The Internet: accessibility & net neutrality

BACKGROUNDER

June 2007


net neutrality
stay
connected

IT IS NOT an exaggeration to say the Internet has brought wide-ranging changes to the way that millions of Canadians – and hundreds of millions of the world's people – work, shop, communicate and relax. Indeed many feel that we are only in the first wave of changes to our social structure that will be brought by the Internet.

The Internet is an incredible tool. As the technology develops there are more and more possibilities opened up for its use. We now have generations of people who have grown up in the digital age. The Internet is not simply an interesting toy to these children of the Internet revolution – it is a continually used fact of life.

Access to the Internet is rapidly becoming a necessity for many in the developed and developing world. In a very real way access to the Internet, in particular the high-speed broadband capability, is becoming yet another defining factor between the world's haves and have-nots.

This digital divide exists both between countries and within a country. It is not only between the have countries of the developed world and the have-nots of the developing

world but between rich and poor, urban and rural in Canada.

Many are surprised to hear that communities a mere forty minutes outside of a major urban area often do not have access to broadband Internet. Even within a single community some neighbourhoods – some streets – will have broadband access while others don't.

These disparities in access have serious implications for our economy and people's equality.

It can be a real disadvantage for the poor and the rural when compared to the rich and the urban.

Children in schools or communities without broadband access do not receive the same education or range of opportunities as those who do have access.

Workers and businesses without broadband access are limited in the services and work that they can do.

Fundamentally, access to broadband Internet services is an issue about democratic governance. Is this profoundly important tool going to be available to all citizens or will it remain a tool of the world's elites?

But connectivity is not the only threat to Internet democracy. Not only are we grappling with the question of disparity in access to broadband but also the creation of unequal access to Internet content.

One of the great appeals of the Internet and the web has been the equality of access provided to users. With the proper hardware and software most people can both access and provide content over the web. The smallest website or web log (blog) has as much chance of being seen as the largest corporation's website. In fact, some small and creative websites have repeatedly shown themselves able to reach millions of people more effectively than those created by the rich and powerful.

Some corporations want to limit this great advantage of the Internet. They want to create a two-tier Internet that would allow them to slow or even block content that is not in their corporate interests.

Communications technologies have been developing at a rapid pace. The expansion of the Internet into homes and businesses has grown at an unprecedented rate from the early days of email. So quickly

has the technology and possible uses grown that many governments have struggled to keep up with developments. There are many examples where consumer protection and public safety have lagged behind technological advances.

This issue is called Network Neutrality.

Simply put Network Neutrality, commonly called net neutrality, is the "principle that all Internet traffic be treated equally, regardless of origin, destination, or application type."[1]

Many advocates for net neutrality in the United States refer to it as the First Amendment of the Internet, making an analogy to the protection of free speech enshrined in the US Constitution.

Major telecommunications corporations, also called Internet Service Providers (ISPs), are involved in a struggle over how and what Internet traffic will pass through the various Internet networks.

But this is not an issue solely about corporate profit or the growing power of telecommunications companies – it is also about the rights of citizens to exercise control over one of the greatest innovations in communications history.

The question is whether telecom companies should be able to favour some Internet sites over others by charging different rates to different customers and making some sites easier to access than others. Should these companies succeed, it will undermine the Internet's level playing field and will make it much more difficult for the small and independent voice to be heard on the web.

The origins of the Internet and the role of government and the public sector

The great myth of the Internet is that it was created by a small number of brilliant entrepreneurs and businesses. These hi-tech adventurers took small ideas and ran with them – making themselves rich while changing communications.

There is no doubt that many of these individuals were, or are, brilliant. It is also true that some of the developments on the Internet were initiated by someone with an idea and a vision. And, it is undeniable that a small number of individuals became very wealthy through the net.

Unfortunately, this narrative leaves out the vital role that successive governments and the public sector, in Canada and around the world, played in funding and supporting the development of the web.

The most obvious place to start is the invention of the Internet. Many are not aware that the Internet largely originated in the research conducted in post-secondary institutions and the military. The desire for fast and reliable methods of communication led these publicly funded bodies to investigate the possibility of transmitting data from computer to computer through a network of cables and wires.

Then there are the "pipes" through which Internet traffic flows. In Canada, and most of the world, the first telecommunications steps were taken by government.

