Music and Copyright

edited by

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EDINBURGH UNIVERSITY PRESS

1993

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Music and Copyright in the USA

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Authorship, uniqueness, reproducibility and a host of other issues occupy business and legal transactions in the American music industry. Within that framework, copyright has traditionally been an author's protection against the copying and pirating of music. It has also been a means for record companies and music publishers, who usually own the copyrights to songs, to ensure income during periods of low sales. Copyrights are bought, sold and exploited via licensing fees and royalties. But new technologies that enable a diffusion of authorship and ready reproduction are wreaking havoc with traditional copyright protection. Music is by no means the only creative field struggling with copyright problems. The US film industry is still engaged in negotiation over videotape copying of films, and the computer software industry has been plagued by copyright difficulties since its beginnings.

The United States government has provided a means of copyrighting music since passage of the Copyright Act of 1909. In 1971, an amendment to the Act provided for copyrighting of 'sound recordings'. Four years later, the 1976 Copyright Act provided copyright protection for both published and unpublished sound recordings.

The 1976 Copyright Act defines sound recordings as:

> works that result from the fixation of a series of musical, spoken, or other sounds, but not including the sounds accompanying a motion picture or other audiovisual work, regardless of the nature of the material objects, such as disks, tapes, or other phonorecords, in which they are embodied. (US Copyright Act, 1976)

The biggest and most recent controversy over copyright concerns home taping of records and compact discs. Though beginning in the mid- and late 1970s, when the recording industry's sales slumped, it has taken on altogether new meanings with the development of digital recording.

The late 1970s found US record companies no longer enjoying steady, predictable sales. Home taping shared the blame with a depressed

economy and a stagnant musical climate. The cassette had become a widespread high-fidelity means of taping records, radio shows, music from all sources. Concerned that home taping was cutting into record sales, the recording industry began advertising home taping as theft, and pursued the US Congress to amend copyright laws. Home taping, the industry reasoned, is copyright infringement.

Little came of these lobbying efforts, however. In the early 1980s, several home electronics manufacturers began marketing dubbing cassette decks, which enable cassette duplication with just one machine. The recording industry (in the form of the Recording Industry Association of America, Inc., the RIAA) again unsuccessfully lobbied Congress, this time for a tax on dubbing decks. The reasoning was the same as with home taping, but the industry went slightly further in their demands. They originally called for a tax on both single and dubbing cassette decks, with money collected to be distributed to recording artists. The pay scale the industry suggested virtually mirrored the top record charts, since presumably those artists with the highest record sales would also have their recordings copied most.

A bill was presented before the US House of Representatives in 1985 (HR 2911, 1985) that proposed a tax on blank tape and tape recorders. Known as the Home Audio Recording Act, the bill included a penny per minute tax on blank tape, a tax of ten per cent of the retail cost on tape recorders, and a tax of 25 per cent of the retail cost on dubbing tape decks. Money collected was to be divided among record companies and distributed to copyright owners, but no mechanism of distribution was established. Although the law was to exempt individuals taping their own records, amateur musicians, and others who were purchasing tape recorders for their own musical use, there was no mention of how subsequent use would be determined at the time of purchase. The bill, though at one time tenuously connected to the Parents' Music Resource Center record rating issue, did not pass Congress.

The *Washington Post* reported (Harrington, 1986) that the RIAA was moving its headquarters to Washington, DC, to more effectively lobby Congress for home taping bills and to pursue another legislative avenue, source licensing for film and television music. Source licensing is primarily concerned with residual payments for composers whose music is broadcast on television. BMI and ASCAP are currently involved in litigation over source licensing in an effort to increase such income.

The recording industry's next lobbying effort came in the wake of the development of Digital Audio Tape (DAT). Regarded as the ultimate in home taping, DAT works on the same principles as the compact disc. Sound is sampled and reproduced digitally, with no distortion from copy to copy. In other words, dubbing a record or CD onto DAT does not produce a copy, it

produces a clone, an exact replica. The threat to the recording industry is thus greater with DAT. Presumably some home tapers were discouraged by the noise and hiss added to each copy generation. DAT produces no noise and hiss. And, since CDs are digitally recorded to begin with, DAT would be the perfect medium for copying CDs.

The problem was one the computer software industry faced from the start – protecting a product that is simultaneously creative and unique yet by definition copyable. Ultimately, some computer software began including copy protection devices which would cause a programme to self-destruct or prevent copying. The recording industry opted for a similar solution for DAT by lobbying Congress for a trade bill that would force DAT manufacturers to include anti-copying devices in their machines. The anti-copying mechanism would read information from a CD, and respond to a message to lock a DAT deck out of record mode. Though successfully demonstrated in prototypes, the mechanism is expensive and produces a noticeable difference in sound when compared to machines without the anti-copying mechanism. DAT manufacturers are (at best) reluctant to raise the cost of an already expensive device, and feel that the record companies should take the initiative in preventing copying; after all, they are the ones providing the software. By October 1990 DAT decks were available in the US for around $800, and digital codes are embedded in pre-recorded DAT tapes that enable only one digital-to-digital copy from a tape. However, this code does not prevent multiple analogue-digital or analogue-analogue copying. Currently, the market for pre-recorded DAT tapes in the US is very small.

