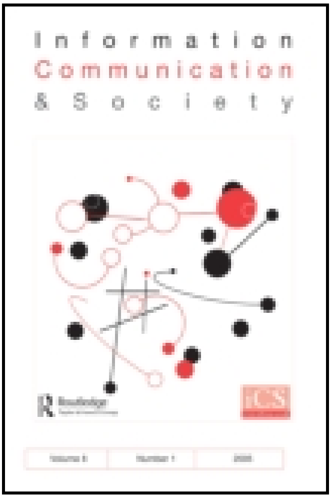

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PRIVACY AS A COMMON GOOD IN THE DIGITAL WORLD

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Abstract

This article seeks to broaden our understanding of online privacy in three ways: first, by drawing out the differences between the physical world and the digital world as those differences affect privacy; second, by exploring how the concept of the 'commons' might help us to understand social and economic relationships in cyberspace; and third, by analysing two contrasting views of privacy: privacy as a private or individual good and privacy as a common good. In order to analyse similarities and differences in privacy in the physical world and the online world, each is assessed in three ways: the obvious level of privacy available; the possibility of modifying that level of privacy to create or choose more or less privacy for one-self; and the degree to which the, prior or contemporaneous, privacy decisions of others affect the amount of privacy that is available to all. Applying an analysis based on the 'tragedy of the commons', the article concludes that at least part of cyberspace can be conceived as a 'commons' and that personal information flows could be considered a 'common pool resource' within that commons. Based on the likely calculations that individuals and organizations will make about collection and uses of personal information, the article next evaluates what would be the most effective policy approach to ensure that the common pool resource of personal information is not overused and degraded. The article concludes that a policy approach of providing individuals with a private means, either through property rights or some means of redressing their grievances, is unlikely to provide an effective means of protecting the common pool resource of personal information. A policy approach that acknowledges the common good basis of privacy and views personal information as a common pool resource provides an alternative view of the policy problems and offers suggestions in terms of rules and institutions that may be effective in addressing those problems.

Keywords

privacy, commons, cyberspace, Internet

INTRODUCTION

Initially images of a frontier dominated writings about cyberspace and served to cultivate a romantic and individualistic spirit: no fences, no laws, and no government. Members of a 'virtual community' (Rheingold 1993) would develop among themselves the norms and customs necessary for civil society in

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cyberspace. However, as the Internet has become a more heterogeneous space and increasingly a more commercial space, the notion of a 'virtual community' has failed to resonate. Instead, we are confronted with contrasting images: a place where race, gender, ethnicity and income have no relevance or a stratified environment in which options are presented based on who you are and what you've consumed in the past; a place where information flows freely or where every bit of data can be commodified; a civil society where old norms of behaviour are cherished and new ones developed or a Hobbesian state where flames are thrown and chaos prevails. Which of these images endures will depend upon public policy decisions: will decisions, for example, be made through market settings with maximization of profit as the goal or will those decisions be tempered by some government involvement to ensure the public welfare?

One of the most vexing issues in developing both social and economic activities in cyberspace is privacy. Internet service providers and companies considering electronic commerce worry that people will not transact business at their sites because privacy will not be protected. Public opinion data and public behaviour support this fear. How privacy gets constructed in our images of cyberspace is likely to be a critical factor not only in the purchase of a paradigm for cyberspace, but also in the success of the digital world. Much of our thinking about online privacy has been shaped by images and problems that date to the transition from a paper environment to a computerized one. Discussions from this era highlighted privacy rights, systems of records, data subjects and organizational responsibilities. Do these concepts resonate in the new online world? Do the policy solutions fashioned for an earlier period still address the problems of the online world?

This article seeks to broaden our understanding of online privacy in three ways: first, by drawing out the differences between the physical world and the digital world as those difference affect privacy; second, by exploring how the concept of the 'commons' might help us to understand social and economic relationships in cyberspace; and third, by analysing two contrasting views of privacy: privacy as a private or individual good and privacy as a common good.

PHYSICAL SPACE AND CYBERSPACE

The physical world allows us to construct a range of more or less public and private places: crowded streets, enclosed malls, cars with tinted windows, apartments with thin walls, gated mansions. The range is intuitively familiar to all. People who live in small apartments with neighbours nearby on four sides know that their ability to establish a boundary between themselves and others –

often used as a definition if not critical component of privacy – is physically limited. They can see concretely those limitations. By seeing those limitations, they can act accordingly. In cyberspace, there are not clear visual cues about the level of privacy available. In fact, many newcomers initially assume that all of their activities in cyberspace are basically private if no one in physical space is observing them as they use their computers. Unless they have been made aware of the fact that 'clickstream data' or 'mouse droppings' leave 'electronic footprints' that become a detailed digital record, they would not intuitively realize this was occurring.

In physical space, tangible limitations and possibilities have affected the course of legal thinking about privacy. In the Supreme Court's landmark Fourth Amendment ruling in *Katz v. United States* (389 US 347), Justice Harlan developed a general formula to determine whether an investigative technique conflicts with the Fourth Amendment: 'first that a person have exhibited an actual (subjective) expectation of privacy and, second, that the expectation be one that society is prepared to recognize as 'reasonable' (*Katz* 361). Notions of legitimate or reasonable expectations of privacy can thus be viewed as turning on these two criteria: the individual conveying a sense that she expects privacy and society recognizing in some way that such a sense of privacy is appropriate under those conditions. A question remains as to whether these criteria are useful in crafting privacy protections in cyberspace.