Realizing that the ability for citizens to communicate with each other across large distances was important for nation building, most governments embarked on ambitious projects of expanding and improving electronic communications networks. The fact that there is

a network of cables and telephone wires connecting into most homes in Canada is thanks to the commitment of citizens and their elected leaders to make it happen.

In Canada, two of the largest telecommunications companies, Bell Canada and Telus, have significantly benefited from government investment and intervention.

For example, the Bell Telephone Company of Canada Ltd., founded in 1880, was granted a monopoly on long distance telephone service. The rapid growth and current market position of Bell Canada is directly related to this government granted monopoly.

Telus has its origins in the Alberta Government Telephones (AGT), created by the provincial government in 1907, and charged with expanding and improving telephone services for the province. The City of Edmonton had its own municipally owned telephone utility that was eventually bought by Telus as was BCTel, the telephone company granted a monopoly by the government of British Columbia.

In addition, the province of Saskatchewan continues to

have a publicly owned telecommunications company.

While not without problems, it was through government support that these bodies managed to develop and expand telephone services into almost every home in the country.

And this commitment by various levels of government to ensuring that the nation's citizens have access to communications is maintained. Provincial and federal governments continue to invest in developing access to broadband services into rural and remote communities. A number of Canadian municipalities and cities are embarking on developing publicly owned and maintained wireless Internet access for the citizens.

Similarly, public sector utilities play an important role in the maintenance of the telecommunications network. For example, the overwhelming majority of telephone wires and cables are carried over publicly owned and maintained hydro poles situated on public land. This is largely rent free or without charge for repairs or upgrading.

So, as a quick summary:

- the creation of the Internet, on campus and in the military, received considerable financial support from all levels of government;
- most of the telecommunications companies that dominate the sector have their origins in public corporations created by governments to see services expanded into the homes of most of its citizens;
- the pipes through which this communication flows was built by public agencies and in most instances continues to be maintained by these agencies;
- this infrastructure is situated on publicly owned land; and
- many governments continue to provide tax incentives and supports to companies that promise to expand service into rural and remote communities.

Past Canadian governments have strongly supported the development of the Internet as a tool for its citizens. This must continue. Corporations must not be allowed to back away from this commitment to the public —to the common good.

Connectivity *Bridging the digital divide*

It is important to start by defining a basic term—broadband. The Canadian government defines it this way: "Broadband, or high-capacity Internet, is used to send or view large amounts of information, including live video and audio, via the Internet. This can bring people in different regions closer together – from a doctor in Vancouver and a patient in Tofino to a grade three class in Corner Brook and a science centre in Halifax. While this would be next to impossible with Internet access over a regular dial-up phone line, broadband provides the support needed to view or participate in these opportunities."[2]

Access to broadband Internet is then different from being able to access the Internet through a dial-up method. This is an important distinction to remember. For example, while research suggests that 67.8% of Canadians have access to the Internet – less than a quarter of them do so through a broadband connection.

In early 2007 the Organisation for Economic Co-operation and Development (OECD) released a

report on broadband statistics as of December 2006.[3] The OECD is an international body comprised of 30 member countries that are among the most developed economies of the world. Its research provides a means for comparing Canada's access to broadband services to other countries.

The OECD report notes that 23.8% of Canadians are subscribed to broadband services – placing Canada near the top of the G7 countries in terms of broadband penetration.

Broadband subscribers per 100 Inhabitants:

Denmark	31.9
Netherlands	31.8
Iceland	29.7
South Korea	29.1
Switzerland	28.5
Norway	27.5
Finland	27.2
Sweden	26.0
Canada	23.8
Belgium	22.5

Some in government saw this as a cause for celebration. However, upon closer examination of the data we find a more complicated, and worrisome, picture.

What this figure does not show is that Canada is dropping in its ranking of broadband penetration when compared to other OECD countries. We see that in terms of broadband penetration, in OECD countries, in:

2003 Canada ranked second
2004 Canada ranked fifth
2005 Canada ranked eighth
2006 Canada ranked ninth

Given this trend we can safely say that Canada will drop out of the top 10 by the end of 2008.