The dilemma faced by the recording industry is based primarily on the copying and piracy of CDs, perhaps the industry's saviour from its mid-'70s doldrums, and not records, because CDs are virtually perfect copies of the master tape. The industry was slow to switch over to compact disc, but since the mid-'80s CD sales have boomed and record companies quickly capitalised on the CD market. Part of the reason for their initial sluggishness in releasing CDs lay in the large capital cost of manufacturing CDs. Now that manufacturing costs are falling, the industry is immediately faced with copying and pirating problems. Record companies are also concerned that consumers will prefer DAT over CD since they can record on DAT. Technology to record sound on blank CDs is currently available, though very expensive and within reach only of the largest audio mastering facilities. The cost of CD-R (Compact Disc Recording) technology will, however, most likely fall as other such technology has. It is also likely that consumers will prefer a format that fits existing hardware. DAT is becoming a pro-audio technology in the US, in part because US consumers are accustomed to purchasing products that include extensive graphics and artwork – DAT tapes are too small to provide adequate space for graphics.

The evolution of copyright and royalty issues concomitant with the development of DAT augured for an apparent parallel to the home taping acts of the 1970s. It seemed doubtful that legislation regarding a home taping tax or an anti-copying mechanism for DAT would pass the US legislature, in the case of the former because of the difficulty establishing the taxing and distribution process, in the case of the latter because the current administration and Congress seem to favour a private sector compromise.

On 10 July 1991 United Press International (UPI) reported just that sort of compromise, and the stage was set for a landmark agreement between the recording industry and the consumer electronics industry. The agreement provided 'for the two industries to jointly request Congress to adopt a set of copyright laws that would codify [their] pact' (UPI, 1991). The agreement found immediate approval among publishers, record labels, BMI and ASCAP, industry associations, and many musicians. It was introduced in the US Senate as 'The Audio Home Recording Act of 1991', in the fall of 1991, and introduction to the House of Representatives swiftly followed. According to an article in *Billboard* magazine, the legislation calls for 'a 2% royalty on the wholesale price of recorders (with an $8 cap and a $1 minimum) and a 3% royalty on the wholesale price of blank tape' (Holland, 1991). The bottom line, as reported in the *New York Times*, is that:

> Record companies will get about 38 percent of the royalty pool, performers will get about 26 percent, and songwriters and music publishers will each get about 17 percent. The American Federation of Musicians will get 1.75 percent and the American Federation of Television and Radio Artists will get about 1 percent. (Shapiro, 1991)

How these moneys will be distributed is unclear, although involvement of the US Copyright Office has been mentioned in the legislation. Interestingly, the Audio Home Recording Act of 1991 (which was passed in 1992) includes a provision for Congress to amend the law as needed in light of the development of new technologies.

SOUND AND COPYRIGHT

Despite the publicity surrounding home taping and copyright legislation, little has been made public about a pending US (and, indeed, international) copyright problem – the ownership of sound. Modern synthesizers have enabled creation of unique sounds, and some of the programmers and musicians who create the sounds are keeping close watch on copyright matters. The issues can be roughly divided into two categories and are currently the scene of great debate in the US.

First, there is the issue of digital sampling of sound. Musicians involved in the recording of popular music have a habit of referring to sounds created by other musicians. For instance, during a recording session, a drummer may ask the engineer if he could get a 'Phil Collins' type of drum sound. As one engineer said:

> For me the most pressure comes when an artist or producer says 'I want this sort of sound' and I have to give it to them or else they'll get someone else who will. It's especially tough if it's something another artist has done because then there's no excuse. He got it so why can't you? Like one time I got a call from this guy the day before his session and he said, 'I want the drums to sound like the drums on the Elton John album.' That night I got hold of the album and listened to it at home and figured out ways to do it. (Kealy, 1974, p. 136)

Equipment manufacturers design effects units with the thought that they should make it easy to reproduce 'hit' sounds. But an even easier method of reproducing those hit sounds is to sample them. Synthesizers such as the Ensoniq Mirage, Kurzweil 250, Fairlight, Akai S900, and many others, permit recording of sound events and subsequent manipulation and playback via a keyboard. Thus a musician can sample the drum sounds from a Led Zeppelin record, for instance, assign the bass drum to one key of the keyboard, the snare drum to another, cymbals to another, and so on. This of course does not mean that the musician can then *play* drums like John Bonham of Led Zeppelin – but he can *sound* like John Bonham, and that is of crucial importance.

