

Regulating the use of personal Information and Communications Technologies

The widespread use of personal information and communications technologies (pICTs), such as mobile phones and digital cameras, challenges existing norms and rules around individual behaviour and freedom. Through two case studies this study will explore the policy and innovation issues that arise around use of pICTs, and the processes shaping the emergence of new formal and informal regulations governing use in public and private places.

pICTs are the focus of considerable consumer and industry interest following the recent success of the mobile phone, and individual ownership of these technologies is one of the most important factors shaping the development of the 'Information Society'. Industry places great emphasis on the creation of new and more sophisticated devices. Constant availability for personal communication is becoming accepted as normal. However this widespread use of pICTs raises important questions of control of use that may challenge growing expectations of freedom of use. Technological innovations that enter the mass market require the development of formal and informal rules and norms of use, as social and individual practice evolves. This societal appropriation process is shaped by consumer behaviour, corporate technical and investment decisions, and decision-making within a wide range of governmental and non-governmental institutions which find their domains of influence or responsibility 'invaded' by technologies.

Use of these technologies can transgress norms and rules of individual behaviour in public and private places (Meyrowitz 2005). These real or perceived threats to commercial, social, or technical order are leading to the implementation of technical and social mechanisms to limit them. While there has been a great deal of work on use of these technologies in social interactions and workplace settings, there is little research into formal restrictions of use. It is important to investigate how and why choices are being made to introduce control, how they are received by the public, who is making these decisions, and how they feed back into future innovation and use of personal technologies.

The successful adoption and diffusion of new technologies depends how they are governed. A conservative and limiting regime can stifle both innovation and its social and economic benefits, a libertarian one could create anxieties, disputes and conflicts. Decision makers have to balance a variety of factors, and be sensitive to changing social norms when setting policy and introducing new technical configurations. This research will inform decision makers' thinking in governmental, NGO and commercial organisations as they are faced with a public with use of increasingly sophisticated technologies.

Aims and Objectives

The general aim of this research is to advance our understanding of the ubiquitous use of pICTS, and governance of their potentially transgressive use in public and private places. The specific objectives are to:

1. Carry out an empirical investigation of the formal and informal rule making processes around use of pICTs in a variety of governance contexts, through i) a literature review and ii) two detailed case studies of formal and informal regulation of pICTs, and a limited user study.
2. Through discussion with decision makers and academics, explore the policy and strategy implications of these processes, and produce guidance on policy and strategy.
3. Carry out an initial exploration of the implications for innovation and technology development and use,
4. Develop an agenda for further research into the social control of ICT use.

Context

Personal technologies such as cameras, video cameras and music players have always been subject to social controls, and controversies have arisen more recently over use of mobile phones, laptops and portable computer memory. This is likely to increase significantly. Multimedia capabilities have now been implemented in convenient and cheap systems, enabling individuals to use them anywhere, anytime, and for many reasons. (e.g. as an aid to memory, to share and communicate images, sounds and ideas, etc.) Many devices are now multi-functional, making it difficult to distinguish use of one function from another, leading to blanket bans on device use. It becomes hard for those given responsibility to enforce rules to decide what is legitimate, and to interpret the capabilities and uses of many different devices.

While certain limitations on the use of phones and cameras in some locations such as courtrooms are generally accepted (Sherriff 2004), other places are likely to be more controversial, as are the methods used to control them. Many retailers forbid photography, there are restrictions on the use of mobile devices in hospitals, petrol stations, aeroplanes and schools, often without 'good', or at least unambiguous reasons. The Government has issued guidelines warning of the risks to children of camera phones, and schools are trying to limit pICT use based on a range of factors from classroom disruption to 'mobile bullying' and Happy Slapping. Cinemas ban video recording and attempts are being made to make this a criminal offence. In France, regulators have permitted jamming of mobile phone calls in cinemas (BBC News 2004) though elsewhere this is illegal. Personal imaging, recording and transmission will prove especially controversial in a world where Intellectual Property Rights (IPR) on music and images is strongly enforced. Debate over the rights of individuals to make personal broadcasts and copies of many privatised public images such as football matches, advertisements, concerts, and images of other people will certainly increase.

Despite increasing restrictions many people expect to be allowed to be constantly connected and free to use these devices. Vendors and service operators have ambitious business plans such as mobile TV, based on visions of people using pICTs in ever more

situations. Researchers are conceiving increasingly sophisticated ways to integrate pICTs into everyday life that challenge the concept of private and public spaces and relations even more, e.g. (Brown, Chalmers et al. 2005). Devices are expected to be 'context aware' and react automatically to the environment. Increased use of location and tracking technologies that require personal devices to be constantly on, and the adoption of RFID tagging on will create more difficulties.