In order to analyse similarities and differences in privacy in the physical world and the online world, each world will be assessed in three ways: the obvious level of privacy available; the possibility of modifying that level of privacy to create or choose more or less privacy for oneself; and third, the degree to which the, prior or contemporaneous, privacy decisions of others affect the amount of privacy that is available to all. This analysis will help to lay the groundwork for the discussion in the next section of the 'commons' in cyberspace.

Physical space

Physical space gives us visual cues about the level of privacy that is naturally available and provides other physical options if we wish to raise or lower that level of privacy. Consider the public space of a mall, for example. Access to a mall is low-cost. It is easy to use, requiring no specialized prior knowledge. Generally, maps are provided, often supplemented by information kiosks. A person can grasp rather quickly the level of privacy that is available in the mall generally and in particular corners (if there are any). Some obvious limitations on privacy present themselves – there may also be covert ones, such as video surveillance, but for the moment assume that there are no non-obvious limitations on privacy. Within those obvious limitations, one can create different privacy levels as one wishes. If one is satisfied with the existing privacy level, one just proceeds. If one wishes to be more public and less private, one can wear a nametag or some identifying outfit that will give cues about that person's identity, and/or one can make all purchases with a credit card thus compiling a transaction record. If one wishes to create more privacy, one can arrive by public transportation, disguise oneself in some way, shop at odd times, create random patterns of movement and/or use cash for all purchases.

Two points are important to establish at this point. First, physical space allows us to discern the obvious privacy level available and provides us options if we wish to raise or lower that level. Second, if one or several individuals establish a higher privacy level, by dressing as Muslim women for example, that does not immediately affect others' ability to establish their level of privacy. Similarly, if some establish a lower level of privacy for themselves that will not affect others' ability to establish boundaries. Relatively speaking, the comparative levels of privacy may differ depending on the mix of people and privacy levels that populate a mall at any one time, but the range of possible privacy levels will remain constant.

Let us now consider how the ability to establish privacy in the physical space of a mall changes as some surreptitious surveillance is introduced. This could be undercover security guards or video surveillance. This second scenario makes it more difficult, but not impossible, both to discern the privacy level available and to act to establish a different privacy level. The contours of the physical space have changed in ways that are not immediately obvious. Marx discusses how widespread surveillance, both overt and covert, has become and how it has spawned a 'culture of surveillance', as is well illustrated by the lyrics from Sting's 'Every Breath You Take' (Marx 1996: 200).

Every breath you take [breath analyzer]
Every move you make [motion detector]
Every bond you break [polygraph]
Every step you take [electronic monitoring]

Every single day [continuous monitoring]
Every word you say [bus, wiretaps, mikes]
Every night you stay [light amplifier]

Every vow you break [voice stress analysis]

Every smile you fake [brain wave analysis]
Every claim you stake [computer matching]

I'll be watching you [video]

In 'gated communities', entry to different parts of physical space requires going through checkpoints where entrance and exit are recorded. These communities exist in residential, workplace and academic settings. The increased security brought about in these communities is gained by some loss of privacy in the sense of being able to move through physical space anonymously. These 'gated communities' constitute fairly complete surveillance systems. These systems, however, do not exist without the knowledge of the individuals moving through them. Most of these systems require some card identification or biometric identification as one enters the community or moves from one part to another within it. The individual then has no subjective 'expectation' of privacy in such a system, although within society more broadly there may be some resistance to the growth of such systems. Social norms may regard these systems as legitimate or reasonable where security concerns warrant them, such as a bank or police station, but may reject a more wholesale adoption of such a surveillance system. Public opinion responses with respect to tracking and monitoring of vehicle movement in Intelligent Transportation Systems (ITS) indicate that the public would resist such total surveillance systems (Regan *et al.* 1996)

With the introduction of some surveillance mechanisms, has or is one's ability to establish a level of privacy affected by the privacy decisions of others? If the mall management's decision to use surveillance is based on past experience with misbehaviour resulting from those who set high privacy levels then other's future ability to set privacy has been compromised. Security or liability concerns may be generated by behaviour resulting from privacy levels set by other individuals. In this way, then, privacy decisions move from decisions that only affect that individual's privacy to decisions that affect the amount of privacy that is available to others. In somewhat the same way that abuses of the environment affect the amount of clean air or water available to others, abuses of privacy by some affect the amount of privacy available commonly. Once surveillance is introduced the amount of privacy commonly available decreases and the cues about one's physical space are compromised.

The relationship between past behaviour of individuals as a cause of current surveillance may well be too simplistic. The concept of a 'risk society' (Beck 1992; Ericson and Haggerty 1997) sheds more light on the dynamic that is actually driving the interest in the actions and transactions of all individuals and the increase in surveillance throughout society. In a 'risk society', every institution with which an individual deals collects information about that individual and her activities. This information is assessed in comparison to profiles of 'trustworthy' and 'untrustworthy', or 'good' or 'bad', in order to determine how the institution should structure its dealings with that individual. Ericson and Haggerty describe the logic as follows: 'Risk society operates within a negative logic that focuses on fears and the social distribution of 'bads'. Collective fear and foreboding underpin the value system of the unsafe society, perpetuate insecurity, and feed demands for more knowledge of risk' (Ericson and Haggerty 1997: 449). The risk society requires surveillance as a way of managing risk. But surveillance creates an unquenchable thirst for more and more information about the risks that exist generally and the risks posed by particular individuals. The knowledge produced by the surveillance systems does not result in a sense of security or trust, but produces instead new uncertainties leading to more surveillance and collection of information. Again to quote Ericson and Haggerty: '[t]he problem is that they [the police] are constantly faced with imperfection in rules, formats, and technologies, which gives rise to both a sense of failure and a renewed sense that more such devices will work where fewer have not' (Ericson and Haggerty 1997: 296). Given this logic, the prior actions of individuals bear little responsibility for surveillance systems and their concomitant privacy invasions.