The second category that US copyright legislators are struggling over is the copying of synthesized sounds by means other than sampling. Much of the problem revolves around the programming industry's selling of sounds. As with the computer software industry, there is little to prevent someone from purchasing a set of sounds and copying them at will. And there is little to prevent someone from hearing a sound on a recording and programming that sound themselves with their own synthesizer.

The point is almost moot in fact, since many of the most popular recordings use sounds that are created by the manufacturer, and consumers get them built into the synthesizer. They are, in computer software terms, public domain sounds. That is, they are free to be copied. A problem arises, however, because once they are used on a recording, it could be argued that the copyright notice on the record covers the sounds.

Two forms of copyright can be filed for a published (i.e. publicly released) recording in the US; a 'circle C' which denotes a musical copyright, and a 'circle P' which denotes copyright of the sound recording. As synthesist and programmer Bryan Bell said, 'The circle P copyright is for the whole record album. The musical copyright is 8 bars or whatever it is. The circle P is for anything that's on there for any amount of time. Sounds included' (Bell, 1987).

The solution to these problems is by no means simple. For one thing, sampling and synthesis are intimately connected to concepts of authorship and authenticity. Public reaction to the introduction of the RCA Electronic Music Synthesizer in 1955 set the terms of the debate between synthesis and acoustic instruments:

> Although crude-sounding, the results nevertheless came near to the actual qualities of the instruments, near enough to make them almost credible. As for the 'new' sounds, that will have to be left to the creative musician rather than to the engineer to exploit ... the synthesizer ... could be made to reproduce the sound characteristics not only of an orchestra, but of its concert hall as well. There would be no need for the recording director to tour churches, auditoriums and theaters in quest of the 'perfect' acoustical setup ... More important, the primary function of such a mechanism should not be to *imitate* the quality of existing sounds, but to create and experiment with new sound ... the synthesizer may some day offer remarkable opportunities to the composer – provided he has the patience and skill to manouevre his way around the complicated [electronics]. (Lawrence, 1955)

The author was being quite open-minded. Musicians' unions had quite a different reaction, stemming from the fear that eventually there would be no need for the performer. Frederick Dorian (1942, p. 342) foresaw the problem and wrote, 'We have only to think of the possibility of an apparatus that will permit the composer to transmit his music directly into a recording medium without the help of the middleman interpreter.'

The debate centres on whether there is a need for live performers or not. In popular music, the synthesizer quickly gained acceptance in progressive rock, but in traditional rock forms it is still frowned upon. The synthesizer is inherently dishonest, the argument goes, because it imitates acoustic instruments and therefore presumably does not require the skill necessary to play an acoustic instrument. Brian Blain, the British Musicians' Union publicity and promotion officer, gave the typical unionist perspective:

> the Union does seek to limit the use of synthesizers where they would be used to deprive orchestras of work ... However, I think it is to the Union's credit that we see the essential difference between that use of the synthesizer where it is clearly taking work away from 'conventional' musicians and its use in a self-contained band where there would not normally be any question of another conventional musician being used ... It is hopeless to look for a totally consistent view but I must say that I see a big difference between a synthesizer in a band, which at least requires a musician to play it, and a machine which takes the place of a musician. (Frith, 1986)

The drum synthesizer is particularly frowned on by rock and roll fans since it not only produces drum sounds, but can play rhythm patterns on its own.

The debate has shifted somewhat since about 1985, from duplication of acoustic instrument sounds to duplication of sounds in general. This may be due to the widespread use of synthesizers for electronic sounds and the public's quick acceptance of those sounds.

To couch the debate in terms of performance, however, is inappropriate. A performer of some kind or other is needed no matter the instrument. Even a sequencer or recorder needs someone to operate it. A more appropriate site for the debate is within the terms of the value of sound.

Bryan Bell has worked with many musicians, from Herbie Hancock to Neil Young. He founded a service called Synthbank, which exists to publish sounds. It is 'a consortium of professional programmers provid[ing] consulting services ... a publisher of commercial sounds that can actually be bought and sold' (Bell, 1987). Synthbank, according to Bell, was 'started to protect the authorship of the intellectual property and programming of sound' (Bell, 1987). By regarding sound as intellectual property, the question of musical copyright takes on different dimensions. In effect, sound itself can be regarded as a creative work, apart from music.

Though Bell began it several years ago, Synthbank is only now beginning operation. Part of it is located in the Performing Artists Network (PAN), a database and computer bulletin board service for those in the music industry. Via PAN, Synthbank users can upload and download sounds by calling the database from their computer.

