy of this nature is similarly limited by "reputation" and workplace role.

In short, it seemed that in both case studies, a good match between the research interest and involvement of sector firms was more a result of a "coincidental" good fit than it was of any specific strategy that had been employed.

ANALYSIS AND DISCUSSION

An analysis of the foregoing themes lends itself to addressing the questions posed at the beginning: What are the assumptions underlying language of both business and research systems of thought that characterize their boundaries? How do these contribute to the prospects of collaboration on disability accessibility research? What intersystem strategies enable a bridging of these systems so that meaningful communication takes place?

The Language of Business and Research Systems

A number of in-group consistencies and between-group differences in language and underlying assumptions are apparent. The discourse of business systems, irrespective of kind of business, supports the view that a (if not "the") dominant goal is to be profitable, very different from discourse in research systems or disability NGOs. Other goals may be espoused with respect to the sale or production of products/services to benefit specific populations, or with being an equal opportunity employer (e.g., people with disabilities), but all private-sector personnel encountered were clear that without profitability, others of its goals could not be met. From this premise it is not surprising that the marketplace is seen as the prime source of approval. Together, the profitability of the firm and its success in the marketplace comprise the lens through which discussion of research on disability related issues is viewed and the dominant assumption that informs its communication and its actions with respect to such research.

A converse state could be said to be true of disability research systems. The dominant operating assumption, at least for the two cases examined, was that their purposes were to pursue knowledge gain of benefit to disabled people. There might be other goals, given their different venues and operating bases, but pursuit of knowledge gain was dominant—in this case, information technology sector-related knowledge gain pertinent to enhancing accessibility in various environments (retail vs. employment) for people with disabilities. The most significant source of approval for researchers is that of knowledgeable peers, as represented by peers reviewing grant applications or manuscripts submitted to journals for publication, and peer adoption of such ideas. These assumptions similarly dominate its understanding of and actions toward research.

The differences as they affect an understanding of accessibility research are contrasted in Table 1. For business, research is about development of marketable products or services. The equivalent for research enterprises is that research is about "experimentation" and the invention, testing, and refining of new ideas, concepts, or theories for adoption. Where the private sector thinks of innovation through research in terms of "time to market" and potential increase in "market share," researchers tend to think about "time to publication" and "citation rates."

Given such differences in value-laden language and their influence on the cultures of the respective kinds of system, the experiences of the two research groups in seeking to engage the business sector in generating and disseminating new knowledge through research becomes understandable. The culture of the "business system" inherently is to exercise extreme caution in respect to participation in research led by "outsiders." This was evident from questions of who controls the product, the amount of time taken, and other concerns pertinent to business success and/or lost opportunity. Similarly, business systems are "risk averse" to publication of research findings, unless such publication can be interpreted as marketing opportunities. Conversely, the idea that new knowledge should be controlled and/or marketed inherently challenges the values that researchers hold dear.

The implication, then, is that if an outside research group and the business sector are to collaborate in research, specific attention has to be given to how one translates the language and set of cultural assumptions of one into another so that these are mutually understood and so that mutually satisfactory accommodations can be arrived at.

TABLE 1
Comparison of business and research system values and assumptions on common attributes related toward generation and dissemination of new knowledge

Attributes	Business system	Research system
Dominant value	Profitability	Knowledge gain
Main source of approval	Market	Peers
Purpose of research	R&D for marketable products	E&D to invent, test and refine new ideas and concepts
Key indicators	Time to market Market share	Time to publication Citation rates
Attitude toward new knowledge	Needs to be protected to maintain "competitive edge"	Needs to be disseminated for adoption by others
Attitude toward publication of knowledge	Publication is marketing Skeptical of knowledge dissemination	Publication is knowledge dissemination Skeptical of marketing

Disability as a Complicating Factor

A complicating factor when pursuing private sector research on disability-related issues is that disability issues, in general, are not a priority for business/industry. For many companies, people with disabilities were not seen as a significant current or potential "market." This "bottom-line" mentality is a particularly hard lesson for those concerned with addressing issues of relevance to people with disabilities, as it is for other culturally marginalized social groups with similar experiences. (Another article in this special issue, by Stienstra et al., addresses this dilemma from a different perspective.) Our observations are that a relatively small number of private-sector businesses see involvement with disability issues as having positive potential for public relations. At most, only one or two had given thought to the potential of deliberately pursuing innovations in response to disability issues as a means of potentially developing a much larger market capacity for a broader population.

