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Digital Rights Management and consumers' use of music: An activity theory perspective

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Abstract

This paper explores the many conflicts and contradictions between the control imposed by Digital Rights Management (DRM) systems and the level of access to online resources that users have come to expect (Jackson and Shah (2005). This paper forms part of an initial contribution to a project designed to gain a better understanding of how people, particularly consumers, actually use digital media. The project, which is being undertaken as part of the Smart Internet Technology Cooperative Research Centre in Australia will examine the social and legal issues surrounding DRM in different contexts. The overall objective of this project is to provide recommendations for the technical design of DRM systems, based on a user-centred design philosophy.

In this paper, we focus on the context of music access and use, and the increasingly prominent role that technologies such as the Internet plays in music consumers' activities. We explore the contradictions between DRM technologies and music consumers' behaviours, and describe how our study data will be further analysed using an activity theory lens. This research is being carried out as part of a wider investigation into media use and digital technologies that aims to develop guidelines for the user-centred design of new digital rights management systems (DRMs). This paper contributes to developing a better understanding of consumers' music listening behaviours and beliefs regarding the use of the Internet as a medium for accessing music.

INTRODUCTION

A DRM (digital rights management) is a technical system designed to protect and control access to, and use of, digital content such as music and video files, software, and e-books (Liu, Safavi-Naini and Sheppard 2001). DRMs are becoming more prominent, as the sale and use of digital media increases: witness, for example, the increase in legal music download services such as iTunes, which typically employ DRM technologies to protect the content being sold (IFPI 2005). Understanding the users' perspective regarding DRM technologies is important for ensuring that new DRM systems are met with approval rather than resistance. However, there is currently a scarcity of literature examining DRM issues from the users' (or consumers') perspective; most writing about DRM focuses on economic, legal, or technology issues (Liu et al. 2001; May 2003; Cook and Wang 2004).

As this paper will explore, there are currently many conflicts and contradictions between the controls imposed by DRM systems and the level of access to online resources that users have come to expect (see Jackson and Shah (2005)). This paper forms part of an initial contribution to a project designed to gain a better understanding of how people actually use digital media. The project, which is being undertaken as part of the Smart Internet Technologies Cooperative Research Centre (see ref), will examine the social issues surrounding DRM in different contexts. The overall objective of this project is to provide recommendations for the technical design of DRM systems, based on a user-centred design philosophy (see Singh, Zic, Satchell, Bartolo, Snare and Fabre 2004 for a discussion of user-centred design).

In this paper, we focus on the context of music access and use, and the increasingly prominent role that technologies such as the Internet plays in music consumers' activities. We explore music consumers' behaviours through an activity theory lens, based on qualitative data from pilot focus group discussions and individual interviews. The activity theory perspective allows us to explore the music experience, the complex relationships and the contradictions that occur within and between activities. This research is being carried out as part of a wider investigation into media use and digital technologies that aims to develop guidelines for the user-centred design of new digital rights management systems (DRMs).

consumption of music and new technologies: a recipricol shaping

We are currently witnessing some dramatic changes in the way both music consumers and recording industry bodies operate. Figuring prominently in these changes is the use of the Internet and other new technologies. This does not mean, however, that technologies alone are driving the changes. Rather, the technologies and music consumption activities are undergoing a 'reciprocal shaping' (Brosveet and Sorensen 2000). Reciprocal shaping refers to the idea that neither technology nor society are responsible for a one-way impact upon the other; rather, both are mutually constructed in an ongoing process of change.

As Beer (2005) noted in a recent essay on the digitalisation of music, it can be problematic to view the "relationship between technology and culture as being based upon the impact of one upon the other" (p.6). Rather than focusing on the impact that digital technologies have had upon music consumption, Beer recommended that sociological studies in this field address the question: "What … is the relationship between music and digital technologies and how can it best be described?" (p.6). Addressing this question is a first step towards understanding how DRM systems could be designed to support, rather than hinder, consumers' use of digital music. Our use of activity theory has been useful for describing the relationship between technologies and music use without isolating the technologies from other aspects of music consumers' activities.