The reason it took Synthbank some time to get off the ground is because copyright difficulties prevented its operation. The US Copyright Office simply did not provide a means for copyrighting sound apart from music. The Copyright Office does make a provision for copyrighting sounds on their Form SR. One paragraph states: 'Use Form SR for copyright registration of published or unpublished sound recordings ... briefly describe the type of sounds fixed in the recording. For example: "Sound Effects"; "Bird Calls"; "Crowd Noises".'

Sound recordings are defined as 'works that result from the fixation of a series of musical, spoken, or other sounds' (Form SR, 1976). But the main problem is one of notation – how to submit a sound for copyright. Bell related his brush with copyright law:

> The copyright has taken us over two years to get ... Because they just went through a whole bunch of rewording in the law, in the grey area of the law, at considerable expense to try to get this more clearly identified in terms of commercial property ... it's been a major hassle ... I've been back and forth with the copyright office and my

> lawyer's office, about 15 times. We just sent in a final application but we have not received confirmation of its acceptance yet, but as far as the dialogue between my attorneys and the senior examiner, we've gotten everything in that we were supposed to ... it'll be an acceptance of how to copyright. It'll be what format they have decided on as satisfactory, from that standpoint, it'll be a precedent ... It's just a matter of whether they classify it as a sound recording or a computer program. It's a clarification of what kind of intellectual property it is. It's a matter of whether it's backed up by source code or what kind of file ... Once it's done that will give us the ability to copyright sound ... We've been holding back on sounds because we've been working on this thing. (Bell, 1987)

As a sound publisher, Bell must place financial value on synthesizer programs and samples. His solution is pragmatic:

> Placing a value on the sound is, whether or not it's saleable, if it's unique or not unique. As far as the actual commercial value of a sound, I pretty much affix that to the instrument. You know, something like a Casio sound or a DX7 sound is about a dollar, say. A Chroma sound or an Oberheim is about two dollars. But when you get into the high end samplers like a piano for a Fairlight, that would be $200 ... it's more in terms of what the user is going to get out of it. If the user can get 32 DX7 sounds for 32 dollars that is a fair market value. Someone who has a Fairlight [and] is making a professional recording can pay $200 for the sample. So we are trying to attach the service to the value it has to the user. When it gets down to samples, it's the amount of time it took to make the samples. (Bell, 1987)

According to Bell, response to Synthbank from musicians has been excellent. And Synthbank provides a payment structure for programmers, without discriminating between professional programmers and amateurs.

The legal problems remain, however, regardless of the change in copyright law that Bell foresees. Just as nothing stops the consumer from copying a record onto cassette, nothing prevents someone buying a sound from Synthbank from copying it for a friend. Though a useful distinction can be made between someone who copies a sound and then uses it for a published recording (the distinction between copying and pirating) the difficulty of determining copyright infringement is tremendous. One would expect an enormous amount of litigation. Bell said,

> The point is that if a sound is made unrecognizable to an expert witness, [there will be] no case. If they play the record and play the sample and a jury can't tell the difference [there will be] no case ... [there will be much litigation] but Columbia [Records] has 250 lawyers on call at all times, so some joker ripping off sounds to do McDonald's commercials will get sued. Synthbank was actually the devil's advocate for the consumer, saying let's protect the artist before the record companies do, and pay a royalty on sounds and distribute them to everybody and fairly, but pay the author. As far as I know I pay the highest rate. (Bell, 1987)

One can expect the record companies to become involved immediately. In general, the 'circle P' copyright is owned by the record company; will record companies claim ownership of sounds and samples?

The solution of having a jury decide whether copyright infringement of a sound has occurred is not as simple as it seems. First, in the case of infringement of a piece of music, court cases can take days and weeks. Second, it is hard to imagine that sound could be the only determinant of infringement. For instance, if an infringement of the sound of a car crash was claimed, and the sound of the two car crashes in question did sound alike but were taken from different accidents, would there be infringement? If Led Zeppelin's drum sound were sampled, and the frequencies between 700 Hz and 1 kHz removed by equalisation, would that be infringement? And one has to wonder about implications of precedent in other areas; what might happen to impersonators such as Rich Little? What of intent to infringe? What of prior access? And with the difficulty in determining authorship on modern pop records, how would one determine who is responsible for an infringement?

The constant use of sampling in rap music has resulted in the creation of sample clearance houses similar to Bell's Synthbank. For a fee, sample clearance houses trace copyright owners of samples used in to-be-released recordings. Most often they are hired by record companies wishing to avoid litigation or expensive settlements, and sometimes they are hired by artists themselves. Their use has greatly increased since Gilbert O'Sullivan's 1991 suit against Biz Markie in which a US federal judge ruled that Markie's song 'Alone Again' infringed copyright and recommended criminal prosecution.