One could interpret such a response as reflective of an anti-disability bias, and to some extent it may be in that the attitudes of people in the business sector are reflective of larger society. Yet in a sizable number of the firms we contacted there were individuals knowledgeable about disability in various ways, some through personal experience, and these too were focused on pursuing their particular product or service. Disability issues were, at best, incidental to this. Said a business informant: "One thing that really hit me when I left [large company], was just how isolated from the real world you can become when you're on the inside of a big corporation. For fourteen years, my world revolved around selling . . .[services of the company]. . .. Research topics outside the sphere of interest for the company will always be a really hard sell unless you can explicitly show the connection to their industry or company."

This response is consistent with the argument that communication in social systems involves a "zone of reduced complexity." Business systems (as all social systems) inherently limit the language they use to that which is viewed as meaningful to their core purposes (in this case, language linked to concepts such as profitability, productivity, market, etc.). The concept of "disability" is not part of the common lexicon used and is viewed as being external to what is familiar in a business system, even though at a personal level a reasonable number of informants had familiarity with people with disabilities. It seemed as if just raising the question about disability-related research immediately led to responses signaling that a boundary had been crossed and, as a consequence, required extra attention.

Strategies employed by our groups to bridge the business system boundary met with mixed success. One was to talk about "market potential"—that is, to use business language. This was premised on the argument that there are many examples where solving an accessibility issue that inhibits full inclusion of a person with disability results in an innovation that has relevance to a much larger population and, hence, represents a strong marketing opportunity. Jacobs (2005), in particular, has accumulated a sizable number of case illustrations of such market successes, though their usefulness as a proactive research and development strategy is not well supported as yet. Response to this strategy might be rated as mildly positive. There was interest in the idea, but some skepticism that it applied to the particular areas of service or product offered by a given business. Given the infrequency of true innovation, one might expect such an argument to be plausible to only a relatively small portion of businesses. That said, this approach had the merit of gaining the attention of business informants, even if

momentarily, and allowed for dialogue to pursue other possibilities.

A larger portion of the business sector seemed responsive to an alternative approach, that of appealing to secondary business goals. Examples were those of fulfilling requirements of federal (or provincial) laws on public accessibility or employment equity, addressing unmet personnel needs or reducing personnel turnover (particularly in contexts with low unemployment rates), the marketing potential of being seen as a "good corporate citizen," and so on. The conceptual base supporting such an argument stems from the work of Herbert Simon, who received a Nobel prize in economics at least in part for demonstrating that once a business achieves a critical level of profit, priority is attached to attainment of other goals (Simon, 1978). This is the notion of *satisficing,* a term coined by Simon in 1957 to explain his observations of how firms of various kinds behaved. The strategic implication is not to deny the need for profitability but rather to argue that accessibility issues are an important priority and can be accomplished within a context of business goals for profitability. Experience in both research groups suggested that successful engagement resulted to a large degree where the firms approached were open to examining disability issues and research based on secondary goals such as described.

Example of Successful Bridging

Despite the frustrations encountered, both groups did develop successful collaborative exchanges to accomplish their research goals. One interesting example is between our community-based research group (the Neil Squire Society) and a large high-tech corporation (Nokia) (see http://www.neilsquire.ca/section.asp?catid=121&subid=130&pageid=484). After about a 1.5-year dialogue the relationship grew to the point whereby Nokia contracted the Neil Squire Society to develop an accessory that can be used with a line of its phones to make them accessible to persons with severe mobility impairment. This relationship took a significant time to develop for many reasons, but one of the key factors was related to identifying secondary beneficial business drivers beyond a simple bottom-line analysis. This included such drivers as social corporate identity, good public relations, and staying ahead of regulatory requirements.