The record industry fought long against the use of the Internet as a means of sharing and downloading music. Peer-to-peer file sharing is seen to have a negative impact on CD sales, leading the record industry to file lawsuits against peer-to-peer file-sharing networks and users (Glasner 2001; Hayes 2005). While illegal downloading and sharing of music online remains a problem that industry bodies are determined to quash, the industry has also begun to offer legal avenues for users to download, and pay for, music online. A recent report by IFIP discussed one example…

"A prominent example of a legal downloading site is the iTunes online music store, established by Apple in the US, which enables users to buy songs on a track-by-track basis for 99 US cents a song. Apple offers a relatively open DRM system to ensure that purchasers use the tracks in a way that meets the fair use exceptions in US copyright law" (2005) (see (Mulligan, Han and Burstein 2003) or discussion of fair use).

As downloading music through legal channels has become more popular amongst consumers, and in turn profitable for record companies, the changes are reverberating throughout the industry. The UK Top 40 singles chart has recently begun to include Internet sales in its calculations of the top-selling songs (Hanman 2005). Some artists, too, have begun embracing the Internet as a means of making their music available to the public. George Michael recently shunned profits and made his music available to his fans for free. Other less prominent artists have also been vocal in their support for free downloading and file-sharing on the Internet (Ian 2002). It has been suggested that the Internet could be a valuable way for independent musicians to market and sell their own music (Pfahl 2001). It is not clear, though, whether these artists' views can be ascribed to the impact of digital technologies on music or whether they are reactions to the way the music industry has operated in the past. Thus more investigation is needed as to the reciprocal shaping of the 'new era' music industry. The research presented in this paper focuses on better understanding consumers' views; however, further research into how artists view the Internet and DRM technologies is an important topic for future investigations to complement our current work.

It is important to examine DRM issues from the consumers' perspective, as well as from the point of view of industry bodies. The project we are conducting aims to address the concern that "future DRM system designers [should] better accommodate consumers' expectations of personal use" (Mulligan et al. 2003). This paper presents the early stages of a study on user perspectives of DRM, and it will help to inform the user-centred design of new DRM systems. To do this, we have adopted an activity theory lens to view the data.

METHODOLOGY

We conducted a qualitative study between October 2004 and July 2005. We chose the qualitative approach for we needed to understand the music experience from the users' perspective, rather than generalize what was already known. Once the different facets of the music experience were understood, these insights could be translated to a design of DRM systems in the Smart Internet Technology Cooperative Research Centre.[1]

[1] The Smart Internet Technology Cooperative Research Centre website is at http://www.smartinternet.com.au.

The study had at its centre the perspectives of user-centered design where the user's activities within their social and cultural context are at the centre of design (Vredenburg 1999; Singh et al. 2004). It was a 'grounded' study in that there was a fit between data and emerging theory, rather than a testing of hypotheses (Glaser and Strauss 1967) .

Our data is drawn from a qualitative study based on 23 people in Melbourne and Brisbane in Australia. They were between 18 and 44 years of age and thus a more diverse group than many studies (7 were between 18-24, 11 were between 25-34, 4 between 35-44, 1 unknown) There were 15 men and 8 women. All except two of the participants had university education or were currently university students. Except for four, the participants were all Anglo Celtic.

The people were accessed through personal and professional networks and through advertising on the university group mail. All of them had experience downloading music or were knowledgeable about DRM and copyright issues.

We conducted two focus groups, three group interviews and six one to one open-ended interviews. The interviews and focus groups were transcribed. We used N6, a computer program for qualitative analysis. This meant we first broadly coded the data, then organized the data into matrices to check emerging themes in a transparent manner. We also used the N6 program to identify negative cases so that the study was rigorous. As Morse and Richards (Morse and Richards 2002) say:

> *"The key to rigorous qualitative inquiry is the researcher's ability ... of being constantly aware and constantly asking analytic questions of data, which, in turn, constantly address the questions asked. Qualitative inquiry constantly challenges assumptions, constantly challenges the obvious, reveals the hidden and the overt, the implicit and the taken for granted, and shows these in a new light " (p. 170).*

We found that a variety of technologies and social practices were important in shaping our participants' experiences of listening to music. In addition, participants' experiences and beliefs surrounding music were characterised by contradictions. Below we provide a brief introduction to activity theory, which we are using to examine participants' music activities. We then discuss some of the contradictions that have become apparent in our analysis to date.

