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Making Sense of Broadband in Rural Alberta, Canada

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Abstract

This article stems from a collaborative research initiative that examined the social adoption of the SuperNet, an Alberta government infrastructure project designed to provide high-speed, broadband access to public facilities, to businesses and residences in Alberta communities. The aim is to explore how rural community members made sense of the SuperNet as a communication technology in the context of their practices and perceived needs and against the background of their existing experience of Internet use. The theoretical underpinnings of the approach taken in the research derive from social constructivism and critical theory of technology. Members of rural communities in their capacity as current and/or potential users of the SuperNet were construed as relevant actors in the social shaping of the network. In the process of the research it became clear that these activities themselves constituted an important stream in the meaning-making and hence social shaping of the SuperNet. The article addresses the question of what economic, political and cultural influences of a national (and provincial) character may be responsible for the observed developments. It also discusses the specifics of rural appropriation of broadband in Alberta and the conditions and outcomes of the creativity of rural users.

Introduction

This article stems from a collaborative research initiative (The SuperNet Research Alliance) that examined the social adoption of the SuperNet, an Alberta government infrastructure project designed to provide high-speed, broadband access to public facilities, and through service providers, to businesses and residences in Albertan rural communities. The article sets itself the goal to explore how rural community members made sense of the SuperNet as a communication technology in the context of their practices and perceived needs and against the background of their existing experience of Internet use. The theoretical underpinnings of the approach taken in the research derive from social constructivism and critical theory of technology. Members of rural communities in their capacity as current and/or potential users of the SuperNet were construed as relevant actors in the social shaping of the network. In the process of the research activities it became clear that these activities themselves constituted an important stream in the meaning-making and hence social shaping of the SuperNet.

Methodologically, the study reported in the article took an interpretative approach relying on qualitative data gathering techniques. Four focus groups were organized for the purposes of data collection in four rural communities of different size and location with respect to urban centres.[1] In the data analysis, an effort is made to identify the specific Internet use genres that arise in rural residents' practice and how

[1] A, population of 3,666 in 2006; B, population of 6,972 in 2006, C, population of 799 in 2006 D, population of 7,785 in 2006. Participants in the focus groups represented also some of the neighbouring rural communities. In an attempt to ensure the anonymity of respondents, the community names are withheld.

these genres are affected by broadband access. Differences in access and use among rural residents are discerned and related to social factors characterizing different positions within the rural setting. A comparison between rural and urban everyday Internet use is drawn based on the results of another study that focused on Alberta urban homes during approximately the same time period. The political and civic meaning of broadband as it emerges from the discourses of rural residents is defined and reflected upon in light of present and future policy initiatives.

The article uses the results of the analysis to address the question of what economic, political and cultural influences of national (and provincial) character may be responsible for the observed developments. It will also discuss the specifics of rural appropriation of broadband in Alberta and the conditions and outcomes of the creativity of rural users.

Background

This study engages the broad problematic of rural ICT adoption and use (see Gilligan, 2004), and yet it is set against a very specific national, social and economic background. That is why some contextualization is in order. First of all, a general survey of Internet use in Canada reveals that while 68% of all Canadians accessed the Internet in 2005, the percentage of rural users was significantly lower at 58%. In the province of Alberta where this study was conducted, the overall percentage of users was as high as 71%, with the two major cities Calgary and Edmonton scoring 77% (the highest in the country) and 69% respectively. About 90% of all Canadian Internet users had access to the network from home. Among them, only 18% did not have a high-speed connection. Notably, however, 70% of those low-speed users lived in small towns and rural areas (Statistics Canada, 2006). These figures show little improvement in rural broadband accessibility from 2003 when another survey had documented that 72% of Canadian communities, mainly those in rural or remote areas, did not yet have broadband services available (Statistics Canada, 2003). The analysts point out that the geographical distribution of the Canadian population presents a major challenge to the provision of these services, largely due to the high cost of upgrading and extending infrastructure to customers dispersed over very long distances (Veenhof, Neogi and van Tol, 2003). They go on to explain: 'Given a smaller customer base and the fact that customers are dispersed over greater distances, building the infrastructure needed to provide broadband services often does not make economic sense for broadband providers' (p. 19).

A number of programs initiated by the federal government were aimed at remedying the situation, however, their efficiency and success rate were low (see Veenhof, Neogi and Van Tol, 2003, Mitchell, 2007). Around 2001/2002, the Government of Alberta took it upon itself to initiate the construction of a powerful

broadband network which was mandated to connect 429, or 95%, of the communities within the province. The project was a co-operation between the provincial government and the major telecommunication operators in the province where the government would cover about two thirds of the costs of constructing the network and the telcos would compete for a contract to carry out the actual construction work. The infrastructure that would emerge out of this endeavour was to be an optical-fiber trunk reaching into municipal administrations, health and educational institutions across the province, with the further expectation that local service providers would piggy-back on the main network and deliver last-mile connectivity to the homes of rural residents. The SuperNet, as the network was named, advertised itself as a 'real broadband network' because it was designed to surpass mainstream high-speed connectivity by providing multi-megabit capacity for uploading and downloading information at equal rates, guaranteed transmission levels, efficiency, security and reliability of traffic achieved through constant monitoring and maintenance (see Axia, http://www.axia.com/projects/alberta_supernet.htm). With such a technological marvel in place, users, ideally, would be able to run business-quality videoconferencing, voice over IP (VoIP) telephony or mission-critical systems monitoring as a matter of daily practice. All these high-end applications, of course, would realistically only benefit administrative, medical and larger-scale business or educational organizations. Home-based users, for their part, had a good chance to tap into the power of the SuperNet (through the mediation of service providers) and obtain reliable high-speed access at a reasonable cost.[2] As it later turned out, the last-mile coverage would be the Achilles' heel of the fiber giant.