One of the initial outputs from this collaboration is a hands-free adapter (HFA), which makes cellular phone operations accessible by using various alternative input switches commonly used by individuals with mobility impairments. The HFA will be available for select Nokia phones and was expected to be commercially available online and through North American assistive technology stores in the fall of 2006.

Implications for Intersystem Communication Strategies

Various strategies were derived in response to the observations already set out, then discussed and refined at and following the 2005 Dis-IT conference. A summary follows.

1. *Need for a compelling rationale for business participation*. To engage business in disability research implies the need to do a good job of articulating "what is in it for me (the company)" and the need for a compelling opening story that resonates with the corporate climate/context. One problem to guard against when following through with such an approach is that what may be perceived as "a good fit" by some may not be perceived the same way by others. This implies the need for the researcher to do some prior "home work" on issues affecting the company's internal and external context so that the researcher can shape the rationale accordingly.

   In both research themes there were researchers with a long history of experience (up to 20 years) in engaging hundreds of companies in either professional services or applied research activities (mostly *not* for products or services associated with persons with disabilities). That experience led to the following conclusions. Companies are more likely to be attracted to academic research groups that:

   Have a "star researcher and/or clinician." Sometimes the magnet is access to intellectual talent they cannot seem to get elsewhere.

   Can solve a very pragmatic problem for industry, for example, provide them cheap space, access to prototyping expertise they do not have, or make a widget/prototype in a timely manner. The polytechnic research team members refer to this as "industry pull," which is quite different from the typical university where knowledge is created on academic terms and then hopefully "pushed out" into the real world.

   Have an intellectual property policy that is client/industry friendly. This often relates to valued intellectual property that may be brought to the table by the industry client, or may have been created by the research team—all the better if the company believes it may acquire the latter kind of intellectual property in a cost-effective manner.

   Have put in place staff members (high-level staff) whose time is dedicated to focus on the academic researcher-industry relationship. This requires more than a typical university-industry liaison officer. Industry wants to know that researchers truly understand their context and will

foster the tenets of commercialization that drive the private industry sector.

One related idea raised for consideration was to involve professional communications expertise to help with messaging. However, a respondent observed: "I'm not sure I agree with getting professional help with the 'sales' message for research mainly because this is research after all being completed by 'academics.' If the 'message' comes across too glitzy it may backfire as it won't match the mental image of academia and if it doesn't ring true, it will be 'binned.' The key thing that sales people do is answer the 'So what, Who cares, Why me' questions for their audience. 'So What' addresses the WIFM in the audience's language and values. 'Who Cares' addresses who will be helped as a result of the research being successfully completed. And 'Why Me' addresses why you are the ones to do the research."

2. *Addressing the perceived effort/cost of participation ratio*. In the words of a respondent: "The potential participant business firm needs to know exactly what is being asked for in terms of participation so that the company can assess the potential cost against the value. The easier it is to participate, the higher the likelihood that companies will participate."

   This implies the need for some reasonable estimate of the likely perceived effort/cost of participation ratio prior to approaching the company. In turn, different methodologies imply different time costs from a respondent perspective, and those are not always consistently perceived. In the two case studies potential respondents often viewed face-to-face interviews with some reluctance because of their busy schedules. In such situations it was important to both ensure the reason for participation was compelling enough to justify the time, as well as constrain time involved in such interviews. In a number of instances potential respondents were more willing to respond to interview questions in writing rather than talking about them. For some that seemed a "run-around" response, when they didn't return the questionnaires even after follow-up prompts. In others, though, they did. That said, for some companies a 1-hour interview was viewed as the most efficient and convenient way of providing information requested. Thus, different research methodologies will make a difference to participation rates.
3. *Persistence in getting through to the right person*. Both cases found it a challenge to find a "right person" who could pave the way for research. Face-to-face personal contact was found to be very important, and in this respect, having an internal contact point or champion certainly helped. However, such personal connections also had their limits—by relying on a given person one also is reliant on the person's reputation within the organization and if the person is not viewed as credible then researchers will have at least as much, if not more, difficulty getting what they want than if there had been no such person.