Another ranking that is far less flattering is the OECD's comparison of growth rate of broadband coverage. Canada, with a growth rate of 13%, is ranked 29th out of 30 countries. Well behind:

Greece	228%
Poland	187%
Slovak Republic	128%
Hungary	89%
Ireland	87%
Turkey	81%
New Zealand	73%
Czech Republic	66%
Mexico	59%
Australia	39%

So, Canada is falling behind other OECD countries both in the percentage of its citizens with broadband access and the rate at which that access is growing.

This is a sad state of affairs. Canada was once recognized as a world leader in developing access to the Internet for its

citizens. We were the first country in the world to connect every school from coast to coast to the Internet. Shortly afterwards a broadband task force was created with the purpose of developing a strategy to ensure that all Canadians had access to high-speed networks.

Michael Geist, the Canada Research Chair of Internet and E-commerce Law at the University of Ottawa, thinks that Canada's ranking in the OECD report is:

> "a pretty abysmal showing. Far from being an Internet leader, Canada is rapidly becoming a second tier country in terms of broadband penetration with limited broadband competition, hundreds of thousands of people with no hope of any broadband access, rising prices, and more examples of the violation of net neutrality principles than any other country in the world."[4]

As we have seen, some initial promising steps have faltered. The fact is that when governments prioritized and acted to expand access to broadband Internet there was progress. As federal governments choose to leave

the expansion and operation of broadband services solely to the private sector we see a decline in growth.

The Telecommunications Policy Review Panel closely looked at whether the Canadian marketplace could be relied upon to ensure that all Canadians have broadband access. Their conclusion was that:

> "there is not a viable business case in all areas and that, without some form of government intervention, a significant number of Canadians will remain without broadband access. The study concludes that after taking into account the maximum likely level of "sustainable" private sector investment, approximately 1.5 million people – about 5% of Canada's population – will remain unserved."[5]

Our federal government needs to develop and implement a broadband strategy that will guarantee equality of access for all Canadians.

Whether or not the federal government acts on this matter will have profound implications for communities in Canada. Research conducted on the economic impact of broadband access in two remote and rural communities in British Columbia highlights the importance to business.

The research was conducted on the Peace Region Internet Society (PRIS) network in the Peace River region of north-eastern British Columbia and the China Creek ISP in the South Similkameen region of south-central British Columbia. The study's key findings were that:

- Over 80% of all business respondents reported that absence of broadband would affect their businesses negatively. Over 18% of all business respondents stated they could not operate their businesses without broadband.
- 62% of pre-existing businesses indicated that their productivity has gone up as a result of broadband, with a majority indicating an increase in productivity of more than 10%.
- Many businesses reported increases in pre-tax income and/or decreases in operating costs due to broadband connectivity.
- 15% of residential broadband subscribers reported that their household income has increased and 39% reported

that their household expenses have decreased due to residential broadband connectivity.

- Almost 75% of residential respondents reported that broadband connectivity at their place of work was critical for one or more members of their household. [6]

The authors of the report concluded that "without broadband access businesses in remote and rural communities would be at a competitive disadvantage." Or perhaps the title of the report says it best—*You Snooze, You Lose*.

Similar results have been found in other studies. To quote from a study on the impacts of broadband in Churchill, Manitoba and Parrsboro, Nova Scotia:

> "there is a 'digital divide' in Canada that separates businesses in rural and remote communities from being able to play on an even field with their competitors that have access to broadband. Whether it is the family farm that cannot deal with e-government files and forms or the B&B that loses customers because there is no broadband access for them or the tour company or theatre that cannot sell

efficiently over the Internet, all are kept from operating as productively as they might otherwise."[7]

While the economic impact can be significant so can the cultural and educational disadvantages for those without broadband access:

- Disparities in broadband access mean that some children do not receive the same quality of education as many of their counterparts.
- Communities and regions without broadband access face losing residents to those areas that do.
- In an increasingly global culture, artists and writers need broadband access to share their work with others.

Some provincial governments are starting to act on these issues. The government of Saskatchewan has embarked on a process of expanding and upgrading the province's information technology infrastructure as a means to retain young workers.

Saskatchewan Premier Lorne Calvert announced the program by saying that this "exciting initiative is just one more way of enhancing the progressive image of Saskatchewan's communities as the best place for young people to work, live and build strong futures."

