

Comparing the Regulatory Models of Net-Radio with Traditional Radio

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Abstract

This article establishes the historical framework of net-radio and traditional radio in the context of emerging technologies, programming ideologies and government regulations in North America and Australia. It illustrates how the unregulated nature of net-only radio relaxes the structural constraints associated with traditional radio.

Keywords: Traditional radio – internet – net radio – radio online – net only radio – regulation – music copyright

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Introduction

Traditional radio, the oldest of the broadcast media structures, is used to competing with emergent technologies like net-radio. Television posed the biggest threat to traditional radio when it was introduced in the 1950s. Traditional radio refocused its attention away from formats taken by television and strengthened its alliances with the music industry. Traditional radio has always had a history of adaptation, ensuring its survival to present times. As Marshall McLuhan (1964: 259-268) argued, because of radio's speed and portable reception, it commanded a particular mobile attention of listeners, which other media did not. In the late 1960s David Sarnoff, a visionary employee of the first radio company (Marconi), acknowledged that traditional radio's survival would be severely tested amidst the arrival of new structures like the personal computer and internet technology:

The computer will become the hub of a vast network of remote data stations and information banks feeding into the machine at a transmission rate of a billion or more bits of information a second ... Eventually, a global communications network handling voice, data and facsimile will instantly link man to machine – or machine to machine – by land, air, underwater, and space circuits. The computer will affect man's ways of thinking, his means of education, his relationship to his physical and social environment, and it will alter his ways of living. (Sarnoff 1964, no page)

Today the competitive threat of other new media technologies has become more serious as traditional radio faces an increasingly crowded media market place. While other digital radio platforms (iPods, satellite radio, HD Radio) have taken charge, none has managed to garner the global audience that net-radio has. Net-radio, which is audio streaming over the internet, began as an emergent technology in the early 1990s when the internet descended from the military domain into the commercial realm to become the World Wide Web (WWW). David Black (2001: 403) said that net-radio's history is divided into two parts. The first stage of net-radio history is what Black (2001: 401) calls "internet radio 1: internet radio in internet history". He argued that in the early 1990s net-radio was a new cutting-edge, progressive medium.

Net-radio, also known as internet radio, web radio, streaming radio and e-radio, is a far more complex, networked technology than traditional radio. Traditional radio is a structured and linear system of mass communication that is domestic in scope whereas net-radio is associated with a non-structured, non-linear system of digital-networked information technologies that is international in scope. The popularity of net-radio stems from the fact it is a hybrid technology that both updates and globalizes traditional radio. Net-radio is a global technology whose audio streams may be delivered live or archived to be accessed on demand; but in both cases audio files are initially created for alternative programming and delivered to an audience of more than one.

There are two types of net-radio: radio online and net-only radio. Radio online consists of regulated, traditional radio broadcasters with existing audiences, which have incorporated the internet as an adjunct service. In contrast, net-only radio, which webcasts exclusively over the internet, is generally unregulated. Net-radio, in both forms, draws its powers from five distinct characteristics of the internet and digitalisation: (i) It is a multi-media digital

platform of converging print and audiovisual texts; (ii) It is interactive; (iii) It is a global medium; (iv) It provides on-demand access to a 24-hour database; and (v) It is a network of networks in a close-knit, virtual online community. Net-radio's characteristics mean that its 'user defined personal involvement' and interaction defines its global consumption practices and audience profile (Friere 2008: 97). In contrast to the "traditional discourse of radioness", the real revolution of net-radio lies in its radical mode of personal audience address (Friere 2008: 97).