At inception, the cost of the SuperNet to Albertan taxpayers was estimated to be around CAD 193 million invested over three years. Why could the Western Canadian province afford such a bold and expensive undertaking? A few broad strokes should suffice here to present the economic situation of Alberta. For several years now, Alberta has ridden the accelerating wave of oil and gas prices. The oil-rich province has paid off its debts and has been continuously posting record-breaking surplus numbers. The latest one is the $8.7-billion surplus, the largest ever, announced for the 2005-2006 fiscal year with resource royalties and other payments hitting a record $14.3 billion (CBC News, June 27, 2006). Needless to say, the explosive growth of the oil and gas industry has given a major boost to many other businesses in the province and the vibrancy has been transmitted down to the level of individual households. In rural Alberta in particular, numerous people have found employment at the 'oil rigs' or in other directly or peripherally related businesses. Incidentally, in approximately the same period ranchers in the province were hit by a BSE crisis and a series of sanctions in its wake, which stressed out, and in many cases ruined, small farms. Thus the opportunities for alternative or supplemental employment in oil and gas and its supporting industries were readily taken up.

[2] Details about the interesting business model championed by the SuperNet can be found in Mitchell (2007).

Parallel to the unrolling of the Alberta SuperNet, an interdisciplinary team including researchers from several Western Canadian universities and led out of the University of Calgary set out to investigate the social and economic uptake of the new communication infrastructure (see http://supernet.ucalgary.ca/). This study represented a sub-area of the larger project. Our focus was on the home and everyday life as sites of signifying work carried out by rural Albertan residents in their effort to come to terms with the challenges and opportunities introduced by broadband connectivity.

The Study: Theoretical and Methodological Framework

As researchers, we faced our own set of challenges and opportunities engaging in this particular project at the time when our main research object, the SuperNet, was still being built. As it usually happens in real life, the anticipated completion deadlines were not met and only small fractions of the network were lit up experimentally while we were out in the field collecting data. In the specific case of the sub-project looking at domestic users, this meant that we could only capture vague rumors and speculations as far as the SuperNet proper was concerned. People had not experienced it in their daily lives. Only a handful of community leaders had been following the development and could offer their perspectives on what the network was about and how it was expected to affect communities. In its large part, these were ideas picked up from governmental publications and administrative meetings. The average rural resident knew at best that 'they are digging for something outside my fence'. This caused our research focus to shift away from the SuperNet per se and on to the experiences of rural residents with various forms of connectivity and more precisely on to the transition between dial-up and broadband, its driving forces, the accompanying emotions, decision-making, hopes and fears. Interestingly, in our focus group discussions, we found that it made sense to come back to the topic of the SuperNet in the end, after broadband connectivity had been examined from multiple perspectives, and to invite people to think ahead, to imagine and project what a more powerful broadband conduit could do to their lives. This dynamic turned our focus group meetings into a constructive exercise of sorts as far as our visions of the SuperNet and our questions worked to shape the conversation in which rural residents' definitions of the network started to sprout.

Theoretically, our study was informed by a framework combining the social construction of technology approach (Pinch and Bijker, 1984), sociological phenomenology (Schutz and Luckman, 1973) and a broadly conceived concept of domestication in everyday life (Silverstone and Haddon, 1996, Lie and Sorensen, 1996, Bakardjieva, 2005). From this perspective, a critical moment in the process of social construction of technology is the one in which users, located in different situations and accordingly pursuing different interest-driven plans, discover the relevance a technical artifact has for them. From that discovery stem

new definitions of the technology and new *use genres*, recurrent use practices that correspond to typical situations arising amidst particular broader social, economic and cultural contexts. By virtue of being the originators of ideas as to what this technology can do for them given their circumstances, and of ways of integrating it into their daily practice, users become important agents in technological development.[3] Thus the concrete objectives of the study become to identify typical situations in Albertan rural users' everyday lives that make broadband relevant to their pragmatically oriented projects and actions. What types of users turn to broadband in what typical situations and how do they construe the significance of this technology for them personally as well as for their families and communities? What use genres do these situations and interests give rise to? How does the use of broadband transform the lifeworlds of rural Albertans?

