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In memoriam: Ian McKinnon and S. Jessie Bernstein.

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Cassettes and Creativity

The Beatles' record producer George Martin once said, "Every third person I meet is either a record producer or trying to become one."

Likewise, cassettes have enabled followers of the Grateful Dead ("Deadheads") to pass among them cassette copies of concerts, a "bootleg" recording industry that thrives in the U.S. and abroad. The pirating of recordings is also a problem for record companies: illegally copied tapes of a Michael Jackson LP, neatly packaged, are available in Hong Kong for half the cost of the legitimate article. In both cases the implications for copyright are great.

The "home taping" controversy has raged in one form or another (and one medium or another) for years, and is complicated by the ease of use and low cost of cassette technology. A fellow named Errol, in Negril, Jamaica, for instance, makes a living from his cassette recording studio. Errol makes cassettes of reggae music from records he buys in Kingston and New York and sells them to tourists.

The Cassette Underground

On a different level, hundreds, perhaps thousands, of small "record" companies exist whose sole business is releasing cassettes—usually containing music by one of the owners of the company. To call them companies usually presumes forethought on the part of the owners. Most such cassette-only labels start with no thought whatsoever. They come into existence when a person, usually a musician, records music that (s)he wants to release to the public. By far the most convenient and inexpensive way to make cassettes of the music and sell them is to give them to friends, acquaintances, record stores, etc.

But it is not simply ease of production that makes cassettes the key medium for independent (non-major-label) music. Several other reasons for the cassette's prominence must be taken into account.

The Tape Cartridge

Recording cartridges were developed in 1930, but it was not until RCA announced in 1958 that it had developed a tape cartridge that would hold thirty minutes of sound and retail for about a dollar more than a stereo disc that the tape cartridge gained widespread use. RCA's cartridge was the precursor to the 8-track cartridge developed by Lear Jet and RCA. Although 8-track tapes were mass-produced in the 1960s and 1970s, they did not find acceptance among consumers. The 8-track cartridge was bulky, unreliable, and difficult to record with. A form of the 8-track cartridge became standard equipment for the radio industry, for announcements, station identifications, and advertisements.
The most widely accepted tape cartridge format to date, the cassette, was introduced by the Philips company in 1964. To ensure standardization of the cassette format, Philips gave up the manufacturing rights to anyone wanting to produce cassettes, provided they used Philips' specifications. By 1965, several companies were making cassette recorders, and reviews were favora-

Steve Jones

ble. High Fidelity magazine wrote that "[a cassette recorder] achieves real portability by using a miniature self-loading cartridge rather than by merely duplicating in condensed from the basic design of larger, conventional machines...It is hard to imagine how operation could be simpler." Cassette were relatively inexpensive compared to both LPs and reel-to-reel tape recorders: a sixty-minute tape cost approximately $1.50 in 1968, and, as shown by the wide variety of people reportedly using them, were easy to operate. Recording was no longer solely in the domain of the hi-fi enthusiast. Business Week called cassette decks a "music maker for the masses." The sound quality was good, with most cassette decks able to reproduce frequencies from 50 to 10,000 Hz. In 1969, the Dolby noise reduction system was adapted for use with cassettes, reducing tape hiss and improving dynamic range.

The rapid acceptance of cassettes prompted concern from record companies that the phonograph may be doomed. Business Week noticed the reason:

The teen-ager, the major market for recorded music, no longer has to thread a tape through a bulky and costly piece of equipment in his living room to make his own music. Instead, he can snap a blank cassette (cost about $3 versus $5 for a prerecorded one) into his tiny portable recorder...and copy two hours of music. What Business Week left out of its article was that the cassette could be played in the car, which was essentially home to many teenagers. The same article quotes an executive of RCA's record division as saying, "there are indications that cassette sales have adversely affected record sales."

Cassette decks far outsold other tape recorders by 1970. Records were still cheaper to mass produce than prerecorded cassettes, and since cassettes were duplicated at high speeds, their quality was at best variable compared with records. High Fidelity noted in 1969 that they "doubt [records] will be displaced, except possibly by some fantastic technological breakthrough which—if it occurs—will make all present forms of recorded material obsolete." That breakthrough may have occurred with the compact disc. The breakthrough that made cassettes the medium of independent music was the advent of home recording.