   Firms where a senior vice-president or president had taken a personal interest in accommodation for people with disabilities seemed particularly open to the research. A starting strategy in such firms would be to seek their support for research, perhaps even beginning with a "kickoff" event. Said our business respondent: "It's OK to ask the 'Champion' to call a kickoff meeting at which you and the research will be introduced to the organization's senior people and you'll be able to nail them there and then in front of the Champion to the interview or survey or whatever. . . and make it clear at the kickoff meeting that you'll be providing regular reports to the Champion on the research progress. This is both carrot and stick—competitive individuals will want to be seen to be participating in the Champion's cause and likewise, the senior team will also know that if they drag their feet, it will be visible to the key person in their work lives."

   A major challenge for researchers when entering a large organization is that no one person is likely to have all the answers being sought. Further, many large companies have well-established internal procedures to follow when considering any research (internal or external), particularly if the organization's name could be reported in the media. In turn, that can mean having to enter into conversation with their public relations and perhaps legal departments—significant "hoops" that researchers typically are not used to dealing with.

   All of this complicates the challenge of knowing who one should talk to in order to "get in the door." There seems to be no particular "rule of thumb." Said our correspondent: "Sometimes the 'networking approach' may be needed to 'case out' the company before launching the formal request especially for larger research studies."
4. *Understanding the current internal and external environment is important*. In the collective experience of both cases and those reported by commentators, timing of one's approach is important. From the outside one never knows what is happening within an organization's setting that may have a bearing on receptivity to research. And since corporate contexts are continually changing, a hospitable environment last year may not be this year and vice versa. As a result, one also may not know what part of one's

message will be of particular interest to a given company at a particular point in time.

To help with this, a useful step before approaching any company—particularly ones of large size—is to undertake some "due diligence" background work to learn something of its recent history. Staff from a school of business or a university/foundation development office can provide sound advice on how to acquire relevant company information. Apart from descriptive information on business kind and size, attention should also be given to other factors that may have an implication for readiness to be involved with interests outside their normal business communication sphere. For example, a recent experience with downsizing or a merger is not likely to be a good time to seek involvement with research, since people will be busy coping with the turmoil of internal change. On the other hand, recent experiences such as successful funding for startup of a new initiative or signing a large (in their eyes) contract or winning a prestigious award can lead to easier reception. Said one industry commentator at the 2005 Dis-IT Institute: "The impact of acquisitions can be positive and negative—depending on whether you're 'eating' or 'being eaten.' "

5. *Planning for the extra effort required of research organizations*. Getting results from research in the business sector takes more effort than is typically required of research organizations. The experience of both cases was that engaging private-sector firms took an immense amount of time, energy, and cost as contrasted with similar research involving nongovernmental or governmental organizations. A substantial amount of the cost was involved in the engagement process itself, including "due diligence" data gathering, then pursuing prospective contacts, following up on contacts made, tracking internal decision processes, and so on.

   The actual data gathering itself can either be very efficient or protracted once a decision in principle has been reached to proceed. This depends in part on the nature of data being gathered and in part on the company. No two firms within a sector were the same. For one a face-to-face interview would be preferable, others wished to screen questions to be addressed before hand and then proceed to interview, and yet others sought to respond to questions in writing followed, perhaps, by a telephone interview. Even if agreement is given and data gathering begins, new hurdles may emerge. Broad policy information is relatively easy to get (except when companies don't have policies, in which case one may well get a "hedged" response), but as one seeks to gather data on specific practices or from specific employees one is likely to encounter renewed concern about potential adverse publicity and/or divulging proprietary information, even though this has been discussed previously and "informed consent" documents signed.

   If private-sector research is to take place, researchers need to plan for and request resources for these purposes. A significant problem with current funding sources is that too little funding is allowed for such engagement and relationship maintenance activities. This was the case for the present research. Finite resources ultimately required researchers to "give up on" some identified industry interviews.

