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Can the use of digital media favour citizen involvement?

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Can the use of digital media favour citizen involvement?

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ABSTRACT

We present here the results of recent studies on the emergence in Quebec of associations of a new kind, which we call *technology activist groups*. These groups consist of individuals who, on the basis of their own expertise in computer programming or in establishing specialist technological structures (WiFi hotspots), are developing social practices involving information technologies (ICTs). We try to give some elements of a response to some specific questions such as: What effects are these *technology activists* having on the dynamics of community activism in Quebec? In a broader context, at the level of political imagination in today's societies, how far can these technical activist groups *act politically* to help redefine the project of the coming 'information society'? And conversely, can the project of a 'knowledge-sharing society' – as formulated by the representatives of civil society organizations at the WSIS (World Summit on the Information Society) in Tunis – help to redefine the aims and actions of actors in community politics?

KEY WORDS

community politics ■ information technologies ■ knowledge-sharing society
■ politicization ■ technological structures ■ technology activist groups

I should like to present here the results of the studies we have been carrying out for the past three years at the *Laboratoire de communication médiatisée par ordinateur* (Laboratory for computer-mediated communication, LabCMO, <http://cmo.uqam.ca>) on the emergence in Quebec of associations of a new kind, which we call *technology activist groups*. These groups consist of individuals who, on the basis of their own expertise in computer programming or in establishing specialist technological structures (WiFi hotspots), are developing social practices involving information technologies (ICTs).¹ As they continue to develop their technical activities, these groups are also gradually starting to define an ideological and political platform which foregrounds a view of social change

involving a politicization of the software and structures of WiFi transmission. By 'politicization', I mean that these social actors are themselves establishing an explicitly political dimension to places or objects which appeared not to have such a dimension, or which were not previously identified as 'political'. These activist practices invite us all to question the directions that political and industrial actors are giving to technical developments in information and communication.

At the same time, this new kind of activism is leading associations of a more usual type (in terms of how they define their aims, their activities, the way they organize themselves and how they represent themselves in the public arena) to reposition themselves (Proulx et al., 2007). So what effects are these *technology activists* having on the dynamics of community activism in Quebec? In a broader context, at the level of political imagination in today's societies, how far can these technical activist groups *act politically* to help redefine the project of the coming 'information society'? And conversely, can the project of a 'knowledge-sharing society' – as formulated by the representatives of civil society organizations at the WSIS (World Summit on the Information Society) in Tunis in December 2005 – help to redefine the aims and actions of actors in community politics?

We are aware – since the research on practices of 'horizontal innovation' (Von Hippel, 2005) and 'innovation through practice' (Cardon, 2005) in environments affected by technical innovation – that innovative users, by using major communications links and social networks to freely exchange their ideas and artefacts, come to form 'communities of innovators' divided into inner and outer circles (core of active innovators, inner circle of those who offer direct support, outer circle of facilitating agents with less strong links, dissemination of innovations via connection to other networks).

These research studies deal essentially with innovation practices in a technical or commercial context. I should like here to look at a more organizational form of innovation. To be more precise, I should like to consider how values linked to successful innovation in the technical field could be transferred to activities of a more social, cultural or political nature. Can we envisage such a *paradigm* transfer as a possibility? For example, that innovations in the socio-technical framework of free software (through the establishment of communities of free software developers), could have some kind of resonance for, or be extended to, other spheres of socio-cultural activity unconnected to the technical field? (see D'Almeida et al., 2008).

As our ethnographic research on the two types of activist groups – one working in the world of computer programming; the other on the

establishment of WiFi hotspots in inner city areas – progressed, we noted that these *technology activists* were simultaneously developing an ideological platform in favour of the need for social change (Powell, 2006). This ideological agenda is constructed around proposed activities, values and specific assumptions: these activists simultaneously view their actions in the context of international networks of exchange between activists, rather than just within strictly local communities. They organize their work on the basis of a libertarian *heterarchical*,² rather than a hierarchical, structure. They tend to develop a relatively ambivalent ideological relationship with existing forms of capitalism. Finally, they establish a set of social representations that define technology as the possible basis for a new and emancipatory political stance, and this set of representations is the site of numerous economic and political ambiguities.