Sampling has created resentment among some musicians, as the following, excerpted from a *Wall Street Journal* article, illustrates:

> Frank Doyle, a New York engineer, recently plugged into his sampler the sound of Madonna screaming 'hey' on her song 'Like A Virgin', raised it an octave and dropped the new sound into a few parts of a coming song by Jamie Bernstein. He took a horn blast from a James Brown song and turned it into a lush, mellow tone for a Japanese singer's love ballad. 'I didn't feel at all like I was ripping James Brown off,' he says.
>
> That's not the way James Brown sees it. 'Anything they take off my record is mine,' says the soul-music pioneer ... 'Is it all right if I

> take some paint off your house and put it on mine? Can I take a button off your shirt and put it on mine? Can I take a toenail off your foot – is that all right with you?' (Miller, 1987)

Frank Zappa, who features sampled sounds prominently on his recent recordings, included the following statement on his *Jazz From Hell* LP: 'Unauthorized reproduction/sampling is a violation of applicable laws and subject to criminal prosecution.'

Most musicians alter beyond recognition the sounds that they sample. Sampling is a means of easily acquiring raw sound material, and shaping it is part of the creative process. A description of a recent concert performance using a sophisticated sampler illustrates sampling's potential:

> I recently attended a concert ... and I was fairly skeptical ... and it totally floored me, it was beautiful. Very wonderful music. A couple of days later [the composer] revealed that the entire piece was constructed from twelve samples, such as a ship's mast creaking, a breaking twig, water running, you get the idea. All these sorts of bizarre mundane sounds, [he] put these sounds on hard disk and wrote a program to select which ones you want. (Junglieb, 1987)

Sampling technology is far from perfect, and creating samples requires a great deal of effort. It is not as simple as recording a sound, because samplers are not of sufficient quality to perfectly reproduce a sound that is fed into them. Instead, several sound parameters (frequency, equalisation, etc.) must be altered so that what one puts in is the same as what one gets out. Stanley Junglieb described it best by saying: 'sampling is pretty easy, but it has its inherent problems. It's pretty easy to plug in a mic or a guitar. The hard part comes in deciding what to do about control of sound. That has been discouraging to a lot of people. You shouldn't have to think about mapping, about envelope shape.'

Visual editing systems which allow the user to see the waveshape and amplitude envelope help one sample, but are still quite costly and time-consuming. Tom Curley, who operates a small studio in New York and considers himself a 'sampling freak', concurred:

> How do you put a value on [samples]? Because I don't know if you've ever tried to make a sample, but making one is a real pain in the ass. Everybody thinks, oh, sample, oh, I just play a note and that's it. It's a lot harder than that, because of the vagaries of the machine once you get in and once you get out. Before the sample goes in you have to screw it all up and do all sorts of crazy equalization things to it in order for it to come out right. Then you've got to go in and set all your parameters and your envelopes so that it is appropriate to that instrument. In the case of the [Ensoniq] Mirage, you have to take multi-samples. If you want to get a piano, you can't just hit a note and that's the sample, you have to take several samples because the sound is only good for an octave or so, so for every note you have to take 5–7 samples. In the case of the Mirage, you have to take two samples for every note, you have to take a sample when you hit it soft and a sample when you hit it hard. And then you have to get the synthesizer to adjust the mix of those samples so that the velocity is like when you hit a piano and the envelope has to be like when you hit a piano. And that goes for all the other instruments. (Curley, 1987)

A further difficulty with sampling is the relationship of the keyboard to the sampled instrument or sound, especially when the sample is of an acoustic instrument. It is one thing to play a sampled piano – the piano itself is a keyboard instrument – but to play a sampled guitar on a keyboard is very difficult. The guitar, for one thing, is set up quite differently from a keyboard. Its strings are tuned in fifths, whereas a keyboard is a linear scale. Though a sound can be sampled, the performance characteristics of a particular instrument must be attended to by the performer if the sample is to resemble the acoustic instrument. Curley explained:

> [Sampling] is definitely opening up a new world for coming up with new sounds. But initially most people will buy a sampler because they think they're going to have any instrument that they want. And you do. It's just not as easy as it sounds. The next thing that I find very interesting is as a keyboard player, I can play different instruments, because you can put up a saxophone sound and it sounds like a saxophone only if you play it like a saxophone. A keyboard tends to play everything like a piano. And it comes out sounding totally strange; like I've learned when to take a breath when I play the trumpet, could a trumpeter hold a note that long? Would a trumpeter do that kind of a trill? Well, obviously he couldn't play a block chord. Like with a violin, you can have a wonderful violin sample, but then you begin to think with a violin player, sometimes he plays it short with a pizzicato, sometimes he plays it long with a slow attack time with a nice long release time, sometimes they play with a quick release time. You have to change your instrument so that you have immediate control over all those paramenters, so that you can then play like a violinist. (Curley, 1987)

Performance characteristics are therefore vital to sampling, and it is doubtful that copyright legislation could cope with them. It would be absurd to believe a performance style could be copyrighted, but it is not inconceivable that litigation based on style infringement could come to trial.