HOME RECORDING

Though recording on vinyl was cumbersome, it was possible to build a small home phonograph studio, provided one could afford it. Tape recording, however, enabled home recording studios to flourish. The low price of tape coupled with its reusability made it the perfect medium for those who wanted to build small studios in their basements. More important, multi-track recording's over-
dubbing capabilities made it an ideal medium for the solo musician. Home recording equipment became to music what the single-lens reflex camera was to photography: a means for a mass audience to pursue mass production.

The home use of tape recording had been recognized from the start. In 1955, Musical American extolled its benefits:

While tape's inherent qualities recommend it highly as a playing medium, the tape recorder, as its name implies, allows the musician to...make his own recordings... You do not need to be an expert to make fine recording... One versatile instrumentalist who plays fourteen different instruments used tape to make his dream of being a one-man band come true.

Home recording got a boost in the 1970's when 4-track open-reel tape decks became affordable. But it got its biggest boost in the late 1970's and early 1980's, when 4-track cassette decks with built-in mixing boards were offered by Tascam and Fostex.

The 4-track open-reel deck became popular for home recording during the 1970's. According to an article in Popular Electronics magazine, "reasonably good 4-channel decks [sold] for around $800 and up." The article's author discovered their popularity when he noticed that electronics dealers were offering mixing boards, microphones, and noise reduction units in addition to the more conventional products such as tuners, amplifiers, and cassette decks. His conclusion was that 4-track tape decks "are forming the basis of thousands of home recording studios" often capable of turning out master tapes that rival some of the products made by professional studios." Many 4-track tape decks became affordable when the bottom dropped out of the quadrophonic high-fidelity market.

In April, 1977, the first "Multi-Track Expo" was held in Los Angeles. Home recording had become a recognizable industry, and the home recordist an identifiable market for manufacturers. The exposition, which drew 4,500 registered participants, featured workshops like "The Musician's Home Studio," and included exhibitors that had
"formerly been regarded as 'for professionals only.'"

The marketing of home recording equipment was aimed at the musician trying to achieve success in the recording industry. An advertisement typical of the marketing strategy appeared in the December, 1987 issue of Stereo Review magazine. Pioneer Electronics Corporation's ad for the RT-2044 4-track tape deck contains bold print stating, "For the price of a few hours in a recording studio, you can own one." The company's reasoning went as follows: since recording studio time in California costs $165 an hour, and the RT-2044 costs $1,650 "just once," the Pioneer deck can be had for the equivalent of ten hours in a studio. Of course, the ad does not mention that for $165 an hour one has access to considerably more than a 4-track deck, and that a 4-track deck alone does not make a studio. Bruce Springsteen's Nebraska LP was recorded on a cassette multi-track machine, ostensibly because Springsteen wanted to record a "pure" album (as did the Punks). His record, however, had the benefit of a professional recording engineer operating the deck, along with high-quality microphones and other equipment. The appeal is nonetheless great, because, according to the ad, "it's obvious that 'paying your dues in the studio' can be a prohibitively expensive proposition."

Pioneer's appeal is twofold, and is typical of most marketing of home recording equipment. First, manufacturers appeal to the musician's desire to learn more about "how to sound truly 'professional,'" intimating that professional recordings are the key to success. Second, and more important to the discussion at hand, they play on the traditional rock and blues notion of "paying one's dues," of working hard for little or no reward and earning one's success. But there is an obvious contradiction between having a home studio and being a struggling musician: an investment of at least $2,000 is required to purchase enough equipment for 4-track recording. Presumably, when it comes time to pay one's dues, payment to Pioneer is the equivalent of credit. "Paying your dues," which traditionally meant sweating it out night after night in live performances at small, smoky bars or nightclubs, has suddenly become equated with sitting in the basement, bedroom, or garage with a tape recorder and other equipment.