These groups maintain that their field of essentially technological activities may enable them to implement a number of new assumptions in the organization of their work, assumptions that look to the emergence of new practices of coordination, cooperation, collaboration and communication. Since their technological activities are carried out in a context that runs counter to the prescriptive and normative methods characteristic of the structures proposed by the proprietary software industry or the major telecommunications operators, they are introducing into the very heart of their working organization a critical decision-making process that gives rise to innovative practices. It remains to be seen whether these innovative practices, occurring first in the technological sphere, can have any resonance in the wider social and political environment (see Doray et al., 2008).

The sociological question we are formulating here concerns whether these new practices for decision-making and collaboration in the organization of work (established by activist groups) are able to influence other types of association with which they come into contact. In what ways and under what conditions could the novel organizational practices of these activist groups influence other groups already engaged in activities for social or political change? And, more generally, how far could innovative practices of this kind, developed within groups active in the technological sphere, have repercussions in the public sphere?

I should like first to present briefly the theoretical model I have developed over the years with regard to the social appropriation of digital technologies. I shall then indicate a number of socio-economic reference points in order to clearly define the context of information capitalism within which we are seeing these digital technologies emerge. I shall go on to describe the programme of research we have been carrying out for

the past three years at LabCMO, which has involved us in ethnographic studies of two groups of activists in the Montreal region. Finally, I shall show that these practices from the field of technology are helping, on an international scale, to construct an alternative (bottom-up) approach to the information society (the 'knowledge-sharing society') in opposition to the dominant (top-down) vision proposed by the image of a 'global information society' (see Proulx, 2007).

1 The social appropriation of a technological approach: elements of a paradigm

I would like to describe the process whereby a technology is appropriated along the lines of a Weberian ideal type. I shall thus present my definition of the process of social appropriation of a technology in the form of a theoretical model deploying one prerequisite and five conditions in order to ensure its complete realization. This of course implies a logical and theoretical construction (a *sociological fiction*) which is never found in a pure and completely actualized form in the reality of the concrete empirical situations that we have to describe in the course of field studies. The more elements of the five conditions are present in the concrete situation empirically described, the more we shall be able to consider that we are in the presence of an authentic process of appropriation. The prerequisite is that the individuals and groups have *access* to the technological structure. If an individual or a group has no access to the structure, the launch and implementation of the process of appropriation will prove to be impossible. This explication of the prerequisite of accessibility allows us to avoid any confusion between the problematics of accessibility and of appropriation. We encounter this semantic confusion again in the context of some international comparative studies which only take account of statistics concerning access to technological structures: this comparative reasoning takes no account of actual practices of use and appropriation of these technological structures by various sectors of the population. That one sector of the population has access to a specific technology does not mean it will necessarily develop mastery of that structure.

The five conditions that must be fulfilled in order for effective appropriation of a structure to be achieved are the following:

- (a) Technical and cognitive mastery of how to use the artefact.
- (b) Significant integration of use of the structure in question in the context of the individual's daily life practices. Here I introduce the conceptual distinction between the *use* of the structure and

the individual's (personal and social) *practice*, as the context within which the use of the technical object is to be viewed. Thus, for example, we may distinguish between the use of word-processing software and the practice of writing.

- (c) The use of a technical structure opens up productive possibilities in the practices of an individual, that is possibilities of action generating significant innovation in practice.
- (d) Mediation by the community: where training, exchange and support are exchanged within the group or the community of practice which is mobilized and with which the users identify.
- (e) Political representation: social appropriation implies the appropriate *representation* of user groups (in public policy or the industrial market for innovation).