What is most interesting about the issue of sampling and copyright is its insertion into questions of labour, income and control. Copyright in

the music industry has traditionally been associated with income, since royalties are paid on the basis of copyright ownership. It has also been a means of control, since copyright owners can determine the uses to which a song is put. The administration of copyright, royalty and control is performed by a music publisher. Until the advent of Synthbank, however, there was no such thing as a sound publisher. Copyright of sound was not an issue until sound could be marketed. And now that there is an administrator of sound copyright, and sample clearance houses, an entirely new branch of the music industry will grow.

NOTATION

In 1959, *Billboard* magazine reported the introduction of a Congressional bill to modify copyright law to cover electronic sounds. The bill was requested by 'a composer of the new-type sounds who has contributed to a movie soundtrack, but has no way of copyrighting his music, since it has no conventional notation to deposit with the Copyright Office' (*Billboard*, 1959). The bill did not pass, though the Copyright Office now requires a recording of a piece of music if a notated lead sheet is not available.

What the bill points out is the change in musical notation following the evolution of recording. Prior to written notation, music was memorised by musicians, the same way that epic poems were memorised and recited. It is no coincidence that epic poems and oral history were sung, set to music. Folk music, popular music, is based on memory.

Notation externalised musical memory, as writing is a form of external memory. However, written notation is not a medium of hearing, but of sight. As composer André Kostelanetz once remarked, 'Music is not what you play but what people hear' (Eisenberg, 1987, p. 57). The notes on a page represent music, not sound. Chris Cutler (1985, pp. 95–6) argues that the development of notation brought about the division between composer and performer. Eisenberg (1987, p. 13) writes: 'Perfect preservation is a matter not simply of technology, but of ontology as well. A defect of preservation is a defect of reification, and this is the trouble with clefs and quavers. They aren't music; they just represent it. The music itself is sound.'

Recording presented a means of notating sound. Cutler (1985, p. 96) writes that recording '"remembered" actual performances; more importantly, it could equally well "remember" any sound that could be made, whatever its source. Thus, through the medium of recording, all sound became capable of musical organization and therefore the proper matter of music creation.'

Cutler goes on to say that recording enables the 'reunification of composer and performer'. In brief, that often accounts for the desire to record, since one is able to perform one's own composition. Eisenberg

(1987, pp. 128–9) writes: 'What are the causes of this impulse to create records? ... Marks on paper can be misinterpreted ... When the composer is the performer, what the recording records is nothing less than the composer's intentions ...'

Recording enables those who cannot read music to none the less make music. The popular music artist can often be counted among those who do not have formal musical training, cannot read notes, but can play. This use of recording was highlighted early on:

> Gordon Parks [composes] with a couple of tape recorders and a grand piano. Parks cannot write a note of music ... [he] composes directly on tape, using two or even three recorders to develop counter themes, harmony and orchestral structure. Tape also serves as note-taker for his musical ideas. He files these work tapes, and refers to them when he needs ideas. 'Otherwise, I'd never be able to remember or use many of the themes that occur to me,' says the composer ... After he completes the composition, it is scored by a professional musician. (Lowe, 1955)

Written notation, then, is removed from sound – it is music transferred into the realm of sight. Analogue recording returns music to its base in sound, but denies sight. Although one can see the grooves on a record or the iron oxide particles on magnetic tape, one can interpret them visually only with the greatest difficulty.

Digital recording combines sound and sight. By breaking music down into computer bits, it makes it possible to represent the music in either of two ways – by analysing the notes or the sound, as reconstructed from the bits. Computer programmes exist that allow a digital recording to be created in several ways, by writing notes or by performing a piece. They can then switch between playing the piece or printing it out as a score. Composer Steve Reich uses an Apple Macintosh computer for scoring:

> a Macintosh ... is now my way of notating music. I am finishing with writing out my scores. A copyist would send me to the cleaners for thousands of dollars. I am now liberated thank you, and the next piece I am writing for the San Francisco Symphony will pay for this Macintosh plus about ten times over it ... The pencil and paper has been replaced by the mouse and keyboard. (Reich, 1987)

Although Reich does not use them, programmes exist that create a score from a piece composed on a sequencer.

Digital recording also allows detailed analysis of sound waveforms. Computer programmes like SoundDesigner let the user portray the waveform of a sampled sound on a computer screen, then modify it visually and hear the results.

Probably the single most striking feature of digital recording is its ability to interpolate bits. If a bit is missing, a microprocessor can

substitute another bit by interpolating between the ones before and after the missing bit. In other words, sound, a continuous phenomenon, is converted into discrete steps. The steps can then be modified aurally or visually, by man or machine, and converted back into a continuous sound wave.