As mentioned earlier, four focus groups were carried out in four rural communities lying at 2-3 hours drive out of Calgary. The communities were selected based on their size and make-up. They represented centres of farming and ranching areas and hosted some small and medium-size businesses in other industrial sectors. They were farther away from the city than the typical commuter communities, but did not fall into the category of truly remote settlements. Not the least, these particular communities were visited because our team had managed to establish contact with a local resident interested in helping us organize a group meeting. These local assistants were entrusted with the recruitment of the focus group participants according to our specification: Our goal was to recruit participants representing a wide range of occupational and socio-demographic profiles. A desired feature of participants was to be Internet users because current Internet users were expected to be in a better position to envision possible applications, benefits and challenges that might occur with the introduction of the SuperNet in their communities. As a result, the focus groups were composed of diverse individuals who were technologically curious and willing to experiment and push the boundaries of the existing information and communication channels and practices.[4] The focus groups included between 5 and 12 participants and employed a structured discussion format covering two sets of questions: (1) Questions concerning participants' current Internet use at (a) the personal and (b) the community level and (2) Questions concerning participants' expectations regarding possible changes in their use practices and outcomes that the SuperNet would bring about at (a) the personal and (b) the community level. A balance was sought between holding on to the predetermined topical structure and allowing participants to recount experiences and share opinions that were relevant, but not strictly 'on topic'. In the course of the discussions it became clear that a distinction had to be made between current Internet use practices involving dial-up versus those based on some form of high-speed

[3] For a detailed development of this argument see Bakardjieva (2005).
[4] It would be prudent to point out that the participants in our focus groups were not representative of the local population in any statistical sense. They were people active in the community at many levels having higher than average interest in broadband.

connection. That was where the dramatic change in perceptions and experiences was occurring at the moment. The SuperNet could only be envisaged against that background as an extension of the current high-speed options and in directions suggested and imaginings sparked by them.

Rural Use Genres

Smart farms... 'not just some dumb farmers'

Farming and ranching as traditional activities firmly tied to the land and livestock may seem far removed from the virtual spaces of computer networks. That is why the visitor from the city (understand the researcher) could be caught by surprise to hear that broadband is essential to cattle breeders:

> We have a pure breed catalogue, we have a website. We try to market to people who wouldn't ordinarily come to this part of the country for a sale... Before the internet, if we had send out our catalogue to all these people they would read the catalogue and [say] oh, I am interested in this now and they would telephone us and say 'I like that number so and so, what does he look like?' And then you send them your picture, and if they did not contact us at least three weeks before our sale, there was no way that we were going to get that video on time... So now about two years ago we had a sale and two days before the sale people were telephoning: 'Could you send us a digital picture on the internet from front to front, back to side...' And [I] went outside and took the pictures and ran them on the internet and people ended up driving up for our sale and there were figures up to about $10, 000... That was the highest selling that we have ever had in our sales. (Alice, 53, rancher, A)

A web site designer from the same community confirmed that Alice's case is not isolated. Farmers and ranchers were his main clientele eager to put out their products on the web. Broadband emerged as a critical condition for success in this endeavour.

> All of my sites involve lots of pictures of cattle and horses mostly cattle pictures. On a regular 56K dial up modem they will not download right away and that's a big problem when people go to your site and want to see a picture and they have to sit and wait, wait, wait, wait. So that's mostly my customers' base here and there are other things too, but that's basically it in a nut shell... But in order for them to make it a useful tool it needs to be faster, it needs to be more information, it needs to be more assessable to people. (Roger, 30, web designer, A)

Another rancher talked about his part-time job with an organic beef company and how the 'education aspects' of Internet access were important for their business:

> I am on a number of lists servers on grazing. ... Another one from the American Meat Institute sort of ties into the organic beef and what's going on in North America and the rest of the world actually. So they have a magazine, but also a daily update on email, about what's going on. We had similar experiences to [another rancher from the group] where we have people contacting us all the time. Last year we had a fellow from France that was doing a university project here and there will be two kids from Austria coming this summer they have to do a project as far as their degree on organic farming. It is virtually impossible to do a descent job of networking on anything without the internet (Mike, 60, rancher, A)

In terms of networking and putting their farms and their own expertise out for the world to see, the web had been instrumental for another rancher's family. They had gotten connected to an international Farm Stay Program that had subsequently sent a German student to spend time on their farm doing 'some practical work in order to finish her degree'. This visit, they said, was a classic example of 'how the Internet has affected us'. The organization had found them through their website and the whole visit was arranged via e-mail.

A rancher and part-time accountant from a different community put these experiences into perspective:

> As in any industry there is your professional end and your more non-professional end. ... the more professional ones that use it [the Internet] all the time are quite often the ones that are into the purebred. And there are a lot of purebred breeders. Your Charolais, Heifers, Black Angus ... Those people have been able to promote their breeding through the internet. You want people to buy the semen from your bulls. You can buy semen from bulls right from Alberta. You can buy them from France, or you can buy them from England or whatever. And that is definitely very big time. The things with purebred horses, the quarter horses, all that agricultural end right down to getting a German Shepherd to guard your farm. You can get those kind of things off the Internet and I think that is the more professional end of the agriculture. But Mister and Missis Joe Farmer that have twenty cows, you know, they aren't going to have a computer in their home. It is frightening to them, to think of technology ... (Sara, 52, rancher, B)

However, as another participant in the same focus group further elaborated, there were pressures that made Mr. and Mrs. Joe Farmer look around and come to appreciate the potential of the Internet to do something for them in their specific situations:

> Ross: As an agricultural economy, probably one of the best things for the computer industry and the internet was BSE[5]. Because these guys aren't making any money and they are all

[5] Bovine spongiform encephalopathy (BSE) commonly known as "mad cow disease".