McLuhan's (1964) concept of "rearviewmirrorism", which described how a new technology copies the one it is destined to supplant, is important to draw on when comparing traditional radio and net-radio. In a McLuhanistic sense, in order to understand a radical new media technology like net-radio, inventors first relied on preconceptions formed through listeners' experiences of traditional radio and then attempted to address weaknesses of the old medium and supplanted new strengths onto the new medium. Net-radio "rearviewmirrored" traditional radio when it first began by adopting conventional formats, like news, talkback and so on. However the implication of "rearviewmirrorism" has meant that net-radio needed to establish its own distinct characteristics, rather than "looking behind" and mimicking traditional radio, in order to compete in the complex, multimedia global environment. Therefore as net-radio developed and audiences grew, by 2000 it encompassed new levels of innovation with new music formats, multicasting and interactivity, thereby providing users with more choices and power over their listening programs. This was a significant departure from traditional radio formats where listeners were restricted by the station manager's formats and music selection. The internet's built-in feature of interactivity, converging multimedia, narrowcasting of specialised music genres and global access provided characteristics to net-radio that traditional radio has always strived for but never fully achieved (Priestman 2002: 229).

The first net-radio station was pioneered by Carl Malamud in 1993 when he set up the first community net-only radio station, Internet Talk Radio, in California, North America to stream independent (indie) alternative music that rarely got air play on traditional radio. Despite borrowing the "radio" metaphor, net-radio did not mimic traditional radio because it was interactive and was not a 24-hour service (Malamud 1997: xv). In 1994 Progressive Networks (now Real Networks) introduced the first free streaming technology, Real Audio, which enabled a continuous stream of audio over the internet (Priestman 2002: 3-6). Chris Priestman said that the development of Real Audio, like the development of morse code, was a significant turning point in radio's history. On 3 December 1994, College radio station Radio KJHL from the University of Kansas in North America was the first radio online station to webcast 24 hours a day. In 1995 North American stations broadcast.com and net.radio were the first commercial net-only radio stations to webcast 24 hours a day (Sawhney & Seungwhan 2005: 400-410).

By mid 2006 there were 1659 radio online stations in North America, which accounted for 42.29 per cent of the world market, with France claiming 6.68 per cent, Germany, 6.8 per cent and United Kingdom, 3.14 per cent (Kuhn 2006: 210). Fifty-five other countries, including Australia, Asia, Oceania, the Middle East, Africa and South America account for less than two per cent of the radio online market (Kuhn 2006: 210). On 29 February 2009, Penguin Radio reported there were about 5000 net-only radio stations around the globe. On the same day Radio Locator, a database of radio stations in cyberspace initiated by the Massachusetts Institute of Technology (MIT) in Boston, reported that the majority of net-only radio stations were based in North America and about 2700 of those stations have live audio feeds from the epicentres of New York City or California.

Net-radio has definitely arrived, but is seemingly confined to technology-rich countries in the Western world. Net-radio consumption is a centre-periphery issue because the northern hemisphere is the centre of the industry and the southern hemisphere is the periphery. Therefore in this article I focus on comparing the development of net-radio where it is still emerging (Australia) with a country (North America) where the net-radio industry began and is established.

Today net-radio is no longer an emergent technology. It has been streaming for nearly sixteen years. Both types of net-radio are examples of alternative media because they stream over the internet and encourage what Chris Atton (2002: 27) called "alternative sites for distribution" to the mainstream media. Atton's claim is backed by research undertaken by Wen Ren and Sylvia Chan-Olmsted (2004) who conducted content analysis of web content from 176 radio online and net-only radio stations in North America. Ren and Chan-Olmsted (2004: 6) found that both types of net-radio have different audience functions to mainstream media: radio online is an "information provider" while net-only radio is a "communication facilitator". To further clarify what I mean by alternative I refer to Stephen Barnard's definition:

The term implies a coherent, uniform, oppositional response to the mainstream ... it covers different approaches, attitudes and precepts from the mainstream that are sometimes defined in terms of modern versus traditional, progressive versus conservative ... revolutionary versus reactionary. (Barnard 2000: 68)