It is precisely such aural and visual control over sound that is creating copyright problems. Not only has the representation of music changed, but the representation of sound has been altered too. Is sound a wave created by differences in air pressure, or is it a series of bits, or a series of instructions for a synthesizer? Copyright lawyers will have to decide, as Bryan Bell said, because if sound is to be copyrighted the means of representing sound must be made uniform.

COPYRIGHT AND CONTRADICTIONS

The inherent problem with copyrighting music and sound lies in the nature of recording. The moment of musical production is extended beyond its origin by recording, and therefore control over the music and sound is surrendered.

Copyright law, as Simon Frith points out, was conceived within the 'terms of nineteenth-century Western conventions', and is not well-suited to coping with twentieth-century technology (Frith, 1987, p. 12). The definition of 'fixing' music has changed dramatically. Frith writes:

> In the days before recording, 'fixing' music could only mean scoring it. The author of a song was the author of its sheet music, which frequently meant that the first person to transcribe a folk song or blues became its author and that a ragtime improvisation was credited to the first listener who could write it down. (*ibid.*, p. 13)

Dick Hebdige has described reggae and hip hop cultures which pursue a folk/oral tradition but use modern technology to do so:

> At the centre of the hip hop culture was audio tape and raw vinyl. The radio was only important as a source of sounds to be taped ... The hip hoppers 'stole' music off air and cut it up. Then they broke it down into its component parts and remixed it on tape. By doing this they were breaking the law of copyright. But the cut 'n' mix attitude was that no one owns a rhythm or a sound. You just borrow it, use it and give it back to the people in a slightly different form. To use the language of Jamaican reggae and dub, you just *version* it. And anyone can do a 'version.' All you need is a cassette tape recorder, a cassette, a pair of hands and ears and some imagination. The heart of hip hop is in the cassette recorder, the drum machine, the Walkman and the ... ghetto blasters. These are the machines that can be used to take the sounds out on to the streets and the vacant lots, and into the parks ... By taping bits off air and recycling it, [they] were setting up a direct line to their culture heroes ... And anyway, who *invented* music in the first place? Who ever *owned* sound and speech? (Hebdige, 1987, p. 141)

The mix of technology and folk culture causes problems when viewed from within the music industry, but as Hebdige correctly asks, who owns sound, music and rhythm?

Since sampling allows easy recombination of sounds, authorship becomes ever more confusing. American rap groups, for instance, or the British group Art of Noise, use snatches of sound from various sources. Reggae groups use backing tracks dozens of times for different songs. These forms of 'versioning' are widespread. How should copyright be established in these cases? This is not a new problem. Wallis and Malm (1984) note that in many third world countries musicians record backing tracks that are used by producers for overdubbing singers and other instrumentalists. David Toop (1984, p. 111) suggests that part of the reason for use of backing tracks is economic. 'Versions are obviously a convenient way of making records,' Toop writes, 'as most of the ideas have already been worked out in the original.'

The following description of a song by New York rap group Grandmaster Flash and the Furious Five illustrates the confusion surrounding copyright and authorship:

> [Grandmaster] Flash's concept was to turn the turntable on itself, making it a musical instrument in its own right. He did this by rubbing the needle against the groove, instead of allowing the needle to play the record normally ... The result was Jimi Hendrix's alien sound with a basic James Brown beat ... Study Grandmaster's 'The Adventures of Grandmaster Flash on the Wheels of Steel' to understand how the masters do it. It begins with 'You say one for the trouble,' the opening phrase of Spoonie Gee's 'Monster Jam,' broken down to 'You say' repeated seven times, setting the tone for a record that uses the music and vocals of Queen's 'Another One Bites the Dust,' the Sugar Hill Gang's '8th Wonder,' Grandmaster Flash and the Furious Five's 'Birthday Party,' and Chic's 'Good Times' as musical pawns that Flash manipulates at whim. He repeats 'Flash is bad' from Blondie's 'Rapture' three times, turning singer Deborah Harry's dispassion into total adoration. (George, 1985, pp. 6–7)

It's interesting that digital sampling evolved at around the same time that city kids like Grandmaster Flash and Afrika Bambaataa were creating sampled effects with turntables. Multitracking, overdubbing, and versioning confuse copyright issues almost as much as sampling.

Currently, artists who sample employ a 'four-second' rule, and ask questions such as, 'Is the sample melodically essential to both the original

and new work? Is it readily recognizable in its new context? Is it crucial to the financial success of both the original and the new work (Aaron, 1989, p. 23)? Such questions will no doubt become a kind of test should litigants ever come to trial for a case of copyright infringement via sampling. However, the emphasis has been on *melodic* infringement, and one must wonder what may happen when cases of *rhythmic* infringement come up.