A recent Yamaha advertisement takes this theme one step further. "Go to Your Room and Play," the headline reads. The text of the advertisement states: "Using the MT2X Multi-Track Recorder/Mixer, you can layer your recording just as you would in a real studio—one track at a time. So if you've been wondering where you're going to get your first big break in music, now you know. At home." Rock producer Tony Visconti rightly recognizes home recording as an alternative to live performance:

I'm amazed at the high quality of the tapes people are bringing me. What's more, a lot of the better material has come from home studios in England...I believe that with the reduction in the number of live venues, people are creating some of the best music around in their own homes in the form of home demos. More than anything else, home recording technology has enabled artists to capture musical ideas on the spur of the moment, in the form of demo tapes. Tascam Corporation's David Oren noted:

I worked with the Alesis Brothers in the past. They started out in 4-track, then quickly went into portastudios. Their statement to
machines and synthesizers had been developed to a point where they too were both inexpensive and small enough to place in one's bedroom. Second, the integrated circuit made possible the reduction in size of most recording equipment while increasing its reliability. Third, as most recording equipment is manufactured in Japan, fluctuations in the value of the Japanese yen and the American dollar meant that at certain times equipment would be priced very favorably.

THE CASSETTE AND HOME RECORDING

Home recording's popularity is attributed to the number of books and magazines on the subject that have been published since the late 1970s. Periodicals such as Music Technology, Electronic Musician, and many others contain useful information for the home recordist. But perhaps better testimony to its impact is the number of home recordings released in the past several years. Underground music magazines like Sound Choice and Option regularly review hundreds of records and tapes created in basements, living rooms, and bedrooms.

Jon Pareles, writing in The New York Times, identified a "cassette underground" brought about by "affordable music technology, especially the advent of inexpensive multi-track recorders." Pareles quotes Scott Becker, Option's publisher, as saying "we get fifty to seventy-five cassettes every month, from all over." Becker's emphasis is on cassettes (he does not mention records) and most home-recorded music that reaches the ears of the public does so by means of cassette. Though several national cassette-only distributors exist, most independent music cassettes are purchased via mail order. Independent music magazines usually publish addresses along with cassette reviews.

Several of the larger cassette labels, such as Sound of Pig, Touch, Office, and Trance Port, swap artists and release compilation tapes regularly, and a network of cassette artists is well established among independent musicians. Groups with names like Big City Orchestra, Flik, Hume, The Arms of Someone New, ToxicPussy,
and if, Bwana have cassettes regularly reviewed in independent music magazines whose readership ranges from several dozen to several thousand. The music (and other) groups release ranges from new age to hardcore, from pure pop to pure punk. College radio stations, traditionally open to non-mainstream music, often play cassettes. Some, like Northwestern University's WNUR, have
cassettes and copyright
The ease of cassette production is ultimately responsible for the conflicts between consumers, musicians, and a recording industry built upon exploitation of copyright. The biggest and most recent controversy over copyright concerns home taping of records and compact discs. Though beginning in the late 1970's, when the recording industry's sales slumped, it has taken on altogether new meanings with the development of digital recording.

The late 1970's found record companies no longer enjoying steady, predictable sales. Sharing the blame with a depressed economy and a stagnant musical climate was home taping of music. Concerned that home taping was cutting into record sales, the recording industry began running advertisements denouncing home taping as theft, and pursuing the U.S. Congress to amend copyright laws. Home taping, the industry reasoned, is copyright infringement.

Little came of these lobbying efforts, however. In the early 1980's, 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; 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 U.S. House of Representatives in 1983 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 percent of the retail cost on tape recorders, and a tax of twenty-five percent 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, was not passed by Congress. The Washington Post reported in September, 1986, that the RIAA was moving its headquarters to Washington, D.C. to better lobby Congress for 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.)

It would be an understatement to say that taping is central to cassette culture. In his book Cut 'n' Mix, Dick Hebdige writes about reggae and hip-hop, cultures which pursue a folk/oral tradition but use cassette technology to do so:

At the center 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

Big City Orchestra 1989 Calendar: Santa Cruz, CA USA
America's Right to Tape: Once Again, They're Chipping Away at It.

It started 20 years ago with the cassette. The big record companies didn't like it and couldn't see the need for it.