2 The emergence of information capitalism as a platform for the innovative practices of technology activists

The emergence of information capitalism

Social experiments in 'information cooperation' – the analysis of which is the main purpose of our research programme – resonate with a position taken by certain groups of social actors in the current context of societies transformed by saturation with information technologies. Analysts are describing some emerging modes of production in contemporary societies as forming part of a new 'information capitalism' (Aigrain, 2005). They mean by this that our societies today are spawning industries of a particular type: those where industrial activity is capitalizing on ownership of computer code (Ghosh, 2005; Lessig, 1999; Weber 2004). By way of examples, we may think of the software industry, the pharmaceutical industry and the major media corporations. Activists who are pursuing projects for information and communication cooperation are strongly opposed to this new kind of domination (Blondeau and Latrive, 2000; Moody, 2001). In opposition to a proprietary definition of information, these actors maintain that information is a common good. This appeal to the ideals of the gift economy (Godbout, 2007), of accessibility, exchange and communication – values originally associated with information by the pioneers of information technology – is central to the commitment of those referred to as 'code activists' or 'techno-activists'.

Our research programme aims to situate the innovation practices of these militant techno-activists in the wider context of the emergence of social movements that condemn the code-owning industries in the context of information capitalism (Castells, 2002; Granjon, 2001). We are

seeking to understand the ways and means by which these code activists are participating in a citizens' negotiation of the 'informatization' of our societies (Boltanski and Chiapello, 1999). Today's philosophers see in these forms of appropriation by citizens of technological questions a new perspective for a movement of democratization (Feenberg, 2004; Loader, 1998). Our study is an opportunity to grasp the values at stake in these processes of innovation, from their first beginnings, their negotiation and implementation to their extension to a wider public sphere.

Innovation through practice

Among users of information and communication technology (ICT), the majority use technical tools as a 'black box', asking themselves no questions about the processes at work. By contrast, the code activists practice a kind of 'technological do-it-yourself': they do not hesitate to 'open up' the codes and structures in order to actively intervene in the functioning of information tools, in particular by means of computer programming activities, designing and distributing new technological tools. The network organization of technology favours cooperation between users and designers, facilitating activities not only of appropriation, hijacking and DIY (Certeau, 1980; Perriault, 1989), but also of cooperative authoring (Neff and Stark, 2003; Oudshoorn and Pinch, 2003) and even of real technological inventions closely tied to innovative kinds of use. Initiated by the grassroots, these innovations amount to a *break* with prescribed uses. They respond in a new way to the ad hoc needs of users. Analysts of the creative process consider these innovations to be decisive, dubbing them 'bottom-up', because they arise from explorations carried out by users wishing to improve an existing technology (Cardon, 2005; Von Hippel, 2001, 2005). These innovations arise from the ordinary practices of resourceful users and are distributed through user exchange networks.

Technical innovation and social change

Analysis of innovation bears a complex relationship to the question of social change. Analysis of socio-technological controversies (Callon, 1981) has demonstrated the non-linear, socially constructed character of innovation, as well as the mechanisms of public production of the ideological and political issues mobilized by these processes of innovation (Latour, 2001). At the same time, studies of use have demonstrated the non-linear manner in which technological objects are disseminated

(Rogers, 1995) as well as underlining the way in which technologies can be hijacked (Certeau, 1980), interpreted (Bijker and Law, 1992) and socially appropriated by users. From these hybridizations of social and technical spaces emerge the principles of a new form of collective action. According to Tuomi (2002), only those uses of technology which lead to a real change in social practices could be called *innovative*.

3 A research programme focusing on techno-activist practices

3.1 Aims of the programme

This programme is based on a participatory approach, where our team is in direct contact with the groups the research is dealing with, and seeks to describe and analyse in detail the practices and values of groups of individuals engaged in new social experiments in the sphere of *information technology cooperation* in Canada today. The aim of the research programme relates to the practices and values of these 'code activists' who are creating non-proprietary structures and generating a socially innovative alternative model to the code-owning industries. Its main thrust is to evaluate the 'transferability' of the values attached to these practices of technological innovation to other sectors of activity (Brand, 2005; Lessig, 2004). To what extent, for example, can these practices of technological innovation give rise to social innovation in the political field of practices of citizenship and democracy?