Cyberspace

There are no visual cues signalling what information about actions and transactions is being captured. The automatic capturing of 'clickstream' data is not obvious to the user. The rules of the cyber-road are not clearly posted. As a result, 'the electronic wilderness [is] a land of perpetual sunlight for the persona' (Mell 1996: 1). One commentator referred to being on the Internet as 'like being a movie theater without a view of the other seats . . . [where] masses of silent, shuffling consumers who register their presence only by the fact of a turnstile-like 'hit' upon each web page they visit . . . ' (Zittrain 1997: 2)

There are a number of ways in which information may be captured as one surfs the Internet. First, each site that a user visits obtains the user's Internet protocol (IP) address. The IP address is the unique address that a user has when connected to the Internet. It locates that computer on the Internet. Although the IP address may not yield personally identifiable information, it does allow tracking of Internet movements from a particular computer. Second, 'cookies' can be placed on the user's hard drive so that a website can determine a user's prior activities at that website when the user returns. This transactional information reveals not only what pages the user viewed but also how the user arrived at the website and where the user went on departure. A user can set up her browser to warn her every time a cookie is about to be stored in her computer. This enables a user to see the contents of a cookie before the computer accepts it. Doing this slows down surfing on the web; the costs of monitoring cookies are borne by the user. A user also can read the cookie file on the hard drive and can delete the cookies that are stored there. Some sites require users to accept cookies, so if a user has deleted a cookie file a new file will be created on the next visit to the site. Third, a new online tracking device, known as 'web bugs', is increasingly being used by Internet marketing companies and others. A web bug is a graphics embedded in a web page or e-mail message that monitors who is reading the page or message. Pharmatrak, a Boston technology firm tracking Internet use for pharmaceutical companies, is using web bugs to track consumers' activity at websites of eleven pharmaceutical companies. This tracking is occurring without any notice to consumers and future plans indicate that information gleaned from the web bugs may be used to identify individuals (O'Harrow 2000). In a statement to the Congressional Privacy Caucus, a computer security expert stated that in January 2000, about 2,000 'web bugs' were in use on the web and that five months later the number increased to 27,000 (Smith 2000).

Because of the non-obvious nature of cyber-tracking, some visual cues about when and how tracking occurs may be necessary in order to make cyberspace somewhat more comparable to what people have become accustomed to in physical space. This is most commonly being done through the posting of 'privacy notices' or 'information practice statements' on websites. In order to be effective as a visual cue, these statements need to be prominently displayed preferably on the home page and any other page where information is gathered. Although more websites are posting such notices (US Federal Trade Commission 1998; Culnan 1999), the quality of these notices in terms of the completeness of information revealed varies enormously.

Although such notices have the potential of providing visual cues in cyberspace, they are less effective than visual cues in the physical world. Modifying one's privacy environment in cyberspace requires more time, attention and effort than it does in physical space. First, people do need to go through extra steps to find and read the notices. This slows down their online experience. Rather than just reading the article in *The New York Times* or purchasing the book from Amazon.com, people have to go through additional steps to figure out the privacy environment. They then have to make a judgment about whether that environment is compatible with their privacy preferences. If it is not, then they have to go through steps to change that environment to better suit their preferences or leave that website and go elsewhere. Second, the notices may set defaults in ways that are not obvious. For example, on the registration page for *The New York Times on the Web*, the e-mail preference options ('Yes, send me e-mail for new features, events, special coverage, and special offers from advertisers') are already clicked on; people who do not want those e-mails have to click them off. In effect, the default here is set at a low level of privacy preferences. Third, it is not intuitively obvious that the websites are doing what they say they are doing. Since much of the action online takes place behind the computer screen, users cannot easily tell what a company is doing with the information it has collected. Enforcing standards or auditing practices are beyond the ability of the user. Some websites have registered with third parties, such as TRUSTe and BBB*OnLine*, which verify the practices of the website.

Cyberspace does provide options for anonymity and pseudonymity. For example, one can use 'anonymous remailers' to send messages or one can open multiple accounts with Internet service providers and use different identities to mask cyberspace movements. Opportunities for anonymity and pseudonymity may be more possible in cyberspace than physical space, but only if one takes the time to find out how to use the necessary technology and/or organizational practices, and takes the effort to implement what is necessary either automatically or for certain information or communications. As with disabling or monitoring cookies, there are costs in terms of time and effort that the individual bears. Encryption of messages in cyberspace is also a technical possibility, but the costs of encryption are carried by the individual. Additionally current public policies make encryption more difficult than many privacy advocates and private companies think is appropriate.