ACTIVITY THEORY: ACTIVITY SYSTEMS AND CONTRADICTIONS

In the past decade, interest has grown in the use of activity theory – a set of concepts derived from Marxist philosophy and Soviet psychology – as a grounding framework for human-computer interaction and information systems research (Hasan 2001). One of the reasons activity theory has become popular lies in its emphasis upon tools, including computer tools, as mediators of activity. Viewing technologies as mediators rather than objects of activity focuses attention on the activity and its context, not simply the interaction between the human and the computer. Thus, using an activity theory lens to understand how and why people download music online would involve examining the Internet as a mediating tool, and taking into consideration the broader activity in which the user is engaged: what the user's purpose is, why he or she has chosen to use the Internet over other possible tools, and whether the technology available has enabled the user to reach his or her goals.

Activity systems

The current widely accepted version of activity theory was put forward by Engestrom (1993) as an extension to Vygotsky's (1978) and Leont'ev's (1977) earlier work. It is beyond the scope of this paper to go into detail about the historical development of activity theory; instead, this paper will focus on Engestrom's notion of activities as social systems, and the idea that activities are characterised by contradictions, and resolving those contradictions evolves the activity.

In activity theory terms, activities are not single stand-alone events or tasks: they are social systems that involve communities of people and are embedded within particular social settings. This idea is typically illustrated by Engestrom's (1987) activity system triangle. Figure 1 shows an adaptation of Engestrom's model, giving examples from the activity system of consumers accessing and listening to music.

The subject in an activity can be either an "individual or subgroup whose agency is chosen as the point of view in the analysis" (Engestrom, 1993, p.67). The community consists of other people involved in achieving the objective (or object) of the activity. For example, the activity system of music consumption is driven by the objective of accessing and listening to music . The community involved in this activity might include friends and relatives, performing artists, radio broadcasters, DJs, and record companies who would each have a role to play – either directly or indirectly – in helping the music consumer achieve his or her objectives.