However, in many situations no restrictions on technology development or use are being introduced. Contrary decisions are being taken by different organisations trying to balance the demands and freedoms of individuals with a range of positive and negative consequences. Widespread use of pICTs may have to be accepted, and catered for, social norms and technical functions may evolve to satisfy users and location controllers, but legal frameworks rules and enforcements mechanisms will develop too.

Research Agendas

The investigation of potentially transgressive use of pICTs and their regulation, encompasses a variety of analytic concerns, including: 1) Innovation studies, in particular domestication of technologies by a society, and the role of social shaping and social learning in co-evolution of technology and social practice; 2) Social and cultural studies, examining the boundary between public and private space and the changing expectations of individual liberty to communicate, record and access information anywhere, and 3) Policy, examining the role of public policy and regulation, corporate tactics and technical innovation in shaping the freedom to use technologies and the ability to control their use.

Domestication of technologies and social learning

The general goal of the study is to improve our understanding of the integration of technology into society. This is achieved though exploring innovation at a number of levels, not only technical, but in terms of changes in social behaviour and norms, formal governance, the creation of new forms of economic and social activities, and subtle changes and challenges to existing activities. The *social shaping of technology* perspective (Williams and Edge 1996) sees innovation occurring not only with commercial actors promoting particular systems, but involving many other actors who often act as intermediaries between technology promoters and the general public. *Social learning* processes occur when these actors engage with each other around technologies (Sørensen 1996; Williams, Stewart et al. 2005), learning how a technology may affect them, and how to engage with new actors and publics. The *domestication* perspective (Silverstone, Hirsch et al. 1992) (Lie and Sorensen 1997) emphasises the role of end users in innovation as they integrate the technology into their everyday lives, be it though formal organisational mechanisms or informal social processes. The *circuit of culture* approach (du Gay, Hall et al. 1997) highlights the role of feedback between the appropriation and innovation processes in the success of a technology such as the Walkman. One question is important: in open markets for standardised products sold to individuals, how are the interests of public and private institutions integrated into this circuit?

In the case of mass market adoption of technology, there is a drawn out process of societal appropriation, as practice, norms and rules evolve and shape each generation of new technology (Stewart and Williams 1998). While the adoption and use of ICTs in organisations, the household and social interactions is well documented (Kopomaa 1999; Ling 1999; Haddon 2001; Haddon, Gournay et al. 2001; Laurier 2001; Fortunati 2002; Kaseniemi and Rautiainen 2002; Katz and Aakhus 2002; Ling and Yttri 2002; Puro 2002; Rule 2002; Taylor 2002), less attention has been paid to the way that organisations and controllers of public and private places cope with voluntary adoption of pICTs by their employees, customers and users. Control of the use of ICTs through social mechanisms is commonly observed within families, groups of friends, the workplace, and in public spaces such as cybercafes (Vitalari, Venkatesh et al. 1985; Livingstone 1992; Silverstone, Hirsch et al. 1992; Silverstone and Hirsch 1992; Berg and Aune 1993; Frissen 1994; Haddon 1994; Mick and Fournier 1995; Nippert-Eng 1995; Aune 1996; Lie and Sorensen 1997; Gournay and Mercier 1998; Livingstone and Bovill 1999; Stewart 2002; Laegran and Stewart 2003). However these rules and norms are constantly changing and previously transgressive behaviour becomes normalised. Widespread adoption of new practices can challenge existing rules, or make them appear outdated.

Personal technologies, freedoms and control in contested spaces

pICTs give individuals the ability to record and transmit information, consult databases and communicate with distant people and machines. They are arguably the basis of a society that is increasingly organised in terms of personal networks made possible by time and distance spanning technologies (Castells 1996) (Wellman 2001) challenging the primacy of physical 'place' (Moore 2004) and the status of the geographical local (Meyrowitz 2005). This raises many issues around intellectual property protection, privacy, social and community action that challenge the existing legal, security and cultural status quo. The response of many stakeholders has been to control and limit individuals' use of these technologies, especially within privately-controlled locations.

One feature of many contemporary 'semi-public' or 'pseudo-public' places (Mitchell 1995) is that they are increasingly under private control (Crawford 1992; Wrigley and Lowe 2002), giving rise to 'Mall Law', such as the banning of 'hoodies', prompting a debate over 'privatisation' of public space. However, this privatisation is not only institutional, but is a result of individuals seeking to assert and advertise their private activities, for example, by using personal stereos (Bull 2001), or having personal conversations on mobile phones (Wellman 2001), activities that appear to transgress the social norms of public behaviour (Jaurèguiberry 1998; Wei and Leung 1999; Persson 2001; Douglas 2002; Humphreys 2003; Itu 2003) (Höflich 2005). The etiquette around this sort of behaviour is changing rapidly and often very culturally specific, as the boundary between appropriate and inappropriate behaviour and technology is reconstructed (Douglas 2002) and "rules of distraction" are renegotiated (Meyrowitz 2005). This often involves pressure to limit pICT use. Even in places such as company meeting rooms and University lecture theatres, decisions have to be made over appropriate behaviour, with policies such as laptop 'lids shut' to enforce local participation. In some debates personal use is not only seen not merely as asserting private/personal activities, but as withdrawing from active social or political participation

in the public sphere. The debate over public space as a political concept is challenged by the emergence of new forms of ‘virtual’ spaces, and leads to a rethinking of the construction of a public-private dichotomy.