Although it is a form of alternative media, radio online is the more conservative type of net-radio because it involves regulated traditional radio broadcasters with existing audiences who have incorporated the internet as an adjunct, and mainly play mainstream formatted music like the Top 40. As Atton (2004: xi) would say, radio online is "still tied to the conventions of doing media". In contrast, net-only radio, which webcasts exclusively over the internet, is the more radical type of net-radio because it is generally unregulated and "offers a range of media products [non-formatted alternative music] ... that work against or seek to develop different forms of the dominant, expected (and broadly accepted) ways of doing media" (Atton 2004: xi). Some net-only radio stations stream web-based non-formatted alternative music rarely heard on traditional radio. According to Atton (2002: 27) net-only radio stations like this are examples of radical media because they are "clandestine distribution networks" that stream "politically radical" or "socially/culturally radical" content, have an "anti-commercial ethos", are run on "low cost ventures" and by "self exploited labor" (Atton 2002: 27).

Regulatory History

From its inception in the early 1900s, traditional radio's early technological history was associated with amateur youth enthusiasts who were caught up in the chaos and mayhem of experimenting with this new unregulated medium (Moore 1993:75-88; Hartley & Notley 2005; Priestman 2002: 25). Alan Albarran and Gregory Pitts (2001: 48) said the unregulated, experimental use of radio in the 1920s characterised the first stage of radio's development, "the pioneer era". Since the mid 1920s traditional radio has been subject to universal government regulations in countries like Australia and North America (Ahern 2000: 3). Marc Raboy (2003: 50) argued that regulation has a role to play in enabling equitable access to distribution markets for producers and consumers, "ensuring that the means of communication can be channeled towards social and cultural objectives". Lee Bollinger (1990) said that regulatory frameworks vary in different contexts but are always necessary in democratic societies and part of the public policy process. Within the Australian context, by the end of 1924 the federal government brought in new licensing regulations which

established two categories of radio stations: A-class stations, which are public broadcasting stations financed by licence fees from listeners; and B-class stations, commercial broadcasting stations financed by the selling of advertisements (Ahern 2000: 3-5).

The *North American Communications Act* of 1934 created the Federal Communications Commission (FCC) with a purpose of “regulating interstate and foreign commerce in communication by wire and radio” (Albarran & Pitts 2001: 6). Albarran and Pitts (2001: 48) said the creation of the FCC in 1934 heralded the beginning of the second stage of radio’s development, “the golden era”. Compaine and Smith (2001: 1-5) argued that the North American regulatory broadcast agenda was rooted in the commitment of the original regulatory law enacted by Congress in 1934, an act which was interpreted through the years by the FCC to promote program diversity in broadcasting. They contend that the goal of diversity has been accomplished in some nations by the programming efforts of government-controlled broadcasters. Compaine and Smith (2001) highlighted that diversity in North America is partly achieved by limiting the number of licences that could be controlled by an entity and by requirements for public service programming by all broadcasters. Radio online, which is traditional radio with a terrestrial licence that also streams over the internet, is subject to the same regulatory constraints as traditional radio.

Deregulating Radio

Albarran and Pitts (2001: 48) said the final stage of radio development, “the deregulatory period”, began in the 1970s when pirate radio stations that were unable to gain regulatory licences broadcast locally anyway because of access to low-power transmitters. Atton (2004: 115) said pirate radio used the act of broadcasting “to make political statements about the regulation of the airwaves” and to address the restriction of on-air political content. The deregulatory period exploded in the mid 1990s with the introduction of unregulated net-only radio stations. The unregulated nature of net-only radio can be compared with pirate radio in the 1970s and, as academics (Spinelli 1996; Barnard 2000; Meikle 2002) argue, is similar to the pioneering spirit of unregulated experimental radio of the 1920s. Manuel Castells argued that radio listening is thriving on the internet because of the deregulation of radio.

