THE ACT OF LISTENING IN THE AGE OF DIGITAL MUSICAL INSTRUMENTS

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For popular musicians who work with electronic instruments, the fashioning of individual "sounds" has come to demand the same kind of focused, creative attention (and commercial speculation) that was once reserved for the melody or the lyric of a pop song. Equally important is the assumption that the musician's efforts in creating a unique "sound" will be immediately recognized by the listening audience; that an individual "sound" can carry the same commercial and aesthetic weight as the other, more traditional elements of musical language. In this sense, "sounds" have become a means of capturing the attention of the listener.

Such an emphasis on "sound" clearly has antecedents at least as far back as the mid-nineteenth century. With the diversification of musical instruments in the modern orchestra, Romantic composers such as Berlioz and Wagner, and later, early modernists such as Debussy and Stravinsky, transformed "orchestration" from little more than a technical afterthought to a central component of the compositional process. But the particular focus on "sound" manifest in much contemporary popular music is based on a very different set of possibilities and is more closely related to the technologies of mechanical and electronic reproduction, on the one hand, and the rise of powerful new digital technologies of musical production (synthesizers, samplers and drum machines) on the other.

Unfortunately, much of the discussion of new technology among musicians themselves during the past ten or fifteen years has been limited by a rather mundane conception (and conflation) of the issues of musical skill and livelihood. Programming a drum machine just doesn't seem to require the years of diligent practice necessary to play a drum kit; session players just don't seem to be able to make a living any more. As pop music critics such as Simon Frith and others have argued, such concerns often mask a deeper set of conflicts over

We always try to get things that become hooks themselves.... As soon as you hear that sound you think of that song. You have to use everything that way, creating hooks on every level.[1]
— *Jane Siberry*

musical values and notions of "authenticity" in musical expression.[2] But this whole emphasis on conventional skills and authenticity needs to be radically rethought if for no other reason than the fact that traditional notions of musicianship and authenticity have largely become irrelevant, for both producers and consumers, in many forms of pop music production during the past decade.[3]

What I want to suggest here is not that we abandon the idea of musical skill, but that through a reconsideration of the problems of skill, technology and the role of sound in defining musical style, a more fundamental set of issues might be revealed. These issues revolve around *listening* as a specific, yet variable set of capacities used by musicians and audiences alike in the process of producing and consuming music. To focus on the variable modes in which we listen to music is important, I think, because it can shift our attention away from the more conventional ways in which musical skill or personal expression have been conceptualized — ways which clearly tend to set musicians, as "producers" of music, apart from audiences, as "consumers" thereof — and towards an understanding of some commonalities and differences that subtly define this most basic of musical capacities.

In certain respects, I take as my point of departure a relatively little known article published in 1971 by John Blacking, entitled, "Towards a Theory of Musical Competence."[4] Blacking argues that the specific ability to perform on a musical instrument is largely irrele-

vant as a measure of "musical competence", which he defines as "the phenomenon of creative, or structured, listening."[5] Furthermore, for Blacking, any number of activities can be regarded as an index of musical competence. For example, he states that dancing is generally considered by the Venda of South Africa as the first stage in the acquisition of musical skill. Indeed, he goes so far as to suggest that it may be impossible to fully develop a notion of musical competence without a corresponding consideration of "dancing competence."[6] Ultimately, however, Blacking's real aim (and here he reveals the enduring influence on ethnomusicology of the goals of comparative musicology during the late nineteenth and early twentieth centuries) is to arrive at a theory that can define both a "particular musical competence" that is related to specific cultural traditions, and a form of musical competence that is more "universal" in character.

On this point I part company with Blacking and, indeed, I want to take an opposite tack on the problem of listening: my questioning is not motivated by his relatively abstract concern with basic human capacities, but rather, by my interest in how specific activities related to making or consuming music result in *differently structured listening habits*. Here, an older and more well known article serves as another significant point of departure: David Riesman's "Listening to Popular Music."[7] Again, I am less interested in the particulars of Riesman's arguments — his concern with "minority" and "majority" tastes, "active" and "passive" con-

sumption (with attendant gendered overtones) — as I am in the suggestion, only implicit in his article, that different people not only listen to different kinds of music but that they indeed *listen differently* as well. The problem, then, rests not so much with the development of a generalized theory of musical competence as an innate, or learned, human capacity to listen in a structured manner, but with understanding the ways in which various activities surrounding the production and consumption of music can result in the very *structuring* of listening. The emphasis is thus resolutely on the particular rather than the universal; on listening as both context and effect.