Part of the program is to offer free wireless high-speed Internet services in a number of communities across the province. The government press release further points out that the initiative will "help to bridge the 'digital divide' by providing no-cost Internet access to residents of the areas who may be unable to afford monthly rates for Internet access."[8]

The Canadian territory of Nunavut has made incredible strides in creating broadband access to the citizens of the region. Comprised of small communities dispersed over a large and demanding terrain, a combination of government funding and local initiative has brought broadband access to increasing numbers of residents. It can be done!

Broadband access for all of Canada's citizens is no longer a luxury but a necessity. Our federal government must recommit to the challenge of expanding broadband coverage to all communities across the country.

Network neutrality *Keeping the Internet open*

Expanding access to broadband services is at heart an issue of social justice and equality of opportunity. But connectivity is only part of the struggle to bridge the digital divide.

The other issue is to preserve equal access to content while on the Internet. This is the principle of network neutrality.

There are a number of definitions of net neutrality used. The one we presented previously states that network neutrality is the:

> principle that all Internet traffic be treated equally, regardless of origin, destination, or application type.[9]

According to Timothy Karr, campaign director for Free Press, a media reform organization and coordinator for SavetheInternet.com, a bipartisan coalition working to preserve network neutrality:

> "Net neutrality ensures that the public can view the smallest blog just as easily as the largest corporate website and prevents companies like AT&T from rigging the playing

field for only the highest-paying sites and services."[10]

There have been a number of instances in Canada where telecommunications companies have acted, or are acting, in a discriminatory manner towards some websites or Internet service users.

The most obvious instances of the initial moves by telecommunications companies towards discriminatory treatment of competing service providers involve Internet telephony (often called Voice-over-IP or VoIP). As the major companies develop Internet telephony services, some are trying to use their network position to unfairly disadvantage the competition.

Shaw, one of Canada's largest telecommunications companies, downgrades the "quality and reliability" of competing Internet-phone services that contact their customers. To quote one net neutrality advocacy organization, Shaw is "driving customers to their own phone services not through better services, but by rigging the marketplace."[11]

The Quebec-based company, Videotron, has made some indications that they may take action against third party Internet telephony providers, going as far as labeling Skype "parasitic".

There have also been examples of companies restricting or limiting Internet access of specific Internet applications or web content.

In late 2005, Rogers largely acknowledged that it is engaged in "packet shaping", limiting available bandwidth, for peer-to-peer file sharing applications – such as the popular freely distributed BitTorrent. Some file sharing applications, in reaction to the packet shaping approach, introduced encryption services as a way to prevent detection. Rogers now simply degrades all encrypted traffic.

There are two serious existing problems with Rogers' packet shaping. First, the use of BitTorrent is legal in Canada and many artists and corporations use these applications to provide their products to people.

Secondly, there is growing evidence that Rogers' packet shaping is downgrading the email services for many users. For example, it appears Rogers is degrading

access to the University of Ottawa email accounts, which use encryption, of students or staff who try to access their University email accounts through their Rogers connection. [12]

In possibly the most controversial example of violating network neutrality, Telus blocked its Internet customers from visiting the website *Voices for Change* that was sympathetic to the striking workers of Telus, members of the Telecommunications Workers Union. Not only did Telus cut access to the *Voices for Change* site but it also blocked access to 766 unrelated websites that were hosted on the same Florida based server.[13]

Ultimately the goal of the large Internet Service Providers may not be merely the blocking of competing services or certain websites and specific applications. Many of these telecommunications companies see even greater profits by charging websites or services for priority access to customers.

Chief Technology Officer William L. Smith, of the US based BellSouth, speculated about charging a premium to websites for prioritization downloading, allowing Yahoo to

pay to ensure that it would load faster than Google. BellSouth and AT&T are lobbying the US Congress for the right to create a two-tiered Internet – where their own Internet services would be transmitted faster and more efficiently than those of their competitors.