The above analysis has demonstrated that the level of privacy in cyberspace is not obvious and that it is difficult at best to modify that level of privacy for oneself. Finally then, the question of whether the privacy decisions of others affect the amount of privacy available to all. Experiences with anonymity and pseudonymity seem to indicate that there is some distrust associated with such decisions. If people use anonymity, for example, to engage in socially disapproved activities, this would likely result in curtailment of the conditions under which one can be anonymous or pseudonymous. The debates in the USA with regard to encryption also lend support to the conclusion that privacy decisions of others affect the privacy available to all in that assumptions are made that encryption would be used primarily by criminals and terrorists. Furthermore, the dynamic of the risk society has been transferred to cyberspace consequently making uniform the privacy level available to all. Three features of cyberspace have provided fertile ground for the easy transference of the risk society and its concomitant surveillance activities to the digital world: first, the natural organizational imperative for more and more information about the individuals with whom they deal; second, the uncertainty presented in a faceless universe; and third, several features of the technical architecture of the networks in cyberspace.

THE 'COMMONS' AND CYBERSPACE

The concept of the 'tragedy of the commons' (Hardin 1968) has provided a powerful way of understanding the results of individual decisions about natural resources. If each individual pursues his or her individual interest, tragedy results because the quality and quantity of the commons decreases. Much of the subsequent work on the commons has focused on environmental decisions: air pollution, fisheries, grazing lands, forests. The 'environment' is viewed as a 'commons' and natural resources are viewed as 'common pool resources' (Ostrom 1990). In this section, two questions will be explored: can cyberspace be viewed as a 'commons' and can personal information be viewed as a 'common pool resource'. This analysis will lead to the discussion in the next section about whether privacy in cyberspace is a private good or a common good or both.

Cyberspace as a 'commons'

'The commons' is an unregulated area that all who wish can use. Access is unrestricted, but there is a limit on how many people can use it and/or how much they can use it without either degrading it or forming co-operative agreements about its use. Each commons has a carrying capacity, the maximum amount of use it can support. At the most fundamental level, the 'commons' in cyberspace is the network architecture. This architecture includes computer and communications hardware, software and equipment and software standards. Although parts of the network architecture may be owned or controlled by private organizations, no one firm owns a controlling amount and much of the network architecture is publicly owned. Technology, market forces, laws and norms all play a role in the existence, possibility of, and conception of spaces in cyberspace. For many Internet explorers, access is gained through commercial Internet service providers. 'Portals' and 'megasites' condition the Internet experience.

Market and technology forces combine to create 'privatized' spaces where access may be restricted but where actions and transactions of individuals are monitored. In response to such privatization, proposals to legally and/or technically create 'public spaces' on the Internet have been offered (Kline 1996;

Gey 1998; Goldstone 1998). Some Internet 'zoning' seems inevitable to many observers (Lessig 1996). If cyberspace were to be zoned so that all spaces were private and entry were restricted, then it would not be possible for a commons to develop. But if, as seems more likely, there are spaces where entry is open to all, even if a private server is required to reach that space, then a commons becomes architecturally or technically possible.

Cyberspace is not just a technical space but also a social space. In this sense, the commons is the larger setting or context in which communities can flourish. To help to understand this context, the notion of 'cyber-reach' may be helpful. This term describes cyberspace's ability to extend the reach of an individual voice beyond that of what is possible in physical space. Cyber-reach can refer, in effect, to the commons. Many can participate, many can listen, a large participatory 'marketplace of ideas' may result. The suggestion of 'building a commons' in cyberspace has been introduced in the debates about intellectual property online from those concerned about maintaining the free flow of ideas. Lessig, among others, advocates an 'intellectual commons' rather than a 'propertization of ideas' that is likely to result if notions of property dominate (Lessig, 1999).

Although a 'commons' is not a community, a 'commons' in cyberspace will develop only if certain basic rules of civility are followed. If not, cyberspace will become chaotic.[1] Social protocols (Valauskas 1996) are as important as technical standards and protocols in the development of a commons. Cyber- or net-etiquette flourishes in large parts of cyberspace. Spamming and flaming, for example, are not tolerated by other users of the commons and abusers are often ostracized. The key question becomes how to provide incentives so that people in cyberspace 'cooperate' rather than act in their own individual self-interest. As Hardin (1968) and Olson (1965) pointed out, there is often tension between individual and collective rationality. Individual rationality may lead to outcomes that are not optimal for the collective. Whereas Hardin's (1968) commons was a pastureland, the Usenet commons is bandwidth, a key common resource that when abused or overused by some individuals decreases in value for all individuals. Kollock and Smith (1994) applied the notion of social dilemmas in the 'commons' to activities in Usenet, a portion of cyberspace organized in a decentralized manner and comprised of several thousand discussion groups. They envision the conversational 'floor' of a newsgroup as a 'commons'.

PERSONAL INFORMATION AS A 'COMMON POOL RESOURCE'

The concept of an information 'ecosystem' helps to reveal questions of ownership of information as well as the interconnectedness of information activities. In discussions about ownership of personal information, many make the argument that individuals do not legally or technically 'own' information about themselves. Some posit that the 'ownership' of such information is shared for example by a person making a purchase or inquiry and by the company or organization involved in the transaction (Singleton 1998: 15). It is also possible that no one 'owns' the information in much the same way that no one owns the air or stream water. This may be especially true for information about what we do in a public or monitored space. Information about what people do or are in that space may be commonly accessible and similar information about others' activities are similarly available in that space. This may then begin to create a flow of personal information events and exchanges that increases as activities leave traditional 'private' areas and enter areas of a more mixed public-private nature.