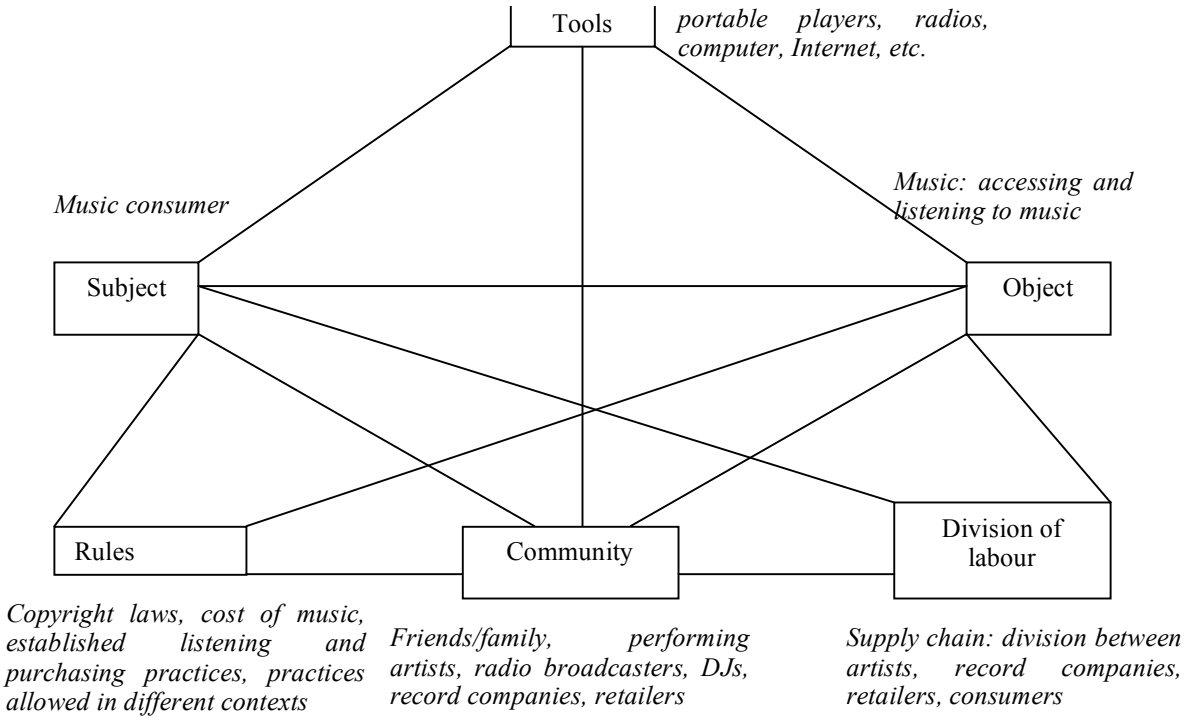

Figure 1 Music consumption activity system

The relationship between the subject and the community is mediated by the rules or regulations that govern the activity. These include both formal laws and procedures as well as more informal and implicit ways of doing things. To extend the music consumer example, the rules in this activity might include copyright laws, the cost of purchasing music, established practices for accessing and listening to music, and what practices are allowed by the available technologies and circumstances (e.g., listening to music on a stereo at home, on the radio in the car, and on the computer at work).

The relationship between the community and the objective is mediated by the division of labour. This refers to "both the horizontal division of tasks between the members of the community and to the vertical division of power and status." (Engestrom, 1993, p.67). In the music consumption activity there is a clear division of labour between four key groups, which can also be described as a supply chain. The content creators – for example, songwriters and musicians – write and perform the music. The content providers (e.g., record companies) "purchase the musical rights, identify and develop performing artists, record music in studios, manufacture and distribute the music, and advertise and promote music through various channels." (Premkumar, p. 90). The retailers stock and sell the music, while the consumers obviously purchase and listen to the music. There are other people involved in this activity too – broadcasters and DJs who play particular music, family and friends who might expose the consumer to other new music, and so on. There is also clearly a division of power and status between these groups: the record companies exert substantial power over the music industry. The development of the music consumption activity system will be influenced by this power balance: "Given the power structure in the industry, it is likely that record companies will influence the future distribution strategy by providing incentives or disincentives for customers to use one channel or the other." (Premkumar 2003). That large companies can influence new developments in such a way points to the reciprocal shaping of technology and society: the development and use of new technologies can be encouraged or thwarted by powerful social groups.

As this discussion has illustrated, activity systems are not stand-alone, but are interconnected with many other activity systems (see figure 1). This is what Kuutti has described as the "web of activities" (Kuutti, 1991, p.534). Conflicts between the objectives of these interconnected activities have been described by Engestrom (1993) as contradictions, which give rise to the development of the activity. The concept of contradictions is elaborated further below.

Contradictions

Contradictions occur within and between activities, and it is through the introduction and resolution of contradictions that activity systems evolve. Contradictions "manifest themselves as problems, ruptures, breakdowns, clashes" (Kuutti, 1996, p. 34). There are always contradictions in an activity system, and they are necessary, although disruptive, for the development of the activity.

Engestrom (1987) identified four types of contradictions. A *primary contradiction* is a "fundamental tension" in an activity system that manifests itself within each component of that system (Engestrom, 1993, p. 72). The activity of producing music could involve a contradiction between two conflicting motivations. The artist may wish to have a wide audience and may get some inherent satisfaction just from knowing that his music has been listened to, while at the same time if he is earning a living from making music he will want to capitalise on his work and ensure he receives all the royalties he is entitled to. Thus, while he may view file sharing over the Internet as beneficial to the first motivation, it could be detrimental to the second.

Secondary contradictions occur between two or more components in an activity system. For instance, a new tool introduced to an activity might conflict with the existing rules and regulations. An obvious example of this is the Internet as a new tool that can be used to access and share music; however, this tool clearly conflicts with copyright laws. The introduction of DRM systems represents an attempt to resolve this contradiction. However, DRM systems introduce a further contradiction, creating a conflict between the new tool (DRM technology) and existing personal use practices and expectations.

Tertiary contradictions represent a conflict between two forms of an activity – the existing activity and its *culturally more advanced form* (Engestrom 1987). This type of contradiction, then, involves some upheaval during the evolution of an activity system. An example can again be drawn from the changing activity of music consumption. With the use of technologies such as the Internet and the iPod, consumers can exercise more control over their music access and use, thereby becoming less dependent upon content providers and retailers, who typically stock only a small proportion of recorded music. This has led to some commentators predicting that the future of the entertainment industry lies in the profits it could get from Internet sales of music and movies that are not classified as "hits" (Anderson 2004). However, before a shift to this "culturally more advanced form" of the activity can occur, there will be many tensions and conflicts between the new form of the activity and older existing practices and beliefs; that is, the practices and beliefs surrounding the promotion and sale of "hits".