Two groups in particular, established in Montreal (Canada), are the subject of our analysis. These groups are active at the intersection of community activism in Quebec and the free software movement. Their work is extremely technical, but at the same time directed to social change. These two groups have agreed to cooperate with our team within the framework of a participatory approach where they are completely involved in the research process.

(A) *Île sans fil (ISF) (Wireless Island)*

Île sans fil was established in 2003 by three university students. ISF is a non-profit body, consisting of French-speaking and English-speaking volunteers (graphic designers, webmasters, Linux network administrators, designers of free software), dedicated to the development of a free communication infrastructure to strengthen local communities in the Montreal region. The group considers wireless technology to be a means of creating social links favouring the growth of conscious citizenship among the individuals involved in this kind of experiment. It is both a

structure for technological development and an association bringing together professionals and students from a number of backgrounds. The project's volunteers share a vision of the use of digital technologies, and WiFi wireless technologies in particular, to break down the isolation of citizens locally. For the last 18 months, the ISF group has been concentrating its efforts on two infrastructure projects in particular. The first is to establish wireless hotspots in public places (cafes, parks). The second is to create a high-performance infrastructure providing complete coverage and open to all. The group was awarded the 2005 Montreal prize for social innovation and today has nearly 10,000 users.

This infrastructure allows local content (artworks, announcements of local events and community information) to be disseminated. The group is also developing new tools enabling citizens to establish spontaneous links among themselves in public places. The group works with cafes, businesses, community organizations and individuals. Users can connect to the internet at so-called 'access points', as long as they have a laptop computer with a WiFi card. ISF offers the service of installing and managing these access points free of charge. The group relies on these organizations and individuals for the sharing of internet connections, retransmitted wirelessly, between clients and the members of the communities concerned.

(B) Koumbit

This is a non-profit body established in 2002 in Montreal with a two-fold aim: on the one hand, to create a space for mutual aid and sharing of resources for workers in information technology who are socially involved in their communities; on the other hand, to support the appropriation of free information technology in order to develop 'technological autonomy' for community groups in Quebec. The group is developing a collaborative IT platform and providing support for the use of free software by community groups. Koumbit has about 20 members, all specialists working in information technology and graphic design who offer their services to some 40 community bodies in Quebec. The word Koumbit is derived from the Haitian Creole word *Konbit*, meaning 'grouping of people for a common aim or cause'. A *Konbit* is an association of peasants who have come together to carry out tasks in common. Based on the social solidarity of Haitian culture, the word Koumbit was used by writers and political activists in the 1940s attempting to inspire Haitian peasants to take responsibility for their own fate. The Koumbit network was established in this spirit, with the mission of supporting the appropriation of free computer technology by community groups in Quebec. Koumbit offers a number of digital tools

(discussion lists, email, wiki, blog) of relevance to groups working in a decentralized and networked manner.

The *Koumbit* network came out of the team at the Centre des médias alternatifs du Québec (CMAQ) (Quebec Centre for Alternative Media), a centre for exchange and reflection serving the activist community in Quebec. The technician-activists involved as volunteers in the CMAQ developed and hosted various websites, email services, discussion lists and other communication tools for community groups. They became aware of the significant demand from groups in this field and, faced with the limitations imposed by their reliance on volunteers, decided in March 2004 to form Koumbit, an independent body with the mission of maintaining and improving the services already being offered. The establishment of Koumbit thus fulfilled two aims: on the one hand, to 'develop an organization whose main task would be the social use of information technologies, rather than activist journalism'; on the other hand, 'to develop a space which would allow technical specialists involved in their communities to create their own opportunities for independent employment'.