And this brings me back to the problems of musical skill, technology and sound. It seems to me that the impact of modern technologies on our capacity to listen to music has been somewhat ignored. And I don't refer here simply to the almost clichéd assertion that technologies of sound reproduction have transformed our listening from a foreground to a kind of background experience. What I do want to argue is, firstly, that traditional musical skills — e.g., the ability to play a musical instrument — tend to focus an individual's listening patterns in particular ways (and indeed, the type of attention engendered by different instruments is quite variable). Secondly, with the increasing use of electronic instruments in musical production and reproduction there has been a corresponding shift in the nature of these listening patterns such that many musicians' listening habits more closely resemble those of other musical consumers than

they might have in the past. Furthermore, this pattern of listening needs to be understood as a fundamental part of a more general type of consumer practice that now lies at the heart of popular music production.

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To begin with, what is often ignored in discussions of musical skill is the degree to which a musician's subjective sense of musical style may be bound up with his or her ability to play a specific musical instrument. Musical style, in such instances, is not simply a particular configuration of sounds that we hear, but is something that is primarily an awareness that is as much physical as it is aural or cognitive. In this sense, for many musicians, traditional styles or genres of music cannot easily be separated either from the sounds that constitute them or from the precise physical gestures that produce them. Nowhere is this more evident than in improvised and semi-notated forms of music where a sense of the relevant musical traditions and conventions is passed on, not primarily through discourse, but through practice. In his discussion of jazz improvisation, Howard Becker (in terms reminiscent of Bourdieu's more fully developed concept of the "logic" of practice)[8] has observed that: "Conventions become embodied in physical routines, so that artists literally feel what is right for them to do.... They experience editorial choices as acts rather than choices."[9] Similarly, David Sudnow has described jazz improvisation techniques as "the knowing ways of the jazz body."[10] Fluent impro-

visational technique, because it must answer to the needs of performance in "real time," demands that the body become accustomed to routines, not simply as a form of acquired technique, but as elements of musical style.

> Only after years of play do beginners attain that sort of full-fledged competence at place finding that the jazz pianist's left hand displays in chord execution.... Through repeated work in chord grabbing, an alignment of the field relative to the body's distancing potentials begins to take place, and this alignment process varies in delicacy and need in accordance with the form of the music. The rock-and-roll pianist's capacities for lookless left-hand reaching differ from the baroque specialist's, and these both from the stride-style jazz pianist's. Every musical style as the creation of human bodies entails correspondingly constituted tactile facilities for its performers.[11]

Similar observations could be made about virtually any group of instrumentalists. For example, drummers know that to move between the steady beat of rock to the shifting accents of reggae, to the melodic and polyrhythmic style of jazz requires not simply a knowledge of relevant rhythmic patterns and phrases, but a realignment of the body and its balances — a complete re-"patterning" of the coordination of the limbs. Style then, for the musician, is something that is acquired only through an extended *process* of learning through practice.

> Furthermore, style, thus acquired, is not necessarily as rigid, as mechanical, or as unchanging a thing as one might suspect: it becomes a physical resource through which

variations — and indeed innovations — are created. More than this, it becomes a way of *listening* to music as well. Sudnow relates how, after a lengthy period of playing jazz piano in a relatively spatial and tactile manner — a manner governed by visual and conceptual schemata and supported by a certain physical dexterity — he began to consciously "aim" for particular sounds (not simply "places" on the keyboard)[12]. The capacity to hear, in advance of an action, is a subtle (and essential) aspect of a performing musician's creative ability.

> It is one thing to recognize familiar sounds you are making and another to be able to aim for particular sounds to happen. A different sort of directionality of purpose and potential for action is involved in each case.[13]

What is essential in Sudnow's account is the fact that this inner hearing is related to action in a temporal way. He describes this momentary pre-hearing of a note-to-note course of action as the "emergence of a melodic intentionality" that had been dormant in his playing prior to that time.[14]

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I will return to this notion of inner hearing and intentionality in music below, but first it is worth pointing out that accounts such as Sudnow's may go a long way in explaining the particular attachment that so many musicians have to specific instruments, the importance they place on the acquisition of skills of execution (which clearly entail specific listening patterns as well) and, consequently, the threat felt by some of them when confronted with new tech-

nology. When a drummer, for example, approaches a digital drum machine for the first time, it is not primarily an unfamiliarity with the functioning of the device that is the source of a certain discomfort; it is, in part, the apparent loss of that entire "field" of physical/spatial/aural potential, so intimately tied to his or her sense of musical purpose, that is perhaps most disquieting. Adopting new instruments, new sounds or a new style of playing is thus a very gradual process for most musicians, as attested to even by jazz trumpeter Miles Davis, a musician whose long career, more than most, was defined by change:

> When I started playing against that new rhythm — synthesizers and guitars and all that new stuff — first I had to get used to it. At first there was no feeling.... You don't hear the sound at first. It takes time. When you do hear the new sound, it's like a rush, but a slow rush.[15]

At the risk of belabouring the obvious, it should nevertheless be noted that "the sound" that Davis refers to in this instance is not the same "sound" with which much of this essay is concerned (i.e., an isolated object of reproduction) rather, as with Sudnow, "the sound" which Davis is trying to hear is that inner projection of a musical action. For the improvising musician, new musical contexts require new ways of feeling and an attentiveness to hearing/playing new patterns of sound.