Then 11 years ago some Hollywood studios sued to keep you from taping movies and programs off the air. (It took the Supreme Court to prevent the studios from preventing you from taping.)

It's 1987. Do you feel that deja vu? At this moment the recording industry is trying to get Congress to require all new digital audio tape recorders (DATs) to contain an antitaping chip. That chip will prevent from taping most new records, tapes, discs, as well as broadcasts.

These chips respond to a code in the music that will destroy the integrity and fidelity of music—even on playback.

Many see this as the first step requiring anti-taping chips in all recorders—audio and video.

And to add injury to insult, there's talk of a hefty royalty tax on audio recorders and blank tapes.

Send the coupon or call right away. So your rights won't be taken away.

We'll tell Congress you oppose any "chipping away" of your rights. Or call us toll free at 1-800-282-TAPE for more information (663-8591 in D.C.).

Home Recording Rights Coalition 1-800-282-TAPE
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 onto the streets and the vacant lots, and into the parks... By taping bits off air and recycling them, they were setting up a direct line to their culture heroes... And anyway, who invented music in the first place? Who ever owned sound or speech? The mix of technology and folk culture causes problems when viewed from within the music industry, but as Hobsbawm correctly asks, who owns sound, music, and rhythm?

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 compact disc 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 potential home tapers were discouraged by the noise and hiss added to each copy generation with analog tape. DAT produces no noise or hiss at all, however. And since compact discs are digitally recorded to begin with, DAT is 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 program to self-destruct or prevent copying. The recording industry is opting 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 compact disc 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. In February, 1988, a Congressional committee concluded that the anti-copying mechanism was not the solution to the copyright problem.

The dilemma faced by the recording industry is based primarily on the copying and piracy of compact discs, not records, because CDs are virtually perfect copies of the master tape. The industry was slow to switch over to compact disc, but CD sales have expanded phenomenally and record companies have now firmly established 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 CDs since they can record on DAT.

The outcome may involve a compromise on the part of the RIAA, its international parent organization the International Federation of Phonogram and Videogram Producers (IFPI), and the Electronics Industries Association of Japan. It is doubtful that legislation regarding a home taping tax or an anti-copy-
NOTES

3. Sumanta Banerjee, Audio Cassettes: The User Medium (Paris: United Nations Educational, Scientific, and Cultural Organization, 1977), p. 20. The author recalls that during summer, 1982, while employed at a chain operated record store in Champaign, Illinois, an executive from the home office arrived one day in a pick-up truck and removed every 8-track cartridge from the store with the comment, "These are dead, I don't know why we've kept 'em this long."
4. Ibid.
5. High Fidelity, November, 1965, p. 46. Cassette players have become popular in automobiles. Stereo Review of November 26, 1966 contains an article headlined "Tapes on the Turnpike" (pp. 64-67). According to Business Week, February 24, 1968, Detroit auto makers were installing 8-track decks as original equipment (p. 109).
8. Ibid., p. 142.
9. Ibid., p. 142.
11. Ibid., p. 109. The growing division between hardware and software manufacturers is evident at this point. The article quotes an executive of Columbia Records: "We aren't in the hardware business, and we don't want to help [GE, Norcalco, or any others] sell their equipment by telling the public they can play our music on cassettes." The recording industry called for a change in copyright laws, and hardware manufacturers marketed only cassette machines (which did not catch on with the public).
15. Ibid.
21. Though the recording quality may not be as good on 1/4-inch tape, the cost of one reel of 1/4-inch tape is $12, versus $32 for 1/2-inch tape.
23. Ibid.
24. The lawsuit brought against Michael Jackson for alleged plagiarism of the song "Billie Jean" revealed that Jackson has a 4-track recorder at his bedside.
28. The argument that consumers will prefer DAT because they can record on it is not a very good one. Consumers would then presumably prefer cassettes to LPs also.
29. Tim Hanafee, keyboard player for Left and Memphis Phase II, in a conversation with the author at Maybel's, Champaign, IL, 1982.
30. Larry Grossberg, presentation at the International Communications Association Convention 1987, Montreal, Canada.