From September 2004 onwards, the group took steps to ensure its financial independence, asking for payment for hosting the sites of its original partners, and then of other groups and individuals interested in the services on offer. Since January 2005, the payments received for hosting members' websites have been enough to ensure the continuing existence of the group's infrastructure. Koumbit has established some 20 internet portals for community groups, using free software, especially Drupal.

3.2 Methodological strategy

There are a number of studies of forms of governance and cooperation in online activist groups (Aiguiton and Cardon, 2006; Auray, 2005; Conein and Delsalle, 2005; Granjon, 2001). A study of cooperation in the field of information technology must take account of how these localized practices interact with the aims of activists in the context of international activist networks and global social forums. Since the groups selected locally are also intrinsically linked to international networks, we have had to analyse their local activity in relation to wider debates (in particular those concerning the so-called *information society*) taking place in a global arena (Fontan, 1998). Our ethnographic descriptions – drawn up with the participation of the actors themselves – have a four-fold function: (1) to explain the context in which these groups see their activities and describe how they are pursuing social and technical innovation; (2) to analyse how the groups define forms of democratization

through their practices of information technology cooperation and how their innovations may be transferable to other spheres of activity; (3) to identify the controversies that emerge within the local public spaces formed by these activities and how these relate to wider questions animating current debates; and (4) to define the perspectives from which these practices and innovations could become more widespread in a context of contributing to the common good.

Participatory ethnography

Our ethnographic descriptions, which are characterized by a participatory approach (Barnsley and Ellis, 1992; Dallaire, 2002), were drawn up by two observers. Each of these observers began by clearly identifying herself to the group as an observer and university student. After a certain period, and on a voluntary basis, each of the observers became a full member of the organization. This situation obviously provoked a number of questions about the relationship between observer and observed. We are aware that the knowledge we produce about each group informs the group itself and helps to foster self-analysis and clarification within the group in relation to its aims and forms of organization. Our observation work has brought to light key issues, with regard in particular to each group's identity, project and areas of debate. Each of the observers has both served as a go-between (between the research team and the group under observation) and herself played a role in provoking self-analysis and reflexivity in the group.

This *participatory ethnography* tends to lead to the group under observation progressively taking on the (re)definition of the research objectives, in accordance with its own interests. We reject the dominant position of traditional sociology, which consists of viewing the group under observation 'from above'. Our approach is characteristically cautious, in that we do not seek to impose the vocabulary of the researcher on the actors in the field. We postulate a mutual enrichment of world views and a mutual exchange of knowledge between the research team and the group under observation. Our methodological approach seeks to grasp the meaning that the actors themselves give to their identity, their actions and their project, so as to foster a self-reflexive approach within the groups targeted. Our methodological approach assumes an epistemological relationship between the process of producing scientific knowledge and the potential use of this knowledge by actors in the field. How can the results of our research process become part of the action and reflexivity of the group targeted? How can we bring together reflection on socio-political commitment and scientific rigour?

3.3 Initial directions for analysis

Towards a politicization of technology

These code activists are offering users a different way of approaching the culture of technology. They are suggesting a change of direction in the way technology is represented. They propose that technology should no longer be thought of merely as a set of 'tools' in the service of a project of personal or social emancipation. The code activists are proposing that we think of technology as a 'culture', in other words as a set of structures which are not neutral tools but, on the contrary, a site of values, whose technological configurations involve a balance of power or an orientation that favours one type of action over other possible actions. Technological structures are not neutral. The process of innovation being carried forward by these activists is a matter of transforming the relationship between users and the world of technology (Bencheikh, 1986; Jouët, 1987). As soon as we start thinking of technology as a culture (Simondon, 1958), the way the world of technology is represented becomes essentially political, and thus capable of provoking significant changes in the wider field of social values (Lessig, 2001).