Finally, a *quaternary contradiction* exists between two different but interconnected activities. For example, co-existing activities may have conflicting objectives or rules and divisions of labour. Quaternary contradictions can be clearly seen in the co-existing activities of the music consumer, the content provider, and the artist. The artist may wish to use the Internet to provide free access to her music, thereby increasing her audience (see, for example, Ian 2002). Meanwhile, the content provider (or record company) who owns the music will want to limit free access in order to protect revenue. The consumer, on the other hand, may wish to download samples of free music to listen to it before committing to purchasing a whole CD (that is, to "try before you buy"). Thus, there are conflicts – or quaternary contradictions – between the objectives of the artist, the record company, and the consumer.

Examining contradictions enables the identification and classification of particular instances of change and development in an activity system. Analyses directed towards the identification of contradictions in an activity could enhance technology design and evaluation research in two ways. Firstly, by specifying the contradictions apparent in an activity system, researchers could identify possibilities for new tools that may help overcome those contradictions. Secondly, the introduction of a new tool would also modify the activity system, thus creating new contradictions between the different components in the system. Engestrom (1993, p. 72) argued that when a "novel" element is "injected" into an activity system it creates new contradictions which lead to further development of the activity system. Thus, research examining the impact of a new technology in a particular setting should include consideration of the contradictions in the activity system – both those contradictions that the new tool helps to resolve and the contradictions created by its use. Such contradictions could highlight other problematic aspects of the activity system that require intervention in order for the activity to continue to operate effectively and achieve its objectives. As such, our research will use the concept of contradictions to help understand and elucidate the problems at the heart of introducing DRM technologies into music consumer activities. In the following section, we discuss the contradictions observed in our study participants' music activities and reactions to DRM.

Contradictions in music listening activities

For participants in our study, listening to music was often an individual activity carried out through headphones attached to a computer or a portable device. Participants said they enjoyed personalising their music, organising the tracks according to their own lists, which was made possible with digital media (particularly with an iPod). They wanted their music, like other media, on demand. They listened to music on the radio, computer, television, CD player, or portable player, choosing the technologies they used depending on the context of use (for instance, listening to music on the radio in the car, through the computer at work, on the stereo at home, and through a portable device while in transit). In other words, participants made use of a number of technologies to ensure that music was usually available to them. Although listening to music was largely an individual activity, sharing music among friends was an important way for people to find out about new music. Certain technologies

made it easier to share music (for instance, by burning copies of CDs), although copying music was not seen to replace buying; rather it was viewed as a complementary activity (a way of finding out about new music so that people could be selective about what they bought). For some participants, the accessibility of the music made a difference to how they used technologies and shared music. For instance, one participant said her brother supplied her with music from Brazil in the form of a burnt CD. Another participant said he often purchased swing music for his DJ and teaching activities, and found the Internet to be the best place to find out about and purchase such specialist music. These findings are consistent with previous research: the use of technologies to support social practices surrounding music use has been documented in the literature (Brown, Sellen and Geelhoed 2001; McGee and Skageby 2004).

In general, participants in our study saw themselves as honest consumers: their role was to purchase the music and use it in a way they considered to be fair. Charlotte, a publishing manager, was particularly adamant in her belief that downloading music was theft; therefore she was only interested in using the Internet to access music "if there was a business model attached to it and there was a digital rights component with it".

However, when confronted with two examples of DRM policies (for the Australian BigPond and US iTunes sites), this participant said that restrictions over the number of times one could copy an item made DRM solutions unattractive, as it complicated the activity of accessing and listening to music. Thus, there was a primary contradiction in this participant's activity system: while she wanted to be able to download music legally and honestly (and therefore supported DRM in principle), she also felt that DRM systems complicated the activity of purchasing music.