Ostrom (1990: 30) uses the term 'common pool resource' to refer to 'a natural or man-made resource system that is sufficiently large as to make it costly (but not impossible) to exclude potential beneficiaries from obtaining benefits from its use'.[2] Acknowledging that some confusion has developed in the usage and definitions of common pool resource, Ostrom *et al*. (2002) identify three features: its availability to more than one person; its difficulty in excluding users; and its being subject to degradation as a result of overuse. In order to determine whether personal information might be viewed as a common pool resource, each of these features will be examined.

The flow of information about personal movements and transactions in both the physical world and the digital world similarly can be viewed as resulting in a resource system that a number of organizations or individuals can 'appropriate' and use for their benefit. In common pool resource systems, a number of appropriators can simultaneously or sequentially appropriate resource units but the resource units cannot be jointly appropriated. As Ostrom (1990: 31) points out: 'The fish harvested by one boat are not there for someone else. The water spread on one farmer's fields cannot be spread onto someone else's fields. Thus, the resource units are not jointly used, but the resource system is subject to joint use'. These resource units are considered to be rivalous goods. Information, however, is generally considered to be a non-rivalous good in that one person's consumption does not reduce the amount available to other people (Varian 1998). The resource system of personal information can be used jointly and particular units can be used jointly. For example, if one organization records the fact that an individual made a certain transaction or action another organization may similarly be able to record that fact. This would then distinguish information from other, especially tangible, resource units.

The question of joint use brings us to the next feature of a common pool resource – the difficulty in excluding users. In some systems, the nature of the good makes it difficult to exclude – such as air, world peace and public radio. These are considered to be 'public goods' in that they can be used by many simultaneously and the cost of excluding users would be prohibitive. For other goods, the critical feature regarding excluding users turns not on the nature of the good but on legal and policy decisions regarding use. Flows of personal information on the Internet, at this time and in most countries, are not subject to exclusionary rules. There are some sites that require passwords for entry but the majority of sites permit users entry and capture, through cookies and web bugs, personal information about individuals' activities at that site as well as their previous browsing activities.

Finally, the question of degradation of a common pool resource must be examined. Most resource systems in the natural world – fishes, herds, air – can be renewed if care is taken that the rate of appropriation does not exceed the rate of renewal. Continuing this analogy to the pool of personal information, the quality of information needs to be renewed in order to retain the value of the flow. Incomplete, inaccurate and/or outdated information will not be of benefit. The quality of the flow in the resource system as a whole is of interest to all potential appropriators and improvements in that flow benefit all. But multiple parties can use and reuse and manipulate personal information, which may well result in overuse of the information. Overuse may entail costs. People may come to resent or distrust this market in secondary uses of personal information, as public opinion surveys indicate. The value of that information to one information appropriator may be compromised by its use by another appropriator. At the same time, the interests of the appropriator of the information far outweigh any interest that the subject of the information has. The subject is not even a party to the subsequent information manipulation and exchange. The subject has been divested of any role once the flow of personally identifiable information starts to move. Technological advances in physical space began this trend; technological advances in cyberspace exacerbate it.

Laudon (1996: 104) similarly draws a picture of current information exchanges that he refers to as 'a polluted, even toxic, information environment' where 'there is more unsolicited invasion of privacy than is tolerable, socially efficient, or politically wise'. As more of our consumer and leisure activities become mediated by communications and information technologies, this allows the collection of information about every transaction leading to what Mosco (1989) in another context termed the 'pay-per society'. Such transaction-generated information (TGI) allows more customization of products and services, and may enable organizations to establish better (more profitable) relationships with customers and clients. Previously discrete and often anonymous transactions become opportunities for organizations to collect information and assemble a profile, as is exemplified by frequent-shopper programmes (Samarajiva 1997). As more and more TGI is collected and exchanged, this information becomes a commodity and information brokers, especially direct marketers, dominate the landscape.

THE NATURE OF PRIVACY IN CYBERSPACE: PRIVATE GOOD OR COMMON GOOD

Are technology and market forces in cyberspace making it harder for one person to protect the privacy of his or her personal information without others having a similar level? Do people share a 'common future' with respect to privacy? If people give up their privacy or abuse their privacy or if organizations entice individuals to give up privacy through some incentive system, then will there ultimately be less privacy? Does the action of one deplete the capability of others to create privacy?

If we assume for the moment that at least part of cyberspace can be conceived as a 'commons' and that personal information flows could be considered a 'common pool resource' within that commons, then what options exist to protect this resource from overuse and degradation? Before evaluating the effectiveness of two approaches that have roots in philosophical conceptions of privacy, it may be helpful to examine the incentive systems for individuals surfing the web or engaging in electronic commerce and the incentives of organizations seeking to appropriate the flow of information about those transactions. Specifically, it is important to discern whether these incentive systems protect the common pool resource of personal information from overuse or degradation. For purposes of this analysis, privacy is used somewhat interchangeably with protecting personal information, which is consistent with the dominant definition of information privacy.