Can these new representations of the culture of technology help to establish new spaces for citizen involvement in the public sphere (Feenberg, 2004)? These projects for cooperation in information technology bring changing values to the world of technology which the major proprietary industries would like us to accept passively. More radically, Cardon and Granjon (2003) have noted that some politicized techno-activists are presenting themselves as a militant counter-culture blending the collective production of software, the use of technological mastery and digital guerrilla actions against institutions. These activists are opening up a new space for collective action and actively proposing a broad model of participation where developers and users are joint participants in the collective production of common benefits in technology and information. We postulate that the construction of such a new public space around technology could form part of an empowerment of citizens. As our earliest research showed us with regard to debates about the culture of free software, the practices of activists in the world of technology are a source of social innovation, especially in terms of the collaborative practices being introduced in the way they organize their work.

Innovations in information technology cooperation

The code activists are also acting politically when they experiment with new forms of collaboration in the way they organize their work of production. The analysis of these collaborative practices has shown that these models of

action and involvement do not appear to be standardized or stable. As in some scientific communities, numerous controversies – with regard to the relationship between the uses of technology and the organization of work – appear to animate the activities of these groups. Some code authors take the view that these practices of ‘opening up the structures of technology’ are merely an indicator of technological success, while others consider that they represent a measure of democracy. The search for consensus within these groups of activists shows that the practical aim of cooperation in information technology is provoking an unprecedented debate around subjects such as decentralization of technological activities, procedural governance and collective management of learning.

4 Conclusion: two conflicting models of the information society

These social movements around the appropriation of digital technologies have a key role to play in establishing an alternative to the dominant vision of the future as defined in terms of a ‘global information society’. The discourse constantly heard for nearly 30 years now concerning the apparently inevitable arrival of an ‘information society’ has helped to trivialize this rhetoric and gradually to establish in the popular imagination something close to certainty about this great and irreversible step towards the ‘information society’ (Proulx, 2007). This kind of discourse has been appropriated by the majority of spokespersons for national governments and international organizations, as well as by the major electronic entertainment, information technology and telecommunications industries. Its critics have shown clearly that this rhetoric went along with the prevailing model of neo-liberalism and calls for globalization (Mattelart, 2003). This representation of a ‘global information society’ has become the dominant ‘top-down’ model used to describe the future of Western societies.

The activities of the activist groups described in our study, on the other hand, are helping to establish an alternative representation of the future information society. This is a ‘bottom-up’ model, presaging the rise of a network of ‘information-sharing societies’ (Ambrosi et al., 2005) in opposition to the unitary vision of an information society seen in terms of globalizing multinationals. This alternative ideological direction found expression in particular in Tunis in December 2005, at the last World Summit on the Information Society. This vision gives expression to the ‘organized civil society’ position taken by what the economist Eli Noam has called the ‘third wave of Internet leaders’ (Noam, 2005), who are more politicized than those of the first wave (the founders: members of the armed forces, university academics and hackers) or of the second wave

(supporters of internet marketing, 1995). This alternative image of an information society, identifying itself with 'information-sharing societies' is based on the social promotion of practices of exchanging and sharing knowledge originating from many different societies, and asserting their cultural diversity in a context of cosmopolitics (Beck, 2006).

Notes

- 1 This article draws on two public lectures given by the author, the first at the MEOTIC Symposium held in Grenoble on 7–8 March 2007; the second in the context of an ANR research project coordinated by Françoise Bernard and Robert-Vincent Joule, at a working group meeting in Aix-en-Provence on 6 December 2007. A more complete presentation of the results of this research programme is to be found in the book edited by Proulx, Couture and Rueff (2008). The programme was funded by the *Conseil de recherches en sciences humaines du Canada* (CRSH).
- 2 In a heterarchical network, competencies and leadership are freely circulated in response to demand and need. There are no dominant leaders imposing their authority across all areas. Each member of the network is called on to take a temporary leadership role at a given and provisional moment when another member of the network requires his advice, services or competencies. Authority is based in particular on cognitive competencies and competencies in communication. In this ideal type represented by the metaphor of heterarchy, no hierarchical structure is imposed on the dynamics of communication between the members of the network. Communication and understanding are freely *distributed*. (Proulx, 2001).