> working off the farms and as soon as they get off the farm they find out 'gee whiz I gotta have a computer and I have to be connected'.
>
> Sara: And be knowledgeable.
>
> Ross: I gotta send my time sheet in and stuff everyday. As far as, maybe there is a lining, a sliver lining, in some clouds anyway. And the other thing, a lot of the people that I found like around [community] and area that have been quite affected by BSE. If they were on the internet they are researching stuff and then figuring out that people are starting these new packing plants, all that research has been done and they have found investors on the internet. And those are the farmers that are more connected and they go out and talk to the guys that are not connected, those guys are going to have to get connected.

The possibility of researching options for packing and marketing one's meat that Ross mentioned was of critical importance for the economic survival of ranchers at the height of the BSE crisis when USA markets were closed for Canadian beef. Ranchers had to find alternative outlets for their meat or fold up. With that crisis as well as the general increase of regulation of agriculture by governments, more pressing necessities for farmers to use computers and to be online had arisen. The outspoken rancher-accountant lady, Sara, described them in compelling detail:

> Also… with the ag-farms, there are forms that you have to fill out for the government. They want to know--like sometimes twice a year "how many acres". You tell them, but they may want to know again, because they lost the first one. So they were mailing us oodles and oodles of forms: how many acres do you farm; how many of those are tame grass; domestics grass; how much is planted grass; oats; how much is barley; how many acres are tame; how many cows…or whatever. So they would mail these forms to us, so you are getting lots of stuff form the post office but now we go on the website we can download the forms. We can print out just the ones that we need as some forms do not pertain to us. They want to know how deep the brow is; how many gallons of water your cattle drink, go figure… They want to know all this stuff. We were farming over 300 cows and I was almost full time trying to get the government forms done. I really do not know how our neighbours who don't have computers how they are doing all this. Now you can get all the forms over the Internet so that speeds it up. Not without high speed…You are going kerchunck, kerchunck waiting for that. (Sara, RMH)

Ross countered this comment with a story about the government of British Columbia (neighbouring province) which had set up a GPS system allowing farmers to go on a site on the Internet and take satellite photos of their properties and then, by just 'running around with your mouse' calculate its area. And that

information was going to become available in Alberta, Ross explained: 'But you can't do it on dial up. Absolutely can't do it. So the one thing that we keep going back to is: Go back and don't wait for your study to be done...' Sara finished his sentence urging us: 'Get us the SuperNet. Get us connected!'

Thus the farmers and ranchers population of rural Alberta appeared to be divided into at least two categories: the 'professional' and the 'Joe-Farmer'[6] with different degrees of understanding, experience and impatience with respect to connectivity in general and broadband capacity in particular. The Joe-Farmers were typically 'deadly afraid of telecommunications', as Sara insisted, however, many of them were making first steps toward discovering the relevance of a high-speed Internet to their lives – in response to needs created by agricultural crises and supplementary jobs (most often in the oil and gas industry). The professional farmers, however, the ones with the need to maintain a high level of knowledge of recent developments in their area and high interconnectedness with suppliers and clients as well as a heavy load of governmental accounting to do, were literally screaming for high speed. They have had enough of the 'kerchunck, kerchunck' of dial-up.

Doing business on dial-up

Small businesses are a major component of the rural economic landscape. They include businesses concentrated in the core settlements as well as ones located on farms or acreage estates out in the country. Due to the necessity for rural families to diversify their sources of income and supplement or replace farming as a major source, many of them have undertaken businesses from their homes, often run by the women. In our focus groups we heard several accounts of the out-of-your-farm business experience under the conditions of dial-up. Notably, there was an assumption shared by these participants that a connection to the Internet was a must, no way around it. The issue was speed. Because DSL and cable were not offered to the spread out farms and estates, their residents were compelled to use the telephone line to hook up to the Internet. The result was crippling for both communication devices because doing anything online tied up the telephone. Juggling the two became a nightmare during periods of emergency and events where time was of critical importance. What rural business operators had come to realize was that the outside world assumed high-speed always-on connections. Julia, a website developer in one of the communities reflected upon this state of affairs:

> I find that because of the internet my business associates and my customer have an increased expectation of response. It used to be that they would phone me during business hours and if they couldn't contact me during business hours they would not expect to hear

[6] As our study participants justly pointed out we had no representative of this category present at our discussion, obviously an upshot of the self- and peer-selection used in forming our respondent groups.

> from me until the next day. That is no longer true. I can be working a 1:00 in the morning and I have customers that are e-mailing me knowing that I work late and are actually hopeful that I am going to be responding them instantly in the morning. So it makes us all immediately available to all people who we are in association with, be that our families or our business associates. (Julia, 52, B)

An exasperated editor producing a local news article out of her farm shared a very similar experience:

> Um, I'm on dial-up so it is quite painful and especially when you're talking to someone from Calgary, they don't understand why, "Oh did you get that email?" 'Well, no, I haven't got that email, I would have to stop everything I'm doing, get on the dial-up, go and check.' You know, so it's, it's difficult because nobody... They don't understand that you're still on dial-up and there's, you know, we don't have the same opportunities as them. I don't know does something ding when you get an email on, on high speed? I don't know but everybody just can't understand why I can't, I don't want files that take forty-five minutes to download. Why you can't do that two minutes before deadline and you know things like that so it's typical. (Christine, 31, C)

She said she had paid some of the telecommunication companies operating in the area to come and provide her with a high-speed connection, but because her house 'had trees and was in a hollow' it didn't work out.