Individual calculus

In modelling individual decision-making, rationality is often assumed. Although this may not accurately capture reality, it does provide a basis from which one can make adjustments. It provides a logical starting point for the analysis. From this vantage, adjustments can be made and the reasoning for them explicated. For example, Simon's (1976) concept of 'bonded rationality' and 'satisficing' behaviour acknowledges that individuals' time and knowledge are limited resulting in less than rational, but quite adaptive, behaviour. It is expected that individuals making privacy choices about the flow of their personal information will likewise engage in 'satisficing'.

Privacy choices are generally hidden transactions costs associated with a consumer or communication transaction. For example, one purchases a product online or visits a website and a record of that purchase or that visit is recorded as transactional information. That information can then be further used by the organization or resold. From the individual's perspective, however, the primary activity engaged in is the transaction, not the recording of the transaction. It is the recording of the transaction that triggers the need or opportunity to make a choice about privacy. Similarly, one initiates an electronic communication of financial information with one's broker. But, without a concomitant choice about who may have access and for what purposes, one may leave the privacy of the information vulnerable. Again, from the individual's perspective, the primary activity is the communication of substantive financial information with the broker. The fact that the communication occurs online, however, triggers the need or opportunity to make a choice about the information's privacy.

Under such conditions, individuals are not likely to restrict the flow or overuse of personal information. One can assume that as the privacy choices become more separable from the initial consumer or communication choice, the more rational an individual will be about that choice. There are some instances in physical space where individuals are given choices about privacy under conditions that are not directly tied to other market decisions. For example, data about those with unlisted phone numbers, alternative driver licence numbers and registrations with mail preference services can be used to gauge behaviour when offered privacy choices. In these instances, the privacy choice might be viewed as increasing costs, in terms of time and opportunity. Public opinion data, anecdotal evidence and direct observation reveal that most people do not avail themselves of these opportunities. In part, this occurs because there are additional costs embedded in the decision to protect privacy. Having an unlisted phone number, for example, protects one from unwanted calls but also makes it more difficult for those with good intentions to call. It would appear then that individuals have not acted consciously and rationally with respect to privacy.

Organizational calculus

Organizations, public, private or non-profit, all process information and all regard information as a resource (Cyert and March 1963; Deutsch 1963; Steinbruner 1974). In this sense, organizations are going to seek to maintain control over the flow of information to the organization, inside the organization, and outside the organization. Variations in how much control is possible will depend upon some factors internal to the organization (e.g. culture, style, tradition, technological sophistication) and some external to the organization (e.g. legal requirements, competition, consumer/client preferences). Computer and telecommunications systems increase exponentially the information processing capabilities of an organization. Storage capacity, speed in retrieving data, ability to manipulate information, and ease of transmission are all increased. The costs of processing and producing information, primarily in terms of time and personnel, are reduced. The value of information itself is increased. Complex programmes involving the manipulation of huge quantities of data can be performed as easily as routine procedures. Not only is there more extensive use of the information itself, but also new information is created through sorting, comparing, and integrating data.

With respect to personally identifiable information, this means that the organizational logic will be to collect as much information as conceivable, reuse that information where possible, and exchange that information where profitable. 'Dataveillance' (Clarke 1988), 'data mining' (Bigus 1996) and 'panoptic sort' (Gandy 1993) are terms that capture such organizational logic. The information privacy problems that have resulted from these practices are well-documented (Rothfeder 1992; Branscomb 1994). Absent other organizational values (reputation, customer/client satisfaction), the logic of the organizational calculus will be fundamentally privacy invasive.

If we assume that these calculations hold true for many individuals and organizations, then what would be the most effective policy approach to ensure that the common pool resource of personal information is not overused and degraded? Although there are numerous specific policy options, two broad approaches, both based in liberal political philosophy, to protecting the privacy of personal information are explored below. In each case, the focus is on analysing the effectiveness of the approach for protecting personal information as a common pool resource.

PRIVATE GOOD

The private good view of privacy is one that is dominant as it has its roots in traditional liberal thinking. This view defines privacy in terms of the rights of individuals, specifically the right to control information about oneself (Westin 1967). In the USA as well as other democratic countries (Flaherty 1989; Bennett 1992), concrete meaning for information privacy was provided by the Code of Fair Information Practices (US Department of Health, Education and Welfare 1973). The Code gives individuals the means (notice, access, consent, correction) by which they can act to protect their privacy and iterates organizational responsibilities (assure reliability and prevent misuse) in collecting and using personally identifiable information. Countries differ in enforcement and implementation frameworks. In some instances in the USA, the Code of Fair Information Practices is contained in statutes, e.g. Privacy Act of 1974 and Video Privacy Protection Act of 1988. In other instances, for example direct marketing, there is no statutory basis. European countries rely less on individual initiative and more on regulation and sanctions for organizations.

At this point, especially in the USA, there appears to be a reluctance to legislate privacy protections in cyberspace and a preference for making options and choices available to individuals (Regan 1995; Schwartz and Reidenberg 1996; Agre and Rotenberg 1997; Cate 1997). Consistent with a liberal philosophical view of privacy and with private sector preferences for self-regulation and market forces, current policy proposals for online privacy highlight self-regulation and notions of individual choice and control (US Office of the President 1997; US Federal Trade Commission 1997; US Department of Commerce 1997). The idea is that individuals and organizations will be able to engage in a process of negotiations with other individuals and organizations to establish the level of privacy that they believe necessary to conduct their activities. Technical and administrative protections would be set by means of a contractual relationship.