Translation by Jean Morris

References

- Aguiton, C. and Cardon, D. (2006) 'L'équipement technologique des débats altermondialistes', in S. Proulx, L. Poissant and M. Sénéca (eds) *Communautés virtuelles: penser et agir en réseau*, pp. 335–49. Quebec: Presses de l'Université Laval.
- Aigrain, P. (2005) *Cause Commune. L'information entre bien commun et propriété*. Paris: Fayard.
- Ambrosi, A., Pimienta, D. and Peugeot, V. (2005) 'Vers des sociétés de savoirs partagés', in A. Ambrosi and V. Peugeot (eds) *Enjeux de mots. Regards multiculturels sur les sociétés de l'information*. Caen: C&F Éditions.
- Auray, N. (2005) 'Le sens du juste dans un noyau d'experts: Debian et le puritanisme civique', in S. Proulx, F. Massit-Folléa and B. Conein (eds) *Internet, une utopie limitée. Nouvelles régulations, nouvelles solidarités*, pp. 71–94. Quebec: Presses de l'Université Laval.
- Barnsley, J. and Ellis, D. (1992) *La recherche en vue de stratégies de changement. Guide de recherche-action pour les groupes communautaires*. Vancouver: Women's Research Center.
- Beck, U. (2006) *Qu'est-ce que le cosmopolitisme?* Paris: Alto Aubier.
- Bencheikh, T. (1986) 'Construit social et innovation technologique', *Sociologie du travail*, 28(1): 41–57.
- Bijker, W. and Law, J. (eds) (1992) *Shaping Technology/Building Society: Studies in Sociotechnical Change*. Cambridge: The MIT Press.

- Blondeau, O. and Latrive, F. (eds) (2000) *Libres enfants du savoir numérique*. Paris: L'Éclat.
- Boltanski, L. and Chiapello, E. (1999) *Le nouvel esprit du capitalisme*. Paris: Gallimard.
- Brand, R. (2005) 'The citizen-innovator', *The Public Sector Innovation Journal* 10(1): 1–11.
- Callon, M. (1981) 'Pour une sociologie des controverses technologiques', *Fundamenta Scientiae* 12(4): 381–99.
- Cardon, D. (2005) 'L'innovation par l'usage', online at Vécam, URL: www.vecam.org/edm/article.php3?id_article=137
- Cardon, D. and Granjon, F. (2003) 'Les mobilisations informationnelles dans le mouvement altermondialiste', International Symposium *Les mobilisations altermondialistes*, Paris, URL: www.afsp.msh-paris.fr/activite/sei/collsei231003.html
- Castells, M. (2001) *The Internet Galaxy*. Oxford: Oxford University Press.
- Certeau, M. de (1980) *L'invention du quotidien, tome 1: Arts de faire*. Paris: UGE, Collection 10/18.
- Conein, B. and Delsalle, S. (2005) 'Le logiciel libre comme communauté de connaissance: normes épistémiques et normes sociales', in S. Proulx, F. Massit-Folléa and B. Conein (eds) *Internet, une utopie limitée. Nouvelles régulations, nouvelles solidarités*, pp. 39–69. Quebec: Presses de l'Université Laval.
- Dallaire, M. (2002) *Cadre de collaboration en approches participatives en recherche. Recension d'écrits*, Chaire Approches communautaires et inégalité de santé, FCRSS/IRSC, Université de Montréal, Montreal.
- D'Almeida, N., Griset, P. and Proulx, S. (2008) (eds) *Hermès*, No. 50: *Communiquer – innover: réseaux, dispositifs, territoires*. Paris: Éditions du CNRS.
- Doray, P., Goldenberg, A and Proulx, S. (2008) 'Du laboratoire à la communauté: organiser l'espace pour innover', *Hermès* No. 50. Paris: Editions du CNRS.
- Feenberg, A. (2004) *(Re)Penser la technique: Vers une technologie démocratique*. Paris: La Découverte/MAUSS.
- Fontan, J.-M. (1998) 'Innovation sociale et société civile québécoise', *Possibles* 22(3–4): 116–35.
- Ghosh, R.A. (ed.) (2005) *Code. Collaborative Ownership and the Digital Economy*. Cambridge: The MIT Press.
- Godbout, J.T. (2007) *Ce qui circule entre nous*. Paris: Seuil.
- Granjon, F. (2001) *L'Internet militant. Mouvement social et usages des réseaux télématiques*. Rennes: Apogée.
- Jouët, J. (1987) 'Le vécu de la technique. La télématique et la micro-informatique à domicile', *Réseaux* 25: 119–41.
- Latour, B. (2001) *L'espoir de Pandore. Pour une version réaliste de l'activité scientifique*, pp. 183–227. Paris: La Découverte.
- Lessig, L. (1999) *Code and Other Laws of Cyberspace*. New York: Basic Books.
- Lessig, L. (2001) *The Future of Ideas: The Fate of the Commons in a Connected World*. New York: Random House.
- Lessig, L. (2004) *Free Culture. The Nature and Future of Creativity*. New York: Penguin Press.
- Loader, B. (1998) *Cyberspace Divide. Equality, Agency and Policy in the Information Society*. London: Routledge.
- Mattelart, A. (2003) *Histoire de la société de l'information* (deuxième édition). Paris: La Découverte.
- Moody, G. (2001) *Rebel Code. Inside Linux and the Open Source Revolution*. New York: Perseus Publishing.