Shirley, a kind and peaceful middle-aged woman running an accounting business explained how she wanted to take down her computer and jump on it when the downloading of a big file would get interrupted in the middle after several hours, or her airline ticket wouldn't print in full because the connection went down, or her clients would try to phone her at the same time as she was checking for e-mails from them. Sometimes she had to call her son in the city in the middle of the night to ask what to do to resume the file download from where it stopped – she had a whole book with notes about how to deal with crisis situations like that. Everyone in the wider world that she dealt with in her business or as part of her many volunteer involvements was on high-speed and her inability to keep up with the rapid communication flow was a constant source of frustration. 'Like, the dial-up has to go, or else I'm going to have an ulcer cause now my business is depending upon the internet', concluded she with a deep sigh.

Rural business people with a stake in high-speed high enough to justify the substantive investment and fees for satellite connections had taken that route and, for some, the pay off had been good. A Hutterite[7] man who had an electronics manufacturing business making original devices for the electronic control of

[7] Hutterites are a communal branch of Anabaptists who, like the Amish and Mennonites, trace their roots to the Radical Reformation of the 16th century (wikipedia.org).

processes in ranching (feed and water supply control, etc.) recounted a positive experience in connecting with potential customers (for example someone in England) over the Internet and developing products to their specification: 'we started e-mail back and forth, and this was the product that he wanted, and you could send him a picture of what the product was and what it looked like, how it functioned, and it must have been 150 back and forth, changing the design and getting the product developed, and it was marketed in England.' His business had a web site that he wanted to enhance to be able to offer pricing and ordering and support documentation. He himself regularly downloaded product documentation from the Motorola site and felt that helped him move ahead with his projects faster and more efficiently.

Many other rural small businesses were waking up to the marketing possibilities opened by the Internet. There was a learning curve all of them had to go through. Sara, the web site developer working in one of the communities captured the dynamic thus:

> Because people, small businesses, farms, retailers, people that are selling things that they are building in their backyard, and there are tons and tons of those business, small service business, people with one truck they are everywhere. And when they want to have a website, or they want to be on the internet, what they want to do it is basically put a fancy business card on the internet or a brochure and they have this sort of mild hope that vast thousands of people will land there and they are going to sell things. They don't understand about the fact that it is two-way communication. They don't understand the commitment that it takes to have a presence; the fact that you can't create relationships on the internet with a static page, things like that. They have no comprehension of what it is that this medium will give them. ... And once they get it they are like little junkies. They really can't get enough and then they start phoning their MPs and say we're on dial up. Do you know I am on dial-up? Until they get it. They don't understand what it is that they are missing out on. (Sara, 52, B)

For larger businesses, on the other hand, the need for speed had been clear and inevitable for some time. Barbara, 45, a business woman running a company doing field work for the oil and gas industry explained that there was a high demand from her clients 'to get information yesterday'. This put her company at pains to move data 'faster, faster, more efficient, quicker and everything like that' between the field sites and their two offices across three provinces. Needless to say, for such an operation connectivity held the key to competitiveness and success. Barbara's company had its own wireless tower which provided reasonably reliable transmission, but nevertheless she felt very upset by the fact that a SuperNet connection point was located only a mile away from her office and yet it was unusable because last-mile connectivity was slow to arrive.

Bigger companies will only come to or stay in communities that offer them the kind of communication infrastructures required by the contemporary business world, a participant in another group reasoned. 'But they need the infrastructure otherwise, ah why move to a rural community? I mean that's very simple and, and we need the infrastructure to attract the businesses to spin off the economic benefits.' Ross, 52, whose general supply store was also a hot spot of connectivity in his rural area and who had followed the growth of the demand first-hand summed it up for all, big and small rural businesses by observing: 'You gotta take the fact that all of us as individuals in business, it doesn't matter whether it is me, or you guys, or Bill the farmer, or whatever, you know we will connect one way or another. But God, make it easy and make it quick! Doors are closing all over the place'.

Crafting a lifestyle

For some of the focus group participants the use of the Internet and the issue of connectivity was not simply a response to an existing social-biographical situation and its dynamic. These people were reflexively creating a new situation for themselves to inhabit following their own life-political values. This category included mostly professionals with university education who had worked in jobs typically hosted in the city for a number of years, but had later made the choice to move back to a rural community and pursue self-employment or business form that basis. The Internet, they admitted, was the great enabler of this move.