Unfortunately, Canada's current federal government appears unwilling to act on the matter. In March 2007, Canadian Press obtained, under the Access to Information Act, briefing notes for Industry Minister Maxime Bernier on the issue of network neutrality. According to Michael Geist the documents:

> "provide a clear picture of an Industry Minister and policy makers content to leave the issue alone, despite acknowledging that major telcos such as Bell and Telus are 'determined to play a greater role in how Internet content is delivered' and that 'they [Bell and Telus] believe they should be the gatekeepers of content, with the freedom to impose fees for their role'."[14]

Countering the Telecom giants

If a hydro provider announced it would only allow products manufactured by specific companies to be used in households or businesses, consumers would be outraged. Researchers, and net neutrality advocates, Tim Wu and Lawrence Lessig, explain that because:

> "it remains neutral, the electricity network has served as an important platform for innovation. The electronics industry designs new and better electronics, safe in the assumption that American electricity will be provided without preference for certain brands or products. ... At the heart of this success story lies the predictability of the network and a certain security of investment. The uniformity of the electric grid is a safeguard against the risk of restrictions and uneven standards. It provides designers and consumers alike with a baseline on which they can rely."[15]

The similar argument can be made for most telephone services. Calls between people

are not blocked, or the quality of the service degraded, because the callers are using specific telephone makes, phone companies or discussing certain topics.

And yet, the telephone has become an essential part of most peoples', and most businesses', daily lives. And as the rapid growth of wireless telephone services indicate, the neutral nature of the phone service has not stifled innovation or development.

But the major ISPs and telecommunications companies, and fake grassroots groups created to advocate on their behalf – often called "Astroturf" – are arguing the opposite. They are claiming that they need to be able to create a two-tiered Internet to allow the continued expansion and development of the service and that, if left unregulated, competition in the free market will ensure that ISPs will be able to improve and expand their services.

This argument ignores a few basic facts about the sector.

First, telecommunications in Canada is dominated by a small number of very large companies. The four largest Canadian providers (Telus, Shaw, Rogers and Bell) control

approximately 60% of the country's telecom market (valued at around $32 billion) and the top eight control between 80% to 90% of the market.[16]

If the largest ISPs choose to discriminate there is basically nowhere else the consumer will be able to turn to.

According to Michael Geist:

> "While opponents of network neutrality legislation argue that a competitive marketplace removes the need for government intervention, the reality is that the market for broadband services in Canada is at best an oligopoly. Most Canadians have limited choice, with consumers in urban areas choosing between indistinguishable cable and telephone Internet packages, while Canadians in rural communities are often left with no broadband options at all."

Second, these companies are already reaping huge profits. The Globe and Mail reports that Bell Canada, Telus and Shaw Communications are among the top 100 most profitable companies in Canada.

A December 2006 report from Statistics Canada found that:

"The nation's Internet service providers (ISP), excluding cable and wireless Internet access providers, grew more profitable in 2005.

"According to new data from the Survey of Internet Service Providers for 2005, earned operating revenues for the industry amounted to $1.9 billion, up 9% from 2004.

"As well, the industry's operating profit margin was 19%, up from 17% in the previous year. Much of this improvement was due to the strong performance of the industry's largest firms."[17]

These telecommunications giants are making huge profits off subscription fees, charges for corporate access and the sale of their own applications and services. Removing network neutrality would only serve to allow them to extract more monopoly rents from a new source of revenue.

Third, consumers are already paying for most network expansion of ISPs. Again, according to Statistics Canada:

> "Revenues from the residential subscribers (households) constituted $6 out of every $10 earned by the industry, double the

proportion generated from business sector clients. Governments and public institutions accounted for less than one-tenth of the industry's revenues."[18]

These ISPs will remain able to expand and improve the service based on revenues generated from monthly subscription fees, equipment rentals and, increasingly, advertising revenues. As an earlier Statistics Canada report noted:

"In recent years, revenues from broadband access have increased substantially. This growth momentum is mostly attributable to Internet users shifting from narrowband to broadband. In 2004, revenues from broadband access increased by 23% while revenues from the provision of narrowband access declined by 19%. Revenues generated from broadband access were more than double the revenues from narrowband access."[19]

Fourth, as we have already seen, Canada's governments have invested heavily in the development and expansion of the Internet. The Chrétien Liberal government made the expansion of broadband services to rural and remote

communities a priority and provided considerable subsidies and tax incentives to telecommunications companies.

While some critics have highlighted the failings of the Chrétien government to implement their goals, it is undeniable that considerable investment was made into the sector.

And, this does not include the large investments made by various provincial and municipal governments.

Finally, there are two ways of dealing with Internet congestion. One is to expand broadband services to everyone on an equal basis – the other is to keep the bottleneck in place and charge users to get around the blockage.

Obviously, expanding broadband service for all is the most efficient means to address the problem. Furthermore, it is equally obvious that companies will have little incentive to fix the fundamental problem with increasing Internet traffic if they can simply charge consumers more for bypassing the problem.