- Neff, G. and Stark, D. (2003) 'Permanently Beta: Responsive Organization in the Internet Era', in H. Philip and S. Jones (eds) *Society On Line: The Internet in Control*, pp. 173–88. Thousand Oaks, CA: Sage.
- Noam, E. (2005) 'The Internet's Third Wave', *Financial Times*, New York, 28 November.
- Oudshoorn, N. and Pinch, T. (eds) (2003) *How Users Matter: The Co-Construction of Users and Technologies*. Cambridge: MIT Press.
- Perriault, J. (1989) *Logique de l'usage*. Paris: Flammarion.
- Powell, A. (2006) *Île sans fil as a digital formation*. Final Report – Pratiques collaboratives, LabCMO, UQAM, 20 July 2006.
- Proulx, S. (2001) 'Usages de l'Internet: la "pensée-réseaux" et l'appropriation d'une culture numérique' in E. Guichard (ed.) *Comprendre les usages de l'Internet*, pp. 139–45. Paris: Éditions Rue d'Ulm/Presses de l'École Normale Supérieure.
- Proulx, S. (2007) 'Interroger la métaphore d'une société de l'information: horizon et limites d'une utopie', *Communication & Langages* 152: 107–24.
- Proulx, S., Couture, S. and Rueff, J. (2008) (eds) *L'action communautaire québécoise à l'ère numérique*. Quebec: Presses de l'Université du Québec.
- Proulx, S., Rueff, J. and Lecomte, N. (2007) 'La redéfinition du tiers secteur québécois à l'aune du militantisme technique', *Hermès* No. 47, pp. 107–14. Paris: CNRS.
- Rogers, E. (1995) *Diffusion of Innovations*, 4th edn. New York: Free Press.
- Simondon, G. (1958) *Du mode d'existence des objets techniques*. Paris: Aubier.
- Tuomi, I. (2002) *Networks of Innovation. Change and Meaning in the Age of Internet*. Oxford: Oxford University Press.
- Von Hippel, E. (2001) 'Innovation by User Communities: Learning from Open Source Software', *Sloan Management Review*, Juillet 2001.
- Von Hippel, E. (2005) *Democratizing Innovation*. Cambridge: MIT Press.
- Weber, S. (2004) *The Success of Open Source*. Cambridge: Harvard University Press.

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