Sonia, a 31-year-old financial planner had started her business in the city with available high-speed connection, but had later moved to a rural community with her 6-year-old son. She recognized that she couldn't have had her lifestyle – working in this particular business from a rural home and raising a young child, if it weren't for the Internet. Certainly, the dial-up created problems for Sonia and she was considering switching to satellite although she found the cost quite unpalatable. James, a broadband advocate running a consulting business in the same community spoke about the desire for the rural lifestyle as characteristic of a whole generation of people raised in small communities across Canada, but later educated and employed in high-tech professions in the city. What James referred to as the 'digital economy' had attracted university graduates of his generation to the urban centres because it was intellectually exciting, dynamic and paid well. Now, he thought, the time had come when the digital economy was starting to creep out of these centres into rural areas:

> ... I can relate back to my experience of being in the city when I was still working there and a lot of people who I was interacting with at that time came from rural communities that tended to be the peer group that I was associated with, and they all wanted to come back to rural communities because that is where they grew up and that's where they felt most at

> home, but they were making a living through the knowledge economy somehow, the digital economy, and therefore unable to come back home because it would limit their opportunities to such an extent. ... It used to be just the major urban centers and now with high speed Internet through DSL and cable into those small towns you get some opportunity there and that allows you to participate to certain extent in the digital economy. (James, 40, A)

The trajectory described by James closely matches the path of a professional woman living several hundred kilometers away in another rural community of a similar size and make up. Sara, the web site developer quoted earlier, had grown up in a small community, later received training in computer programming and spent a good part of her working life writing software for mainframe computers in office towers and big cities. In the 1980s, Sara entered the arena of microcomputers and already at that point she was hoping that the new generation of information technology would offer her a ticket out of the city and back to 'small town rural life', that 'place of sanity', as she saw it: 'I live in Rocky not because I chose to do business here, but because I choose to live here. And finally I do business', says Jennifer.

Developing web sites for small business had been a significantly new type of activity for her and she still felt fascinated by the social and communicative side of the enterprise. Other than allowing her to have the rural lifestyle and making a living in her profession at the same time, Sara saw the Internet as facilitating her relationship with a globally dispersed community of people working in the same area. She admitted to have learned a lot from professional exchanges on web pages, mailing lists and blogs.

> The reason I think it is so significant for rural people is that rural people who have interests that are not too similar to the people around them...Rural people are so isolated from their professional associates without the Internet. We cannot all afford to leap into our car and go to Calgary every Thursday night to the meeting of the whatever association that discusses those topics and interests. So if you are rural and you are in farming you are good to go, but if you are rural and you are not into beef you are really professionally very, very isolated or can be. ... And in fact many of my associates are in New Zealand, the States, Ireland, Great Britain, and there is enough of a sense of community that you can actually establish personal relationships and rapport with people who contribute so much to your intellectual milieu.

Sara's story is only one version of a type of movement that rural residents anticipate the Internet, and even more so broadband, may trigger. There is the category of older professionals who are retired or semi-retired who may and do decide to move to rural communities for the peace and quite and closeness to nature. With high-speed connectivity at hand, these people would still be able to maintain their bonds and commitments and that would make rural life more attractive to them. The influx of professional people could diversify rural communities and invigorate their economies. It could help close the gap between the

rural and the urban worldviews that many focus group participants believed was glaring. City folks who come to live the rural lifestyle would learn that 'the milk comes from the cow, not form the grocery store', they would come to understand the concerns of rural dwellers and thus the political agenda, so heavily 'lopsided toward large urban centers', would gradually restore some balance.

> I see that that city person will come out there and if he represents a high rich lawyer and he lives amongst these rural people and he can go back when he has his council meeting or his administration meeting he can say: I know that I am where my beef now comes from, and I ain't going to eat it anymore [laughing]. (Mike, 60, rancher, A)

With significant social transformations like that in view, naturally came some anxiety and sense of impending loss. Those urban migrants might put a lot of pressure on the infrastructure of rural towns with demands for services similar to those offered in the city. Their estates would take away land from farming and ranching and thus erode the foothold of agriculture. With a fast and fascinating Internet at their fingertips, people would spend most of their time in front of their computers and would not go to visit their neighbours as they used to. People like Sonia move to our community, said Alice, a 53-year-old rancher, 'and yet we don't go to visit her and see her'. That geophysicist who buys acres around the corner may decide to stay in his house and do his work and the community will never know who he is.

> It's good in a way because it brings new people into community. If agricultural is suffering then we have some people that are moving in to pay taxes and buy things in our community that might not otherwise be there, but then again, on the other hand, it isolates us a bit because we are now married to our computer instead of our partner and our neighbours. So there are two different ways to look at this whole thing. (Alice, A)

Computers and the Internet were seen as the main culprits for the onset of the depersonalization of life, alienation from neighbours and the community and an existence behind closed doors. There was always something to maintain or update, viruses to disarm, spam to clean up, problems to solve on the computer and the Internet and these activities ended up eating up huge amounts of time, complained Barbara (45, business woman). The kids could not be persuaded to go play outside, grumbled a choir of parents from all focus groups. Our lives are moving at a breath-taking speed with our senses constantly tuned into the computer and we do not find time for our usual social activities and human pleasures.

> At the same time there are very few hours of the day where I will sit and relax and not have my ear tuned for the beep, beep, which means I have an incoming message. (Sara, B)
>
> I feel that our families are becoming so concentrated that we come home check our e-mail and do all these things at home. [We] do our stock reviews, that is, so focused on the one

> individual and the computer that we are not doing a lot of that social interaction... A definite change in our lifestyle from twenty years ago... (Barbara, B)

So, it looked like the desired rural lifestyle was being undermined at the same time as it was being made more available to different categories of people. The vehicle responsible for both processes was one and the same – the Internet. There was obviously a price rural communities had to pay for 'growing into the global sphere' as Barbara put it. And yet rural residents were quick to push their apprehensions aside and to raise their voices demanding broadband.