Alternative radio stations, focused on narrowcasting, find a cheap, easy way to broadcast on the internet, beyond the limits of the licensed spectrum ... The internet offers freedom in a world of increased control by large media groups. (Castells 2001: 197)

Expanding on Castells’ point, Ben Compaine and Emma Smith (2001: 12) said that the distinction between the unregulated nature of net-only radio and the regulated traditional radio that goes online (radio online) is important because it speaks about the ability of new webcasters to compete with large incumbent webcasters from the public and corporate world. The unregulated nature of net-only radio highlights two of its features: minimal start-up costs and freedom of content. Carol Ting and Steven Wildman (2003: 4) calculated the start-up costs for a regulated, traditional radio station were approximately US\$280,000 while a net-only radio station could be set up for around US\$8700. The start-up costs for net-only radio stations are three per cent of what it costs to set up a traditional radio station. Unlike traditional radio, net-only radio does not require expensive studio equipment, offices or institutional arrangements.

Harmet Sawhney and Lee Seungwhan (2005: 404-406) argued that the net-radio experiment worked because it was driven by fun rather than commercial gain; the barriers to entry were low and because of the camaraderie and openness that facilitated cross-fertilization of ideas within the net-radio community. For example, Australia’s first community net-only radio

station, Pulse Radio, which specializes in dance music, was set up with seed funding of about AUS\$5000. Todd Davies, an internet jockey (IJ) from Pulse Radio said, "setting up your own net-only radio station is a low-capital investment exercise" (Baker 2002). Davies described how 60 of Pulse Radio's IJs, scattered around the world, work from their homes using their own computer equipment. IJs have encoding software that is installed into their home computer, and a mixer that plugs into their computer soundcard. IJs connect to Pulse Radio via Live 365 on the internet, one of the specialist webcasting host sites. Live 365 have a minimal monthly cost which is paid by the Pulse Radio consortium. Pulse Radio has a backup server in Sydney, loaded with music on a hard drive, should IJs miss their start time or lose connection to the Live 365 server (Baker 2002).

Freedom Associated with Net-Only Radio

Martin Spinelli argued that the similarities between the utopian democratic rhetoric once used to promote radio and the rhetoric is now used to promote the internet:

Common aspects arise in a close examination of the independent popularization of radio and the internet: ... the emergent medium is instilled with hopes of initiating utopian democracy, providing for universal and equal education, and bringing a sense of belonging to a community (Spinelli 1996: 1)

When net-radio first emerged in North America in 1993, there was hope that an open space would emerge whereby public discourse could take place devoid of the mediation of licensing authorities, and the gate-keeping and agenda-setting of the mainstream media. The popular assertion often made by net-only radio advocates that it cannot be controlled – that content control, a primary characteristic of the traditional state-media relationship, cannot be as successful or far-reaching when applied to unregulated net-only radio (Priestman 2002). Because net-only radio is unregulated, it offers freedom of content, freedom from government licensing requirements and no advertising censorship. John Hartley and Tanya Notley (2005: 11) suggested that, "regulation is the enemy to innovation". They argued that unregulated net-only radio is a space that allows innovation, creativity, ideas and alternative content to flourish, reminiscent of the early days of radio (Hartley & Notley 2005: 111-115). Spinelli (1996) said net-only radio offers a greater potential for creative and innovative approaches to production, delivery and consumption because it provides artists with opportunities, innovation and empowerment not only as users but also as producers and managers. Jo Tacchi (2000; 2003) argued that the freedom associated with net-only radio is not merely access to technology; its freedom is associated with fertile spaces for innovation and creativity. Some traditional radio stations have become net-only after failing to get a broadcasting licence and have become attracted to the unregulated nature of the internet. In a United Kingdom example, Tacchi (2000: 291) said it took about five years for the station, Future Radio, to apply for a terrestrial radio licence in Bristol, which eventually proved unsuccessful. Tacchi and Williams toyed with setting up Future Radio as a pirate radio station. Williams had already set up a successful and innovative pirate radio station called FTP (For the People) in Bristol in the late 1980s (cited in Tacchi 2000: 291). In the late 1990s Tacchi set up Future Radio as a net-only radio station because there was "No regulation, no convention ... Every restriction or limitation you come across with the internet is temporary" (2000: 292).