The introduction of pICTs raises questions about the rights of those who control public or private spaces to limit the freedoms of those who use them, and how the contract is formed and enforced. We need to consider how and why rules are being created and enforced within a pluralistic governance system. A range of approaches can already be identified: a desire to protect users from themselves, such as the school banning iPods (Orlowski 2005); maintaining the social atmosphere of a particular place, such as cafes turning off wifi hotspots at weekends (Nuttall 2005); enforcement of social norms that are not respected by a minority, e.g. banning phones in cinemas and train carriages, or jamming signals in churches (The Register 2004); protecting the vulnerable, such as banning cameras in schools and swimming pools (ISRM 2003); protecting other technical systems, such as hospital or aircraft equipment; protecting private commercial interests, in particular IPR; controlling employees activities with regard to information security (Samsung and Motorola restrict use of their own products) or personal use of time (Grant and Kiesler 2001)); or to protect a broadly defined ‘public order’. Behind this can be detected motives such as a desire satisfy the majority of customers or etiquette-conforming users (Goffman 1963), or fear of litigation, where risk of harm to those using controlled places and resultant liability to prosecution leads to pre-emptive restrictions. In truly public places there is the increasingly common practice of use of mobile phones to coordinate community action, e.g. flash-mobs, or for political manifestations, as seen at the WTO riots, and a number of popular revolutions (Rafael 2003).

Regulation, Policy and Innovation

This broad process of societal appropriation opens up a range of issues relevant to policy practice, as well as in theoretical debates. A number of types of rule-making responses are already visible, using legal, technical and social mechanisms to enforce decisions. This rule-making is shaped by the national and local cultural and policy environments. A range of policy agendas and governance frameworks will be influential, such as the degree of autonomy of local decision-making units, the degree of market liberalisation, and market concentration, and the power of specific legislation e.g. re. gender and disability. A key issue is the privatisation of public space, and ability of those who control those spaces to make pre-emptive rules in the face of fear of litigation in the face of user resistance. However rule-making seldom remains localised, and the process of establishing these constraints may open up decisions to scrutiny and debate involving a range of actors, and passing responsibility for decisions and enforcement to other governance levels.

As well as the environment shaping social or legal rules, technologies can be changed to reflect or subvert the concerns of users and rule-makers. pICTs evolve in response to markets, regulators and innovation, so we can also look for the responses of vendors to these rules in the way they configure their products (e.g. the introduction of audible warnings on Korean camera phones to deter ‘up-skirt photography’ on trains (CNET Asia staff 2003) and consumer/user innovation and resistance to limitations being placed on

the use of their new-found technological facilities (e.g. development of mobile phone systems for aeroplanes, or silent mode on mobile phones). The degree to which products and services are based on global standards, or can be configured for local contexts will have an important influence on the type of control mechanism that can be introduced, and the power of different organisations to shape the technology itself, through direct influence, or via the market.

Research Questions

This project will tackle four questions:

1. How is the use of pICTs creating situations where propriety, safety, privacy, intellectual property or some other factor is perceived as being challenged?
2. How and why and by whom are decisions to control pICT use made, and how are they enforced?
3. How do these ‘third party’ rule makers enter into the innovation loop, when the primary market relationship is between producers and end users?
4. What are the policy issues for various administrative and rule making bodies concerned with limiting or controlling pICT use?

Methods

Due to the short timescale of this project, this study will primarily generate empirical data in two cases of pICT regulation.

Objective 1:

Literature survey

The study will review a range of empirical and theoretical research literatures, drawing on political science, geography, cultural and technology studies, and innovation literature. News sources and online debates will be reviewed for examples of rule making and controversy covering a range of examples illustrated in Figure 1, and these will be verified and confirmed by selected interviews.

Case Studies

Two case studies will be chosen from four the initial typology of location class shown in Figure 1. Provisionally these will be: 1) Schools where a Scottish Local Authority has made the decision to ban camera phones, of interest because of the rich array of interests and technologies involved (BBC Scotland 2004) and 2) Control of pICTs in cinemas, primarily in the UK, (chosen partly because of the opportunity to compare UK outcomes with experiences in France and New York City where alternate control regimes have been implemented based on a technical solution, a legal solution and voluntary compliance with social norms). These will illuminate different aspects of research questions 3 and 4.