A musical style is thus always *learned*, to paraphrase Leonard Meyer, even by the musicians who "invent" it.[16] In this sense, musicians are little different from other listeners (i.e.,

audiences). The codes, habits and strategies of a given style or genre of music come to be intuitively felt by listeners as a set of implied relationships and expectations that are "empirically real, but...necessarily general, vague, and physical."[17] For the listener (and again I include musicians as well as audiences), the problem of translating these vague feelings into more concrete terms usually involves language and is thus always an active and ongoing interpretative process — a process that is (like music itself) both subjective and socially interactive, composed of a set of "interpretative moves that metaphorically locate, categorize, associate, reflect on, or evaluate music experience."[18] Furthermore, like musicians, listeners learn to *anticipate* certain features and patterns within a given style; and if this sense of anticipation is neither as precise nor as specific as the "aiming" process of the improvising musician, it is nevertheless essential to the formation of the listener's sense of stylistic "boundaries."[19] More than a simple matter of recognition, the perception of boundaries or "frames" becomes part of that other musical practice — consumption — where issues of "value," "identity" and "coherence" are instantly and simultaneously felt and reflected upon.

For audiences, a parallel intimacy between physical potential and listening is perhaps most clearly felt when dancing (and here, Blacking's observations concerning musical competence and dance are particularly salient). In dance, the body both responds to the shaping influence of rhythmic sound and makes use of it — channels

it towards another kind of expressive action that is at once related to, but different from, musical performance. The active and potentially creative nature of these practices challenges conventional notions of "consumption." Critical theory of the past has too often dismissed dance as a form of meaningless abandon or, worse, as in Adorno's account of the "jitterbug" craze of the 1930s and '40s, a set of mere "socially conditioned reflexes" representing false consciousness in its most frenzied and hysterical form.[20] More recently, pop culture theorists have tried to recuperate dance as a meaningful process of self-realization through the body, and have placed considerable emphasis on the importance of dance in the gendered expression of self-control, pleasure and sensuality. Whereas males have been able to make use of musical instruments in public displays of physical control and technical mastery (e.g., the electric guitar), women have had fewer outlets for similar forms of public expression — dance has come to be considered as one of those outlets.[21]

But for my purposes here, the importance of the relationship between popular music and dance can also be seen in the manner in which the latter feeds back into musical production practices. It seems to me that the function of popular music as dance music can inform the subjective impulses of popular musicians even as they engage in the relatively detached and analytic practices of electronic production (e.g., programming a drum machine). Furthermore, these basic impulses are also mediated, complemented and even guided by other kinds of

knowledge derived from specialized magazines, industry tip sheets and the like. This feedback of consumption into production is then both conceptual and physical in nature, both fully intentional but also intuitive. Thus, a history of personal and collective consumption can form not only the basis of an awareness of the general outlines of musical style but even the precise "feel" for the details of musical form. And in this regard, I would like to suggest it is perhaps not surprising that it has been in the various genres of contemporary dance music that new technologies have been most fully utilized. In dance music, the physical relationship between sound and the audience is more direct, less mediated by other kinds of physical gestures related to instrumental performance and/or the spectacle of live concerts.[22] In this sense, new technologies have not so much been an influence *on* dance music as they have become utilized *within* the already existing cultural context of dance — a context with its own needs, aesthetics, production practices and modes of listening.[23]

But to return to Sudnow's notion of inner hearing and intentionality, it seems to me that there is a sense in which the vast array of "sounds" produced by digital instruments has had a more general and subtle influence on pop musicians and their approach to music-making than is generally recognized. Part of the reason for this, no doubt, is the unique, pre-formed character of the sounds themselves.

Sounds really make you play a certain way. If you have a little, dry, ticky-type sound, you might not take the soaring solo that you would with a different sound...I really think that sounds inspire you.[24]

— keyboard player Starr Parodi

I've been getting into sounds lately...realizing that if something has an interesting enough sound, you don't have to play as much on the instrument. If you get a keyboard that has an interesting sound, you don't have to play a lot of notes on it. The sound takes over.[25]

— multi-instrumentalist Marcus Miller

There is a striking difference in approach between Sudnow's account of "aiming" for particular sounds and that of *responding* to them in the manner suggested here by Parodi and Miller. Sudnow's practice suggests a form of subjective, internal listening that precedes and guides the act of sound-making, whereas this more recent form of practice described by Parodi and Miller suggests the opposite: an external form of listening where the objective character of the pre-existing sound either strongly influences the manner in which it should be played or becomes, in itself, the primary focus of attention.