Like pirate radio, net-only radio uses the act of broadcasting, or rather webcasting, to make political statements about the regulation of the airwaves, and to protest about the constraints of traditional radio. Unlike net-only radio, pirate radio by its very nature is illegal and therefore highly volatile. When a pirate radio station is shut down by legal enforcement, broadcasting equipment is usually confiscated and the station is unable to resume operation until new

equipment arrives (Rudin 2007). In contrast, just about anyone, anywhere can set up their own net-only radio station without fear of government interference. However, because net-only radio is unregulated, it is difficult to establish exactly how many stations are currently online and where they are streaming from. As Black (2001: 399) said, net-only radio is a "moving target" and any catalogue of how many stations there are is "doomed to fade out of date very quickly". Kuhn (2006: 210) expands on Black's point by arguing that the relative update instability of net-only radio, that is, the inability to stay functioning as an online entity, is the main reason many researchers (himself included) have avoided exploring its phenomenon. Similarly, very few pirate radio stations have longevity or consistency and therefore are equally neglected by researchers. Contrary to Black's and Kuhn's commentary, however, net-only radio directories, large and small, are springing up everywhere.

Regulatory Pressures on Net-Radio

The rapidly developing capabilities of net-radio to act as converged, multi-media platform and deliver audiovisual and other content "on demand" has raised a range of issues for government regulators. As Adam Thierer said, technological convergence has put "formerly distinct sectors and their regulatory regimes on a public policy collusion course" (2005: 7). To some, net-radio and its multi-media platform represents a chance to clean up the regulatory mess that has accumulated over the past century of policy covering print, radio and television as these three media merge. These developments have raised concerns at the international level to the extent that at the first World Summit on the Information Society (WSIS), held in Geneva in the late 2003, some countries used this cyber summit to place restrictions on the internet and other information technologies (Tharoor 2003). In spite of the joint declaration at the December 2003 WSIS to affirm commitment to internet freedom (WSIS 2003), the desire of governments to extend restrictions against the internet continues unabated as they retain the legal and legitimate right to intervene with restrictions and sanctions.

However regulatory policies have had a hard time applying classic regulatory models of traditional radio to net-only radio. Net-only radio is typified by user-generated content, developed in a bottom-up, collaborative and often non-proprietary, not-for-profit way giving rise to new businesses and business models that challenges traditional media. The experience of the Western world is that regulation that tries to protect one party or another at the same time risks holding back the net-only radio industry. Nevertheless, governments around the world are still looking at ways of defining or regulating net-only radio. In Australia under the *Broadcasting Services Act 1992 (BSA)*, a broadcasting service is one that delivers television or radio programs to persons with appropriate equipment for receiving that service. The definition is expressed broadly and in terms that are technologically neutral. There are only a limited number of exclusions to the definition of a broadcasting service:

- (a) A service that provides no more than data, or no more than text (with or without associated still images);
- (b) A service that makes programs available on demand on a point-to-point basis, including a dial-up service; or
- (c) A service or class of services that the Minister determines not to fall within the definition (*BSA 1992 Subsection 6(1)*)

On 12 September 2000, the then Minister for Communications, Information Technology and the Arts made a determination under paragraph (c) above (the Internet Streaming Determination), that excludes from the definition of a broadcasting service:

A service that makes available television programs or radio programs using the internet, other than a service that delivers television programs or radio programs using the broadcasting services bands. (*BSA 1992: Determination under paragraph (c) of the definition of 'broadcasting service' (No. 1 of 2000), 12 September 2000*).