CONCLUSIONS

A first conclusion from the foregoing is that the contexts typically occupied by researchers interested in disabilities, whether located in the academy or in specialized research organizations, and those in business or industry are sufficiently different as to appear foreign to each other. The goals in one are to pursue knowledge that can be disseminated with limited cost to interested publics (whether in disability organizations, government, or private sector); the other's goals are to develop innovative goods or services for a context largely defined by the marketplace. Funding for accessibility research typically comes from public sources where the expectation is that findings will lead to a broad public good, whereas research undertaken in the private sector fundamentally is driven by considerations of gaining a "competitive edge," building profitability, and so on. Such differences contribute to and are reinforced by the meaning and language of communication with the respective sectors. In turn, such differences contribute substantially to difficulties in establishing successful collaborative arrangements between business and research groups interested in examining questions related to disability.

While the differences are real, that does not mean they are insurmountable. An examination of organizational theory indicates that most are commonly applied to both the business and public sectors.[9] And while pursuing profitability may be a fundamental motive of private-sector firms, other motives also are evident as shown earlier, consistent with Simon's work on *satisficing,* as well as with other evidence on the import to some firms of addressing broader social values.[10,11] It might be noted that in these respects, from a private-sector perspective, disability issues are not significantly different from those associated with other groups that have been socially marginalized (racial minorities, poverty, etc.). Conversely, when it comes to research, whether disability-related or otherwise, differences are not always what they seem. For instance, researchers in both business and public-sector contexts face productivity

expectations. The difference lies in the ultimate arbiter of progress toward research goals—the "marketplace" or "research peers." The challenge, then, is in overcoming the real differences between the two systems by building on common interests and understandings. In other words, with persistence and use of appropriate strategies, it is possible to surmount the real differences, building on areas of mutual interest that, in the business context, may often involve an appeal to addressing secondary goals of the businesses.

A further conclusion is that the language used in and meaning of communication within each of the systems contribute substantially to difficulties in establishing successful collaborative arrangements between business and research groups interested in examining questions related to disability. For example, it is apparent that "time to market" considerations are important in many business sectors, with ICT being a case in point, given that there are rapid changes in the nature and sophistication of electronic products entering the market (e.g., PICTs), and intense competition between producing firms. Lack in understanding the fundamental link between timely market application and profitability (hence survival) of private-sector enterprises can become a "deal breaker" for involvement of disability researchers with industry. A successful collaboration, then, requires sound understanding and acceptance of such business imperatives.

Understanding of the meaning of language used in the respective systems also is a prerequisite for establishing the mutual trust. Private-sector firms need to have confidence that their requirement for "bottom-line profitability" is understood and respected. Researchers need confidence that their requirement for "conceptual and knowledge breakthroughs" recognized by peer researchers (including partners in disability organizations) is supported. It is how one arrives at such mutual understanding that seems the most fundamental challenge—one of how to convey information between two different cultures by people using different languages. The kind of "dance" between those pursuing disability research and private-sector personnel as described in this article, at least in our experience, seems to characterize how learning each other's languages takes place and trust becomes established. With some firms, meaningful relationships result; with others, they do not; one might say this is typical of how interpersonal relationships normally emerge.

Some instrumental approaches can help the process, but one shouldn't count on them. For instance, signed agreements of confidentiality and anonymity of sources (as required by university ethics committees) may be helpful, but not necessarily so. Many in the private sector are remarkably wary of divulging details of their products or procedures lest competitors gain a competitive edge, as noted earlier. Similarly, developing mutual agreements on "intellectual property rights" can be helpful. But the offer to develop such an agreement is not likely to be persuasive unless a significant degree of trust already exists between a publicly funded researcher and the private sector.