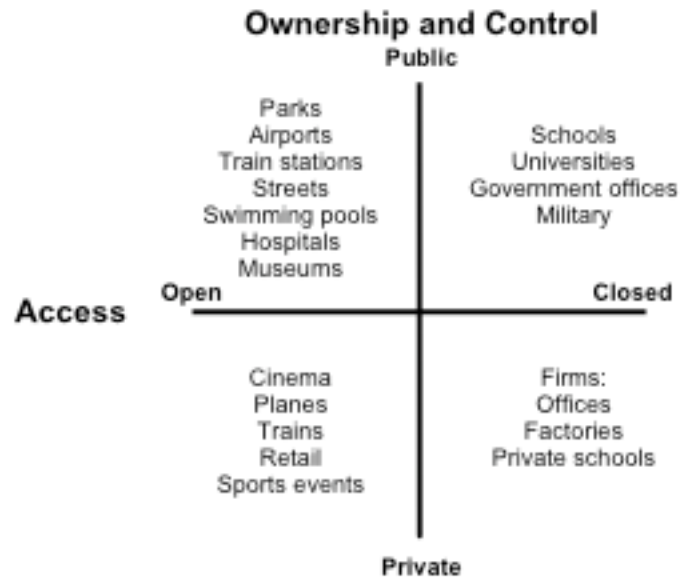


Figure 1 Typology of cases according to ownership and access

The cases will deploy multiple methods, gathering evidence from interviews, surveys and documents. Respondents will include licensing authorities, local decision makers, those responsible for implementation, end users, and other relevant parties, such as parents, technology providers etc. The cases will not only include those directly involved, but also technology companies and external advisory agencies that produce technical solutions and rule-making advice. Each case will include 15-20 interviews of varying length.

The interviews will investigate how and why rules have been introduced, or not, looking for pressure or perceived pressure from outside organisations and the public, the use of pICTs in these locations, how rules are enforced, how exceptions are made, debates and continuing tensions, trigger events, and the perceived evolution and future of these restrictions. Issues to be explored include the construction of pICTs and their users and uses, narrative and storytelling devices used, the sources of information and experience used in decision making and how rules are seen as reinforcing or undermining perceived norms of pICT use. It will also consider restrictions on personal media in the context of other rules and restrictions on individual behaviour in these locations.

User Survey

Within each location study a limited end user survey will be undertaken focusing on individuals' experiences of control over the use of pICTs, and expectations of fair use and mechanisms of control. This will be used to build up a picture of experiences of restrictions, expectations and knowledge of restrictions, and options as to whether these are justified. This will be a minor part of the study that could be extended in future research.

Objectives 2: Industry and Policy engagement

The study will be forward-looking in its final analysis, integrating current trends and future projections of technology capabilities and applications with a view towards

identifying new areas of contention. Potential users of the research in academic and non-academic circles will be engaged in discussion of the findings and exploring policy implications of the conclusions.

Objectives 4: Investigation of implications for innovation

As well as interviews with those directly involved in each case, the cases will be supplemented by interviews with representatives of around ten mobile phone operators, and device and system manufactures, and their representative trade bodies and regulators over their reactions and expectations of restrictions on pICTs.

The results will be disseminated to government organisations and NGOs. Through earlier research and in preparing this proposal links have been established with relevant organisations including Ofcom, the Institute for Sport and Recreation Management, the ITU, Local Authorities in Scotland, and firms such as Nokia, BT and Vodafone. Others organisations include civil liberties groups, local and national government and the Information Commissioner. Outputs will be a refereed journal article and two work-in-progress papers presented at international conferences.

Objective 4: Development of the research programme

This study emerges from a ten year programme of research that has investigated the way that new information technologies, particularly multimedia and mobile applications, emerge and are integrated into social and economic activities. Most recently this has included participation in an AHRB/EPSRC research network investigating the design and use of public 'non-places', and a studies with major European industry partners on the future of mobile communication and RFID tagging. I will be supported by a research board consisting of experienced academics in relevant fields,: Robin Williams, (RCSS, technology studies); Charles Raab (Politics, information policy and regulation), Eric Laurier (Geography), Andres Guadamuz (IT Law) who will aid in the analysis and dissemination of the results. This short project will be the basis of a future study of pICTs use and control, and their implications for understanding innovation processes..

Timetable

- 1-3 (Months) Literature Review.
- 4-5 Case study 1
- 6 Preliminary report; conference paper
- 7-9 Case Study 2; supplementary interviews.
- 10-12 Report finalised and circulated.

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