But the way the 'market' in personal information is currently constructed, the individual who wishes to control or restrict her flow of personal information bears the burden and cost. The collectors of, and traders in, personal information are advantaged by the current market. Some have suggested that individuals be given property rights with respect to the flow of information. Laudon proposes a National Information Market 'in which information about individuals is bought and sold at a market clearing price freely arrived at, in which supply equals demand' (Laudon 1996: 99). The scheme he develops is somewhat cumbersome. But his basic arguments that privacy invasions are the results of market failures and that administrative solutions to rectify disparities between individuals and organizations have also failed are quite sound.

Mell develops a somewhat different concept of a property interest in privacy. She argues that:

> On the electronic frontier, however, the individual's privacy can be reduced to a 'possession' and alienated from the real person when the personal information file is disclosed to a third party. Once stored electronically, these two aspects of personal information – the privacy of the individual and the nature of the file as a commodity – become inseparable.
>
> (Mell 1996: 29)

She concludes that the resulting electronic persona is 'owned' by the individual; the identifiability of the persona makes it property. She suggests a legislative scheme that would provide authorities for disclosure and/or licenses to disclose that would bind information compilers in their compilations and reuses of electronic personae. Her concept of an 'electronic persona' captures the notion of a flow of personal information occurring in a common space.

If individuals were given some property rights in their personal information, others have countered that 'social costs' may increase in that the ability to conceal identity may create a disincentive to cooperate and encourage socially irresponsible behaviour (Johnson 1994; Singleton 1998). Such a view is found in Posner's (1978) analysis of privacy. Posner acknowledges that a right to privacy could be used as 'a right to misrepresent one's character'. He argues that people might wish to 'manipulate the world around them by selective disclosure of facts about themselves' and that 'others have a legitimate interest in unmasking this misrepresentation'. If those who have 'guilty secrets' were given privacy rights, this would 'reduce the social product' (Posner 1978: 20–5). Posner's rule-utilitarian view of privacy supports a careful calculation of costs and benefits in each instance where privacy of information is at issue.

If one accepts the view that privacy is used by individuals to shield certain aspects of their lives and extends that view to cyberspace, the result would then be that such personal control or choice would result in an overall increase in the cost of online activities. But the opposite may more likely occur. Abuses of privacy may have already created a cost in that public opinion surveys indicate that people are afraid of compromising their privacy on the Internet and hence are limiting Internet activity. Additionally, anecdotal evidence indicates that, in the current information environment, people misrepresent themselves or give erroneous information in order to protect their privacy or because they feel that the request for information is unwarranted. If the social norms support the view that this is 'none of your business', then there are no disincentives to lie. For example, if one logs on to a website that requests demographic information, misrepresenting your age and income will not be obvious and may well meet with social approval, but it will decrease the value of the information that the website has collected.

COMMON GOOD

The common good view of privacy has received somewhat less explicit attention but still has roots in traditional liberal thinking. I have argued elsewhere that privacy is not only of value to the individual but also to society in general in three respects (Regan 1995). Privacy is a *common value* in that all individuals value some degree of privacy and have some common perceptions about privacy. Privacy also is a *public value* in that it has value not just to the individual as an individual or to all individuals in common but also to the democratic political system. Finally, privacy is rapidly becoming a *collective value* in that technology and market forces are making it hard for any one person to have privacy without all persons having a similar minimum level of privacy. In discussions about protecting personal information as a common pool resource, each of these social values of privacy is relevant.

A common value basis for privacy in cyberspace would exist if people valued privacy and had common perceptions about its importance. Although legal rules and organizational practices may not provide protection for privacy in cyberspace, people do expect and value some level of privacy. As Nissenbaum (1997) similarly argues, there are norms of privacy that guide both our behaviour and our expectations. Practices that do not comply with those norms will not receive social acceptance even if they are technically and legally possible. The common value of privacy derives in large part from a moral argument that privacy is intrinsically valuable as part of human dignity and autonomy. This concept of a common value is similar to Rule's concept of 'aesthetic privacy' (Rule 1980: 22) and Bennett's 'humanistic dimension' of privacy (Bennett 1992: 23). If cyberspace is to develop in ways hospitable to human dignity and autonomy, then privacy will be essential. Public opinion surveys and anecdotal evidence support the common value of privacy in cyberspace (Harris and Associates 1997).

The public value of privacy is related to the significance of privacy for the democratic political system. A public value of privacy is derived from, first, its importance to the exercise of rights that are regarded as essential to democracy, for example freedom of speech and association; second, its importance as a restraint on the arbitrary power of government; and third, its importance in the development of commonality that is necessary to unite a political community (Regan 1995: 226). Almost all commentators believe that the Internet has the potential to impact the democratic political process in a positive way. Discussions of public problems and possible solutions and of candidates in elections can take place electronically with possibly more ease than in physical space. Barriers of time and opportunity costs are less when people can go online as they like. However, people are unlikely to engage in online political discourse if they believe that their words are being monitored even if only for administrative purposes. The 'chilling effect' of surveillance will obviate a robust 'marketplace of ideas' in cyberspace. Protection of privacy in cyberspace will constitute a public value.