In January 2008 the Australian Communications and Media Authority (ACMA) introduced a new regulatory framework for the prohibition of, and restriction of access to, certain classifications of content over a broad range of content services delivered over mobile devices and the internet. The proposed changes to these legal instruments follow the passage of the *Communications Legislation Amendment (Content Services) Act 2007* (Content Services Act). The Content Services Act creates a new Schedule 7 of the BSA, which replaces the current online content regulatory framework in Schedule 5 of the BSA (Department of Communications, Information and the Arts (DCIA) 2006). The consequence of this position at the time of writing this article is that Australian net-only radio stations remain unregulated.

North American traditional radio industry stakeholders are also putting forward arguments about whether or not the internet should be considered in current debates and discussions regarding the regulation of radio. Despite such deliberations Compaine and Smith (2001: 5) argued that few North American government authorities officially take the internet into account as an alternative source of radio programming. They noted, however, that the regulation of the internet is increasingly a topic of debate at the FCC in the analysis of the structure of the radio broadcasting industry. The North American *Telecommunications Act* of 1996 allowed traditional radio broadcasters to reach online audiences without requiring any governmental approval. This meant incumbent private and public broadcasters started to compete with potentially new young webcasters for their audience share. Compaine and Smith (2001: 27) highlighted that North American broadcast groups see no reason to end the easing of ownership rules that followed the Telecommunications Act and argued that, "the internet is adding significant diversity to the radio broadcasting universe; regulators could further relax ownership rules that currently govern the radio industry in many countries". Since 1996 other authorities in North America and worldwide see no reason to end the unregulated ownership of the internet domain.

Net-only radio provides substantial diversity to the radio broadcasting industry by supplementing, enhancing and extending the term "radio" (Compaine & Smith 2001:3). However, Black said, "Should an audio signal delivered over the internet be called 'radio' in the first place?" (2001: 387) He said that if net-radio is a different medium why has it borrowed the name "radio"? He argued that the addition of interactive services means the very definition of the word "radio" is in need of a major rethink. Tacchi (2000: 289-290) argued that one of the reasons for the research neglect of net-radio is related to the fact that net-radio is seen as "un-radio-like". She said the term "radiability" refers to the technical ability of the internet "to be radio-like or radiogenic" (Tacchi 2000: 292). Atton concurred with Tacchi's commentary by noting that, "the application of the internet to radio appears largely as an adjunct to existing broadcast services" not just as an internet-only model, but also a "radio-like model" (2004: 121). He argued that one should consider "the use of internet as radio" in terms of its "radiogenic qualities to emphasize connection, not uniqueness" (Atton 2004:121). Black argued that the use of the term "radio" to describe "streaming internet audio" may be seen as an exercise by established commercial radio broadcasters of claiming, defining and commercializing streaming audio (2001:397). He said there is a motivation to make "streaming audio" mainstream and make it like traditional radio so it won't be so un-radio-like (Black 2001: 397). Similar concerns were echoed by Spinielli (1996) who,

like Black, hopes net-only radio will be a site that will resist regulation and corporate control, reach a global audience and result in the end of traditional-format radio which generally only attracts local audiences.

Compaine and Smith (2001:3, 27–28) argued that the unregulated nature of net-only radio has increased flexibility, competition and diversity in the marketplace and should lead to further market deregulation. They argued that diversity is characterised by the variety of program formats and the number of radio stations available to listeners under unrelated ownership. They contended that net-only radio audiences have access to a greater diversity of formats, channels, owners, languages, geographically focused programming and content distribution. Net-only radio listeners have the benefit of an abundance of content, but also the task of locating those stations that mesh together their taste or mood. Fans of net-only radio would readily agree that the diversity that is missing in traditional radio is thriving across the spectrum of streaming choices available online. Net-only radio outlets cater to listeners unsatisfied with what's available on traditional radio. Niche genres like classical, jazz, independent rock, electronic, international styles, and early country and bluegrass – categories largely ignored by commercial and public traditional radio broadcasters – have found homes and enthusiastic audiences on net-radio (Maloney 2003).