Finally, there is a question about whether business firms with an interest in accessibility research would be open to longer term relationships once trust is established. In other sectors such relationships have been developed, as reflected, for instance, by university/private-sector-supported "research parks." Such joint enterprises, though, do not come without cost to both parties. The implication is that if public/private-sector research on accessibility issues is to become more prevalent, then extra funding will have to be allotted to allow for the engagement process itself so that bridges not only are built between these foreign contexts but also are maintained over a prolonged period of time, allowing for development of new technologies that both fit the requirements of people with disabilities and are marketable from a private-sector point of view.

In sum, this article examined challenges associated in and solutions to pursuing with private-sector businesses' two agendas of interest to the disability community: employment and new technologies aiding accessibility to public and retail services. To our knowledge, this is the first time such an analysis has taken place. Even though in many respects the findings are not all that surprising, it is their application that has been elusive. Understanding the differences between disability organizations and businesses in social systems terms as described here provides a framework for interpreting the exchanges that take place, and, with application of strategies identified, the potential for increasing the number and duration of mutually beneficial relationships to the advantage of both individual people with disabilities and the businesses involved.

NOTES

1. Uses of the terms "people with disabilities" and "disabled people" have somewhat different rationales in the international disability movement, with the former emphasizing the import of placing the person first and the latter emphasizing that disability arises from social and physical barriers to accessibility. Consistent with the practice of a growing number of authors, these terms are used interchangeably in this document to highlight these distinctions.

2. The draft Convention is awaiting passage by the United Nations General Assembly as of writing.

3. Statistics Canada reported labor-force participation rates for the years 1986, 1991, and 2001 for disabled people were, respectively, 48, 56, and 49%, compared to 78, 80, and 79% for nondisabled people. Australian 1998 labor-force participation rates were: 53% persons with disabilities, 76% nondisabled people. "Labor-force participation" means either working (full-time or part-time) or unemployed and looking for work.

4. A related field of inquiry on efficacy of public subsidy of private-sector R&D has been of interest in recent literature, this representing a different type of public/private-sector collaboration. See, for instance, Falk (2006) or Guellec and de la Potterie (2003).

5. An English-language summary of Luhmann's work, along with a series of critiques, can be found in *Acta Sociologica* 2000; 43(1).

6. Community Rehabilitation and Disability Studies Program, University of Calgary.

7. Neil Squire Foundation and British Columbia Institute of Technology, respectively.

8. See URL: www.dis-it.ca.

9. The writings of the noted management and organizational theorist Henry Mintzberg provide a case in point. His book *The Structuring of Organizations* (Mintzberg, 1979) draws on research from both public- and private-sector organizations, with common concepts derived from and applied to both. The same has been true of other notable theorists such as Argyris, Galbraith, McGregor, Simon, and others.

10. Two of many writings arguing the importance of such broader corporate values are those of C. Argyris, *Organization Man: Rational and Self-Actualizing* (1973), and T. Peters and N. Austin (1985) in their book *A Passion for Excellence: The Leadership Difference*.

11. Dupont, for example, has a justified reputation for concern over the welfare of its employees, one that began long before current organization theories argued the merits of doing so. Its origin as a producer of gunpowder contributed to a corporate emphasis on safety, and a culture recognizing that safe workplaces require a satisfied and healthy workforce.

REFERENCES

Argyris, C. 1973. Organization man: Rational and self-actualizing. *Public Administration Review* 34:354–357.

Australia Bureau of Statistics. 2003. Disability among adults 15–64 years. Feature article, *Year Book Australia*. 2003, author. http://www.abs.gov.au/ausstats/abse.nsf/0/CO54EB06576C20B8CA256CAE000FC5C1?open

Barnes, C. 1991. *Disabled people in Britain and discrimination*. Calgary, Canada: University of Calgary Press; London: Hurst.

Conference Board of Canada. 2004. *The national corporate social responsibility report: Managing risks, leveraging opportunities*. Ottawa, Canada: Conference Board of Canada. http://www.conferenceboard.ca/GCSR/national-csr.htm (accessed March 7, 2006).

Dewa, C. S., Goering, P., and Lin, E. 2000. Bridging academia and business: Exploring the workplace burden of mental illness. *The Economics of Neuroscience* 2(6):47–49.