Defending net neutrality

> "The neutral communications medium is essential to our society. It is the basis of a fair competitive market economy. It is the basis of democracy, by which a community should decide what to do. It is the basis of science, by which humankind should decide what is true. Let us protect the neutrality of the net."
> – Tim Berners-Lee
> Inventor of the World Wide Web[20]

The opposition to efforts to create a two-tiered Internet is growing rapidly in the United States. Organizations like SavetheInternet.com boast:

> "more than a million everyday people who have banded together with thousands of non-profit organizations, businesses and bloggers to protect Internet freedom."[21]

Prominent artists in the music industry are also getting involved in the campaign. A new coalition has formed, Rock the Net, which has more than two dozen founding members and includes the Kronos Quartet, Sarah McLachlan, The Wrens, OK Go, Death Cab for Cutie and the Barenaked Ladies.

The coalition is planning a series of high profile concerts to raise awareness and funds to continue the fight for net neutrality.[22]

It is becoming such an important matter of public debate in the United States that numerous possible presidential candidates have publicly come out in favour of net neutrality legislation. The list of confirmed candidates that support net neutrality includes Hillary Clinton, Barack Obama, and Bill Richardson. Potential candidate Al Gore has also supported the basic principle of Internet freedom.

Presidential candidate John Edwards said that:

> "This goes to the heart and soul of democracy. Because, if democracy is going to work in this country, then we want people to be well informed and we want a wide variety of diverse voices to be heard. And that's what is at issue with these media conglomerates ... We really have to stay on top of this because what we see flourishing at the grassroots can be stomped on if we're not careful."[23]

Another indication of the interest that this issue is generating is that

SavetheInternet.com now has more than 1.6 million signatures on its petition to Congress.

To date we have not seen the debate reach this level of interest in Canada. But there are some encouraging signs that this is changing.

Members of Parliament Charlie Angus, NDP, and Paul Crête, Bloc Québécois, have begun asking tough questions of the government. Grassroots meetings are being organized and advocacy groups are growing.

One website, www.neutrality.ca, has an online petition and resources available. Neutrality.ca says it believes:

> "that the Internet is more than just the physical infrastructure over which it operates. It is a vibrant marketplace and an entirely new format for free expression, even a political landscape and a tool for free organization. Some ISPs in Canada, however, are overstepping their role and cannot separate their participation in this network from their component ownership and commercial interests.
>
> "In order to protect the Internet from these increasingly invasive corporate interests, we are asking that the government define the rules for which ISPs may participate on the Internet and mandate the application and content neutrality of Internet access providers.
>
> "By protecting Net Neutrality, we guarantee that pro-union sites do not get blocked, that ISPs do not charge anti-competitive 'preference' fees and that independent media can compete based on content, not pocketbook, with the largest of publishers.
>
> "It's time for the Canadian government to stand up and protect the future of the Canadian Internet."[24]

And the media is starting to take notice. Important articles about the threat to net neutrality have begun to appear in both national and regional media sources.

Canadians need to understand the threat to the egalitarian nature of the Internet. We need to demand that our federal government acts in the interests of Canadians to preserve net neutrality.

Notes

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3 http://www.oecd.org/document/7/0,2340,en_2649_34223_38446855_1_1_1_1,00.html

4 http://www.michaelgeist.ca/content/view/1894/125/

5 http://www.telecomreview.ca/epic/site/tprp-gecrt.nsf/en/rx00062e.html

6 http://broadband.gc.ca/pub/program/case_studies/sfu/index.html

7 http://broadband.gc.ca/pub/program/case_studies/brandon/index.html

8 http://www.gov.sk.ca/news?newsId=71f283b3-f8f8-44c4-b0d6-693921262e29

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13 Zandberg, Bryan. "Canada Sleeps Through War to 'Save the Internet'". *The Tyee*. January 17, 2007 (//thetyee.ca/Mediacheck/2007/01/17/NetNeutrality/)

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17 www.statcan.ca/Daily/English/061218/d061218c.htm

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19 www.statcan.ca/Daily/English/051215/d051215e.htm

20 http://dig.csail.mit.edu/breadcrumbs/blog/4 (2006-06-21 16:35.)

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23 ibid.

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