Music Copyright Laws

According to most reports, the North America digital media policies were the first worldwide to apply regulatory controls to the net-radio domain. This final stage of net-radio development Black calls “internet radio 11: public freedom and corporate constraint” (2001: 403). Former US President, Bill Clinton, signed the *Digital Millennium Copyright Act* (DMCA) on 28 October 1998, which was enacted by the North American copyright office on 11 December 2000 (Priestman 2002: xvi). The DMCA ruled that all North American-based net-radio stations transmitting digitally had to pay copyright fees of US\$500 a day – a fee that dates back to October 1998 (Priestman 2002: xiv). Tim Wall (2004: 27-42) feared that net-radio, as an accessible cultural space where innovative and alternative forms of music can flourish devoid of the restrictions of radio regulation and from market-driven mass entertainment, would fade under the restrictions of the DMCA ruling. Under the DMCA ruling a 24-hour net-radio caster with 500 listeners has to pay an annual music copyright fee of about US\$90,000. Major multinational net-radio players like Yahoo Radio, AOL Radio, Time Warner's Spinner.com and Launch.com who can afford this extra cost, survived this shake-up (Carnevale 2002a: 2) while about 100 smaller, net-only radio stations closed because of the increase in production costs (Swift 2002: 7; Wall 2004: 41). The DMCA ruling put an end to small net-radio stations that allowed unsigned musicians to easily promote their work to a global audience.

Hartley and Notley (2005: 12-13) detailed how a small net-only radio station from San Francisco in North America, Soma FM, led a campaign protesting against the DMCA ruling to the North American Congress. Protest against this ruling was most profound in the independent and college sectors because such laws could lead to their financial ruin. Some college stations that belonged to the Intercollegiate Broadcasting Systems (IBS) cooperative like Bellevue Community College's KBCS-FM in Washington State stopped broadcasting for a month because of uncertainty over the amount of music copyright fees. In 2002, in protest against this ruling, other college stations like Rice University's KTRU and University of Louisiana's KXUL stopped playing music over the internet for 24 hours on one day. This day was called “May Day: Day of Silence” (Carnevale 2002b).

In 2002 the North American Congress finally submitted to the public backlash and introduced the *Small Webcasters Settlement Act* (SWSA). The SWSA allowed a two-tiered music

copyright system, one for commercial net-only radio stations and one for non-commercial net-only radio stations. Non-commercial net-only radio stations, which include college stations, have to pay 200ths of a cent per song, as opposed to commercial net-only radio stations, which have to pay 700ths of a cent per song (Carnevale 2002b: 1). Following the implementation of the SWAA, Soma FM resumed streaming and instead of paying US\$500 a day, the station only had to pay US\$2000–5000 per year (Hartley & Notley 2005: 12-13).

Although the SWSA provided a reprieve for some small webcasters, many streaming stations faced royalty costs that challenged their survival. Will Robedee, Vice Chairman of College Broadcasters, Inc. (CBI), a national membership association of non-profit, college radio stations, argued that the new lower rates were still high and would drive away any potential college radio station from streaming on the internet (Carnevale 2002a: 21). However, a survey of 103 college radio station managers conducted by McClung et al. (2003) found that despite the legal and economic uncertainties about net-radio and music copyright, two-thirds said that they would continue streaming online because it was a valuable technology for extending a station's presence in the global arena.