The argument that privacy is a collective value is most closely associated with the proposition that personal information can be viewed as a common pool resource. Experience in the environmental policy areas demonstrates that individual actors are generally not effective in protecting a common pool resource. Individuals, motivated by their self-interest, use such resources as they desire and with the assumption that others will behave similarly. The problem then is how to get all users to restrain themselves to sustain the resource (Ostrom *et al*. 2002: ch. 1). The current online collection, manipulation and exchange of information similarly illustrates the negative impacts that result when the common pool resource of personal information is overused and its value to any one user is curtailed by other users.

These negative impacts can be seen as falling into three categories. First, the common pool resource system is *overloaded* in that more personal information is collected driving up the costs to subjects and users. Second, the common pool resource system is *polluted* in that inaccurate, irrelevant and out-of-date information contaminates the resource pool. Finally, the common pool resource system is *over-harvested* as more and more users take similar pieces of information from the pool and reduce the value of that information for any one user. When the resource system becomes degraded in these ways, the delivery of a range of public services, such as health care and public safety, are compromised, as well as the vitality of commercial services.

If privacy is viewed not as a private good but as a common good with the goal of protecting personal information as a common pool resource, then the policy question becomes how to mould individual and organizational actions so that social benefits and social costs are taken into account. What rules and social arrangements are necessary to achieve this end? In answering this, characteristics of the resource system of personal information need to be taken into account. The system is part of a larger complex of commercial and service systems involving public, private and non-profit actors. It is a broad impact system in that all individuals and organizations are part of the system. And, it is a global not a local system. These characteristics reflect a large, diverse group with weak community ties and few shared norms – a type of system that is unlikely to be able to devise and monitor its own rules (Ostrom *et al.* 2002: ch. 13). Ostrom (1990) suggests that under these conditions there are several principles that should be taken into account in designing rules and institutions to produce desired effects. These include: support by higher authorities in applying sanctions; establishment of clear definitions regarding access to the resource system; establishment of clear boundaries; participation by resource users in devising rules; creation of graduated sanctions for offenders; and low-cost conflict resolution mechanisms.

CONCLUSION

The policy approach of providing individuals with a private means, either through property rights or some means of redressing their grievances, is unlikely to provide an effective means of protecting the common pool resource of personal information. Given the individual calculation, people are less likely to make choices to protect their privacy unless these choices are relatively easy, obvious, and low cost. If a privacy protection choice entails additional steps, most rational people will not take those steps. This appears logically to be true and to be supported by behaviour in the physical world. The organizational calculation is to be privacy invasive; information about people is a resource and an organization will collect as much as it can unless internal or external costs become too high. Organizations are unlikely to act unilaterally to make their practices less privacy invasive. Such a decision is unlikely to affect their customer or client base in a major way and will impose costs on them that are not imposed on their competitors. Overall then, the privacy level available is less than what the norms of society and the stated preferences of people require.

In cyberspace, the logic will continue to hold. Unless choices are easy, obvious and low cost, people will go with the default and the default in cyberspace is privacy invasive. Choices built into the network architecture, such as P3P, that would make privacy choices easy, routine and transparent would change the logic and make the network more privacy protective. But if a privacy protective choice requires individuals to slow down their online activities and/or requires additional steps in those activities, the individual is unlikely to initiate that choice. A choice to allow personal information to be collected requires no steps. No choice means less privacy for that individual but that does not comport with what we know about privacy preferences. As in the physical world, the overall level of privacy available online is less than what the norms of society and the stated preferences of people require.

Relying on individual decisions to protect privacy in a context where organizational logic pushes so aggressively in the opposite direction will result in less privacy than would be optimal from a collective standpoint. This is even more true when the organizational logic is embedded in a social logic of avoiding risk by monitoring and profiling individuals. When individuals mistrust the personal information practices of an organization and when the organization responds by increasing its information collection and surveillance practices, a 'spiral of mistrust' (Samarajiva, 1997: 284) begins. Not only is there less privacy in this risk society, there is also less trust. The social costs, then, are high.

A policy approach that acknowledges the common good basis of privacy and views personal information as a common pool resource provides an alternative view of the policy problems and offers suggestions in terms of rules and institutions that may be effective in addressing those problems. Viewing the issue of online privacy as a common pool resource provides a different entry point to defining the problem and crafting policy solutions. Since the 1960s, information privacy has been defined largely in terms of individuals and solutions crafted in terms of giving individuals choices. Approaching the issue from the common pool resource perspective helps to identify new possibilities for solving the problems posed by personal information collection and use.

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NOTES

1 The 'commons' is something quite distinct from a 'community'. Community encompasses the notion of 'shared': shared values and norms, shared experiences, shared identification as a member. There are subsets of communities in cyberspace. One of the best known and enduring is the WELL (Whole Earth 'Lectronic Link), a computer conferencing system that allows people to communicate publicly in various forums and to communicate through e-mail. The culture and sub-cultures of the WELL have been chronicled in many places (for example, Rheingold 1993). There are also numerous smaller and somewhat transient communities that are conceived around issues, problems, or shared interests.

2 Much of the research and analysis regarding common pool resources has focused on natural research. However, there is increasing interest in applying this concept to man-made systems. For example, Turner (1993: 3) applies the concept of the 'commons' to distributed artificial intelligence (DAI) systems and postulates that 'common pool resources' that DAI agents might share include: power obtained from a slowly-recharging refuelling point; information from an external sensor; message traffic of a shared communication channel; or cycles, memory or disk space on a shared processor.

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