There were similar contradictions in other participants' beliefs, too. Some participants went out of their way to purchase certain music legally, but were happy to deviate from their roles as honest consumers in other circumstances. For instance, Adam preferred to download, rather than purchase music he considered to be "mass-produced bubblegum music where the people involved aren't really serious about doing anything but making a whole heap of cash." In other words, there was a primary contradiction between this participant's belief that recording artists should be supported and his antagonism towards record companies and 'bubblegum music'.

Participants in the focus groups were shown two examples of DRM policies: from the Australian Bigpond site and the American iTunes site. In general, participants were less supportive of the Bigpond DRM statement, which was more restrictive than the iTunes policy. People were particularly concerned about the restriction that music purchased from the Bigpond site could only be downloaded in a certain file format This meant they could only play the music on the Windows Media Player through the computer and not, for example, on certain portable players such as the iPod. This was seen as an infringement upon what participants believed to be fair 'personal use'. They felt that if they purchased the music, they should then be able to play and listen to it in any format that suited them, so as not to limit where and when they could listen to the music. In other words, the technical restrictions placed on digital music did not correspond with what participants expected to be able to do with the music they purchased (Mulligan et al. 2003).

This was also a problem with the iTunes policy. Although this policy allowed a greater number of copies to be made and recognised that people would want to access their music on a number of devices, it also limited downloads to a particular file format: the music could only be played using Apple software. Although some participants (e.g., Adam and Alice) felt that this was okay because they approved of Apple software over Windows, there were others who felt that any such restriction was an infringement upon their personal rights.

There were also difficulties in comparing restrictions over the use of physical media (such as CDs) with restrictions over the use of electronic media. Participants felt they should be able to use music they had purchased over the Internet in much the same way they used a physical CD. With a physical CD they were able to copy it and play it on different devices. They wanted to be able to do the same with digital media: "[With DRM] I'm not really getting what I want, which is to have the music and be able to play it on all the devices that I own." (Carla). However, the use of CDs is, of course, restricted to devices that can be used to play CDs. As discussed above, one of the key features in our participants' use of music is that people made use of a variety of media and technologies to listen to music in different contexts. Restricting the technologies used for music access, then, would inhibit music consumption; this could be a possible outcome of particularly stringent DRM systems governing online music.

CONCLUSION: MOVING TOWARDS USER-CENTRED DESIGN OF DRM SYSTEMS

The research we have presented here, and our analysis of the data collected so far, is a work in progress. In this paper, we have used an activity theory lens to explore consumers' perspectives on DRM issues, and this has given us some insights that could be transformed into user-centred design recommendations. Our goal, as we continue this research, is to find ways of using this activity theory perspective to develop technology design guidelines.

This paper explores the many conflicts and contradictions between the control imposed by Digital Rights Management (DRM) systems and forms part of an initial contribution to a project designed to gain a better understanding of how people, particularly consumers, actually use digital media. The project overall examines the social and legal issues surrounding DRM in different contexts, however this paper brings focus to the context of consumer music access and use, and the increasingly prominent role that technologies such as the Internet play in music consumers' activities. We have discussed the contradictions between DRM technologies and music consumers' behaviours.

Moving towards design of DRM systems, the first step is to transform our findings from the initial focus group and interview discussions, into scenarios that describe consumers' activities that are affected by DRM issues. As we develop these scenarios, we will focus on the contradictions inherent in users' activity systems. In this context, contradictions are a useful analytical tool for determining how DRM systems could be better designed to minimise, and help resolve, the conflicts that occur as people move to a system of consuming music that is predominately mediated by digital technologies.

There is a great conflict between providing free access to information and resources and enforcing the level of protection that content providers would like to have over their digital content. McGee and Skageby argued that technologies ought to be designed with "gifting" in mind; that is, to support rather than to discourage the giving and sharing of music files. As noted above, artists' views are also important in determining how DRM technologies could support the use of online music. In particular, given that Internet technologies could empower artists to take control over the promotion and sale of their music (Pfahl, 2001), it would be informative to examine the views of new and independent musicians who may not have the support of record companies. Our research so far has focused on consumers' views; investigating musicians' views of Internet technologies would be a useful avenue of inquiry to complement our current work in progress.

As the discussion above illustrates, we have already identified a number of contradictions within our participants' music consumption activity systems. An understanding of the elements within consumers' activity systems will next be used to inform design goals.

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