At present most artists will print a credit for a sample on a recording's accompanying insert or jacket, or will negotiate for a license (as was the case with MC Hammer and Rick James for Hammer's 'Can't Touch This'.) At present, though, the US recording industry is generally unprepared for such negotiations, and, as mentioned earlier, engages sample clearance houses to perform such tasks. Since, traditionally, licensing has been granted for full cover versions of songs, for which full mechanical royalties are paid, there does not exist a mechanism for payment of a percentage of mechanical royalties to pay for a sample. However, as negotiation for licenses for samples has become rather commonplace, it is but a matter of time until a fee structure will emerge.

Current copyright controversies, whether they involve sampling, piracy or other forms of infringement, must be viewed as part of the recording industry's exploitation of all income-generating means at its disposal. Simultaneously, the breakup of the Soviet Union, the westernisation of Eastern Europe, and similar occurrences on a smaller scale throughout the world mean that broader exploitation of copyright is possible. This has not escaped the attention of the US government and recording industry. For example, the International Intellectual Property Alliance (IIPA) claimed that 'Taiwan, Poland, and the Philippines top the list of countries whose inadequate copyright laws cause huge losses for the US copyright industries' (Kelly, 1992). The IIPA enlisted the aid of US Trade Representative Carla Hills and asked her to negotiate with those, and other, countries, to 'end their allegedly unfair trade practices'. Hills is to decide whether or not to 'retaliate' against those countries. Similarly, the IIPA asked the US government to intervene in trade negotiations with China to ask that 'it offer US record companies full international-level copyright protection' (Holland, 1992).

It is particularly noteworthy that even the Audio Home Recording Act is viewed by the RIAA as an international agreement. Jason Berman, the association's president, hopes that 'the royalty bill – if passed – will create waves that ... will alter copyright protection throughout the European Community, Japan, Latin America, and Canada' (Berman, 1991). The association has also been involved in GATT talks.

Interestingly, a similar situation occurred in magazine publishing in the mid-1800s, as Pauly (1988) found. Nathaniel Parker Willis began publishing the *Corsair* in 1839, reprinting popular articles from England

and Europe, without permission or payment. Willis's action was in response to a British law that did not grant copyright protection to American authors, and thus deprived him of royalties for his own writing. Pauly notes that it was 'improvements in transportation technology' that made Willis's piracy possible, since steamship travel made access easy to new material from abroad. Similarly, new technologies make access to new sound material easy, and make reproduction of that material easy as well.

Still, the copyright situation in the US itself is quite unstable. The contradictions in copyright law must be worked out before it can cope with new technology. A recent decision by the US copyright office to treat 'colourised' versions of black-and-white films as 'derivative works' if they show 'a minimum amount of individual, creative, human authorship' (AP Wire Service, 1987) may set a precedent for music copyrighting. Probably the best illustration of the difficulties that will be encountered during litigation over sound and/or music infringement comes from the 'Stars on 45' recording, as described by Frith:

> The earliest great mastermix, a series of Beatles songs segued with fine imagination over a shifting disco beat could not be released in its original form because it breached copyright. A cover [version] of the mix was released though – for his Stars on 45 version Jaap Eggermont hired studio musicians to *reproduce* the sound of the Beatles. The latter duly got their mechanical royalties as composers; the deejay whose idea/beat/sequence was exactly copied was entitled to nothing at all. (Frith, 1987, p. 18)

And nothing illustrates the evolution of recording better than the current copyright struggle. When first invented, recording was thought of as a means of sound transmission, primarily via telephone lines. It was in essence an adjunct to the telephone and telegraph, meant to enable later decoding of very rapid messages. An auxiliary use was for storing sound. Since the late nineteenth century, the emphasis has shifted to the retrieving of sound, and development has focused on facilitating retrieval. In an analysis of the history of copyright, Ronald Bettig notes that

> The dominant trends in the development of US copyright law and judicial interpretations were the extension of the duration of copyright protection, the application to new forms of artistic and literary creativity and expression, and the concentration of intellectual property in the hands of increasingly larger corporate entities ...
>
> With ... technological developments, authors and artists found new outlets for their creativity, while publishers and other owners of the means of communication and dissemination found new ways to make a profit. (Bettig, 1990)

Such trends continue to this day. Even though it appears that sampling allows artists to 'reclaim' or 'recontextualise' sound, it must be remembered

that sampling is a *production* method and not a means of distribution. So long as the structure of the US music industry, the US legal system and US copyright law, which support corporate ownership of copyright, remains intact, dissemination of sampled material will remain problematic. The use of digital recorders, compact discs, DAT, hard disk drives and the forthcoming recordable CD is based not only on fidelity and mass storage, but on rapid recovery of sound as well. Recording without playback is, for all intents and purposes, senseless, and it is *playback* that is, in the final analysis, problematic for copyright owners.

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