Home schooling

According to our focus group data, there were several compelling reasons why rural young people needed home schooling in the form of individual courses or whole programs. First, it was the factor of distance which made it impractical for some youth to travel to school every day. Second, but not least important and possibly more widespread, were the economic reasons. Farms and ranches needed the young workforce in place throughout the day to help out with cattle minding and working the land. Most small farming and ranching businesses could not afford to hire outside workers and had to mobilize all available hands in the family. Third, the resources of local schools did not allow a large gamut of courses to be offered, which usually became a serious problem at the level of high-school. Students, as well as parents, did not want to put up with the limited educational choices available locally and looked for options offered by distance education. Finally, but also quite commonly, due to the changing profile of the provincial and local economies adults needed to take college or professional courses in order to enhance their skills and employability in particular areas. More often than not these were working people, moms and dads who could not simply move to the city for their studies. They had to stay put, go about their daily lives as usual, and fit their studies into their evenings, weekends and early mornings.

Predictably, in all these situations home schooling, distance education and their online versions gained relevance and attractiveness. People quickly came to appreciate the interactive course delivery modes furnished by the Internet and opted for them whenever they had a chance. Moreover, doing research online had become a habitual practice and necessity in all forms of education starting from elementary school and going up to the high levels of university. Rural people were clear that if their abilities for conducting research online were crippled, their learning outcomes would not be as high as desired. In one of our focus groups Ken, a 17-year-old high school student and free-style skier shared that he always felt a bit behind the city students who could do their research in no time while he had to sit and wait for

information to download for hours. Will had taken conventional correspondence courses where materials were mailed back and forth and Internet-based ones and could compare the experience:

> Ken: On the internet it's more you go on and everything is interactive and they are telling you what to do and there is more and more stuff going on, it is more available and you can do more and you can be surfing the net while doing your homework. I think it definitely is very different from conventional. … On the Internet you know it's [help from the teacher] right there, somebody is there and you know when they are on and if you are stuck on a question, you can ask it right there. … I have used a lot of high speed internet already so I know what it has to offer and I would like to have access to it right now, but it's not out here when you need it. …Right now you can't do that over the internet. Like I tried and it's impossible, I ended up just quitting the course
>
> Carl: My daughter was doing a German course because it's not available in [community] and she has to telephone constantly on the phone asking questions and interacting like that. I see the Internet with the high speed broadband where that class is now not limited to lecturing at university. It's available to anybody any place with high speed internet.
>
> Sonia: I think that if we had high speed internet where then it would just make the educational side easier. Obviously it would make my work easier, but like instead of doing article based school, you could probably do the [inaudible]. Tim has his own computer and his is not up to technology, but I gave him my old computer and I bought myself a newer one and I keep that in the kitchen because I like the apple juice next to me and its right there by our kitchen table and it can access the internet. I think that for right now with him he is five years old so he probably wouldn't go on the virtual web, because would be so slow, but if it had higher speed and had the cable based one, he might.

A middle-aged woman in another community told us that she was taking a university course online, but did all her downloading and correspondence from work where she had high-speed access. Some families in their communities had given up on online home schooling as both parents and kids found it too slow and too frustrating over a dial-up, our participants reported. Families from one community, we learned, would sometimes move to bigger towns where high schools offered more subjects to their teenagers. Getting access to high-speed Internet for the kids would sometimes be a factor in making such a decision. School access was generally available in all communities we visited, however, it was considered inadequate as way too many sites and activities were blocked on the school servers.

Rural parents whose children had access to the Internet at home, regardless of the speed, did worry about all the things that are also a concern for urban families: pornography, strangers in chat rooms, kids not

playing outside, although there was the caveat that rural kids have chores related to the farm and the animals, so getting completely sucked up into computer activities is more rarely an option for them. In the rural setting the dark sides of the Internet were probably met with somewhat higher anxiety as they contrasted so sharply to the more peaceful and conservative (at least on the surface) environment small communities had offered until not long ago. And despite all this, rural parents spoke about the absence of broadband access as a major disadvantage putting their children behind urban youth, diminishing their chances in life and threatening to chase them away from their home places for good.

> I think it's going to become more and more important because the kids out here may have to have to get a proper education. (Randy, 46, farmer, C)
>
> In order for them to compete on the same level as the city kids and to get the same type of education that the city kids are getting our kids in the rural areas have to have it as well so that they can compete on that basis. (Melissa, 42, buyer, C)