Independent and college net-only stations were not the only ones pulling the plug on their streaming audio transmissions; commercial stations were also. In November 2002, shortly after the passage of the SWSA, WebRock.net, a Christian modern rock station, and CyberRadio2000.com, a multichannel netcaster based in Chicago, were among stations announcing the end of their streams, at least on a temporary basis. As of May 2004 CyberRadio2000.com, one of those hoping to return to the internet in the near future, had not resumed its webcasts. Approximately 150 stations owned by Clear Channel, the nation's largest radio network, stopped streaming in January of 2003, after the network told stations they would be paying webcasting costs along with their local budgets (Harwood 2004: 688-689). In 2008 the *Internet Radio Equality Act* contended that all net-radio stations would be means tested and only have to pay a sliding scale percentage of their revenue toward music royalties (Anderson 2007). The *Webcaster Settlement Act* of 2008 detailed three agreements for internet-based music copyright: one agreement for Corporation for Public Broadcasting (CPB), another agreement for National Association of Broadcasters (NAB) and one agreement for Small Webcasters. Unlike AM/FM radio stations that pay a fairly fixed amount for the right to play songs, North American net-radio fees are now also assessed based on the number of people who listen to a station.

Music copyright laws have not greatly affected the emerging Australia net-only radio industry, as they have in North America. Australia's version of America's DMCA, the *Digital Agenda Copyright Amendment* (DACA), introduced in March 2001 is less harsh. This Australian amendment addressed changes to copyright laws alongside other digital broadcasting issues, rather than net-radio specifically. Swift (2002: 7) wrote that Australian online radio broadcasters pay only a quarterly licence based on a percentage of their revenue, a fee system that also applies to traditional radio. Hartley and Notley (2005) detailed how an Australian tertiary student net-only radio station, EMIT, which was set up in 2003, worked around the music copyright laws. EMIT set up a "Creative Commons Copyright" licence system under Australian law, which is similar to that developed in North America (Hartley & Notley 2005: 14-15). Under the Creative Commons Copyright licensing EMIT pays an annual fee to the Australasian Performing Right Association (APRA) for music content and one-off fees for copyright video and images (Hartley and Notley 2005:14–15). However Rebecca Coyal (2000), who set up the first Australian tertiary student net-only radio 21CP at Macquarie University (Sydney) in 1998, argued that net-only radio stations should be encouraged to "self regulate" and that each station should set up their own guidelines and

programming standards. Either way the long-term success of net-only radio may ride on the “imposition or change to music copyright fees internationally” (Swift 2002: 7).

Two significant observations can be made based on the regulatory push on net-radio. First, net-radio casters and others are dissatisfied with the existing royalty and licensing process, and second, in spite of the new system music copyright regulation, net-radio is more popular than ever (Harwood 2004: 692). These observations suggest that, although the new music royalty system claimed numerous casualties, “There are still a lot of webcasters who are going to continue to broadcast no matter what” (Webster cited in Kharif 2007:2).

Time will tell whether government authorities will stifle the unregulated nature of net-only radio, especially in relation to licences and music copyright. As Howard Rheingold (2002) lamented, just because the new medium of the internet comes from an innovation-rich and (hypothetically) universally accessible common ground, this doesn't guarantee that it will remain that way. He predicted that just like radio and television, the internet domain may one day “be tamed” (Rheingold 2002: 202-203). Wall doubted that net-only radio would ever become fully regulated because it has been “built and set in a political age when state intervention is not a widely supported ideal” (2004:13). Hartley and Notley agreed with Wall and said that the internet is still in its early stage of development and it would “be a very bad time for governments and corporations to impose strict regulation” (2005:18).

Conclusion

In some ways it is impossible to know how net-radio will evolve. Some industry spokespersons argue that regulation is a death wish for net-only radio while others suggest the solution is to design regulations that are flexible or upgradeable, and to assume from the outset that the regulatory environment will change, because net-radio consumption will certainly change in ways we cannot predict. Net-radio and its convergence capacities are an opportunity, not a threat, and enable the media sector to revitalize itself. If policy makers should seize the opportunity of drafting new regulations for net-radio, a few points may be useful in their reflection process of regulatory reform:(i) policies should be flexible enough to compete with newer technologies and cope in the modern business environment; (ii) policies should offer rewards to existing players; (iii) policies should allow new players to embrace it; and (iv) policies should benefit the public.

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