Enns, H., and Fricke, Y. 2003. The emergence of a global disability rights movement. In *In pursuit of equal opportunity: Canada and disability at home and abroad,* eds. H. Enns and A. Neufeldt, pp. 84–110. Toronto: Captus Press.

Falk, M. 2006. What drives business research and development (R&D) intensity across organization for economic co-operation and development (OECD) countries? *Applied Economics* 38:533–542.

Guellec, D., and de la Potterie, B. van P. 2003. The impact of public R&D expenditure on business R&D. *Economics of Innovation and New Technology* 12(3):225–243.

Houtenville, A., and Burkhauser, R. 2004. Did the employment of people with disabilities decline in the 1990s, and was the ADA responsible? A replication and robustness check of Acemoglu and Angrist (2001)—Research Brief. Ithaca, NY: Rehabilitation Research and Training Center for Economic Research on Employment Policy for Persons with Disabilities, Cornell University. http://digitalcommons.ilr.cornell.edu/edicollect/91 (accessed November 28, 2006).

Jacobs, S. 2005. The electronic curbcut effect. IDEAL Group Inc., USA. http://ideal-group.org/articles/ECC_1_6.htm (accessed January 22, 2006).

Luhmann, N. 1995. *Social systems*. Stanford, CA: Stanford University Press.

Mathur, P. 2005. Neither cited nor foundational: Niklas Luhmann's ecological communication. *Communication Review* 8:329–362.

Mintzberg, H. 1979. *The structure of organizations*. Englewood Cliffs, NJ: Prentice Hall.

Neufeldt, A. H. 2004. What does it take to transform mental health knowledge into workplace practice? Towards a theory of action. *Healthcare Papers* 5(2):118–132. http://www.longwoods.com/home.php?cat=350&sort=orderby&sort_direction=0&page=2 (accessed November 28, 2006).

Neufeldt, A. H., and Mathieson, R. 1995. Empirical dimensions of discrimination against disabled people. *Health and Human Rights Journal* 1(2):174–189.

Neufeldt, A. H., Sandys, J., Fuchs, D., and Logan, M. 1999. Supported and self-directed employment support initiatives in Canada: An overview of issues. *International Journal of Practical Approaches to Disability* 23:24–36.

Neufeldt, A. H., Watski, J., Birch, G., and Buchner, D. 2005. Inclusive information technology & business success. Paper read at Dis-IT Research Alliance Institute, May 10–12, Winnipeg, Canada.

O'Day, B., and Berkowitz, M. 2001. Disability benefit programs: can we improve the return to work record? In *Handbook of disability studies* eds. G. Albrecht, K. Seelman, and M. Bury, 633–640. Thousand Oaks, CA: Sage.

Peck, B., and Kirbride, L. T. 2001. Why businesses don't employ people with disabilities. *Journal of Vocational Rehabilitation* 16:71–75.

Peters, T., and Austin, N. 1985. *A passion for excellence: The leadership difference*. New York: Random House.

Simon, H. A. 1978. Rational decision-making in business organizations. Nobel Memorial Lecture, December 8, 2006. http://nobelprize.org/economics/laureates/1978/simon-lecture.html (accessed January 22, 2006).

Statistics Canada. 2003. Education, employment and income of adults with and without disabilities—Tables, participation and activity limitation survey. 2001. Ottawa: Minister of Industry. dsp-psd.communication.gc.ca./collection/statcan/89-587-X/89-587-XIE.html

Stienstra, D., and Wight-Felske, A., eds. 2003. *Making equality: History of advocacy and persons with disabilities in Canada*. Toronto: Captus Press.

White, L. 2003. The private sector and disability. In *In pursuit of equal opportunity: Canada and disability at home and abroad,* eds. H. Enns and A. Neufeldt, pp. 261–268. Toronto: Captus Press.

Viskovatoff, A. 1999. Foundations of Niklas Luhmann's theory of social systems. *Philosophy of the Social Sciences* 29(4):481–517.