Certainly, many Internet uses, or as I call them, use genres that emerged out of rural residents' accounts closely resembled those that have taken shape in urban households: maintaining relationships with family members across distances and feeling connected to friends, shopping online – despite heightened caution and numerous reservations, rural residents were discovering the potential of online shopping as a practice that could save them gas and time and expand their consumer choices tremendously. There was a rural twist to all these use genres compared to how they were conceptualized and enacted in the city. One interesting nuance referred to travel: both urban and city dwellers enjoyed the opportunity of researching and arranging their trips via the Internet, but with rural people there was more of a desire to stay away from crowded commercial resorts and go to less well-known quieter places in Mexico, Belize or elsewhere. The Internet came in very handy for finding those places. Both urban kids and rural kids rushed to their computers to start chatting with their friends right after they came back from school. For rural kids, however, these chats (and the telephone) were the only way to get peer help with homework or just gossip and giggle as often these kids were surrounded by miles of fields with no one of their age around. The Internet-related roles and activities in both rural and urban homes were divided along gender lines, but in rural household it was more often the case for the woman to take leadership in computer and Internet use. The male ranchers and farmers typically had little or no typing skills. Some men worked on the oil rigs and spent weeks on end away from home. When they came back they were not interested in virtually leaving. Both rural and urban entrepreneurs and professionals needed to establish connections over the Internet with partners and colleagues outside their immediate surroundings, but for the rural people this need was often a matter of survival.

An interesting time lapse was noticeable when comparing the discourses of rural Internet users to those of their urban counterparts that I have been studying over a period of close to 10 years (see Bakardjieva, 2005, 2006, 2007). The signifying work accompanying the domestication of the Internet in rural homes resembled those that unfolded in urban homes in the late 1990s due to the later arrival of the Internet in rural areas. The enthusiasm, the puzzlements and the intense decision-making performed by urban adopters at an earlier stage of Internet penetration were present in the current accounts of rural users including, as has been demonstrated in this article, questions regarding personal and professional development, economic opportunities, issues of parenting children on the Internet, privacy and security concerns, etc. While for urban users in 2004 - 2006 period being connected to the Internet was taken for granted and no particular or personal reasons were sought or articulated, rural users still approached their Internet connection with the reflexive and critical mindset characteristic to the appropriation of a novelty.

Conclusion: Broadband Citizenship

Rural communities in Alberta present a varied landscape of access possibilities and quality. Those residents living in the core settlement most typically are already being served by commercial broadband Internet providers. In contrast, residents living on farms are most likely to have dial-up access only and to face very high prices for both second phone lines and/or satellite Internet connections. This creates disparities among rural residents themselves. The greatest disparity perceived by rural people, however, is the one between themselves and urban dwellers. Rural residents frame their understanding of broadband and, in this particular case of the SuperNet, in terms of equality and civic rights. They see themselves as 'have-nots', deprived cousins, second-class citizens relative to urban dwellers. They, or more precisely those among them who have tasted the power of high-speed connectivity, are past the point where this state of affairs might be considered natural and part of the necessary price a person pays for living amidst natural beauty and fresh air. The major message that our focus group participants wanted to convey through us was that the urban-rural broadband disparity was unfair and unacceptable and it was their government's duty to step in to ensure equal citizenship and equal economic and social opportunities for all.

> … what I expect the Super Net to be is pipelines coming in [here] and towers being put up so that everybody can have access to the Internet … We would like it the same. We would like to have the city people realize that we are not just some dumb farmers that have a BSE problem that you do not need because your food comes from the grocery store. (Mike, 60, farmer, A)

> I feel that the quicker that we can get high speed internet to everyone or the availability of it, whether you choose to use it or not, but having the ability of it I feel that it makes people, it has the ability to make people more equal its more of a democratic equalization, I think, information is and knowledge is... (Ron, 49, rancher, A)
>
> - If we could have those costs to us similar to those folks [in the city]...Put us in the same playing field.
>
> - To what people in the city are doing because everybody's got it in the city so they must have something that's affordable. If we would have the same opportunities...
>
> - It's a terrible disadvantage when you look at it.
>
> (Exchange among participants in C)

At the same time that rural residents voiced these feelings they engaged in a deliberation around the hot issues of the technical designs and business models that would be quicker and more efficient in bringing broadband into their communities. Is it more practical to employ satellite or land-based optical cable? Through what technical installations should the last mile connection be secured? Who should be responsible for providing the last mile connection – small local players, large provincial telecommunication companies or should that be part of the SuperNet project as a governmental responsibility: 'Okay but why isn't the government helping, like instead of sending a local company [to do] the patchwork of who knows who, ... why aren't they working our provincial phone company to bring it to the masses?'

What about the last quarter of a mile? Are there people who will be excluded: 'So,... the technologies [have] come so far, but there, you know, it doesn't make it through your trees and it doesn't make it up the hill there...' What should residents in rural communities be doing to accelerate the process? Should they be signing petitions to the government, or joining forces with other small communities across Alberta to cooperatively build a shared infrastructure?

> ... if we could have it [so] that it could be spread out amongst Albertans, rural Albertans and people in small villages and towns right across from the northern to the southern part then it could be cost effective, then we could afford it. And this is what I'd like to see. (Shirley, 54, C)

These debates, I believe, amount to no less than a kind of engagement that could be called 'broadband citizenship'. It is interesting and ironic at the same time that it takes a research team to travel to the rural area in order for such a collective deliberation to be precipitated. Despite the fact that these conversations were happening in the research laboratory, in a sense, their potential as a formative strand in the process of technological development is indisputable. For this to happen they should spill out of the test tube and be taken aboard in a timely and appropriate format by technologists and policy-makers.

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