The subtle impact of this influence has been felt by many musicians, and in some cases they feel that they have to work against it in order to get back to some other "essence" of music. Composer/performance artist Laurie Anderson, for example, claims that when she writes music she usually calls up a standard piano "patch" on her synthesizers rather than allowing "sounds" to distract her.

I just don't want to be too distracted by colour. When I decided to write the songs on *Strange Angels*, I thought, "Well, if I just sit down at a piano and play them and sing them, then they'll work." I decided to take that approach rather than immediately getting distracted — "Oh, I have this great Akai sample that I just have to use, and even though it doesn't have too much to do with what I think the tempo of the song is, we'll, uh, work around that.

Writing with piano sounds makes me pay closer attention to the real structure of the song. It strips the song down to the most plain kind of version.[26]

The idea that piano sounds themselves are somehow "neutral" is curious. Ethnomusicologist John Blacking has argued that the physical experience of playing an instrument (and not just the sounds that it produces) can have a strong influence on the character and conceptualization of music, and that we can gain different kinds of insight into musical structures when we know that Hector Berlioz composed at the guitar and Beethoven at the piano.[27] The apparent neutrality of the piano sound is no doubt due, in part at least, to the piano's long-standing cultural heritage, its basic familiarity and acceptance as a tool of composition.

But Anderson's statement also suggests that there is some fundamental opposition between the focus on "sounds" as objects in themselves, and the demands of musical structure. Here, she is perhaps only echoing the conventional opposition between formal structure and its

expression in sound which is inherent in the representation of music through notation and which has long been a basic tenet of Western musical aesthetics (in this sense, notation also guides listening, as a kind of "sound noticing system," towards selective aspects of the music-making process)[28]. Perhaps one of the most virulent expressions of this opposition can be found in Theodor Adorno's polemic against the music of Igor Stravinsky. Adorno argued that Stravinsky's exploitation of instrumental techniques in his compositions was motivated by nothing more than the desire for "effect," and that his heightened sensitivity to instrumental colour overpowered his music, resulting in a "fetishism of the means."

> The means in the most literal sense — namely the instrument — is hypostatized: it takes precedence over the music. The composition expresses only one fundamental concern: to find the sounds which will best suit its particular nature and result in the most overwhelming effect. There is no longer any interest in instrumental values per se which will...serve the clarification of continuity or the revelation of purely musical structures...the intensification of "effect" had always been associated with the progressive differentiation of musical means for the sake of expression.... The goal of musical effects is no longer stimulation...in the emancipation from the meaning of the whole, the effects assume a physically material character.[29]

Adorno's argument was clearly influenced by his desire to connect particular tendencies which he perceived within modernism (and manifest in the music of various composers from Wagner to Stravinsky) to his analysis of capitalism and the "culture industry." The adaptation of Marx's theory of commodity fetishism, and the concern for the manner in which the "progressive differentiation" of means and the pursuit of "effects" obscures musical structure, were all consistent with his more general social critique. While I do not wish to debate the overall validity of Adorno's critique here, it seems appropriate in the present context to point out the entirely conventional (even conservative) nature of the musical assumptions upon which Adorno bases his broader analysis, which valorizes the unity of musical structure above all else (this was even more clearly the case in his analysis of Schoenberg's music), and demands that all colouristic and expressive tendencies be sublimated to the force of compositional logic, to "purely musical structures."

Curiously, the language with which Adorno described the compositional tendencies in Stravinsky's music — the concern for choosing the right sounds for a given context, the progressive differentiation of musical timbre, and the manner in which sounds came to assume an independent, physical and material character — could be applied equally to the more recent tendencies associated with digital synthesis and sampling in popular music during the 1980s. Indeed, among popular musicians who are critical of the new technologies, the articulation of a basic opposition between the apparent fetishism of "sound" and the demands of compositional structure are virtually the same:

A lot of the technology has made it so easy for facile writers and inconsequential writers to play with the sound, rather than write a great piece of music, that it's tended to water down a good deal of substance in composition.[30]

— singer/songwriter, Billy Joel

But while there are certainly still valid distinctions to be made between "songs" and their realization in sound, there is a sense in which, for much popular music, such distinctions have become increasingly difficult to make. Indeed, musicians today (and critics and audiences as well) often speak of having a unique and personal "sound" in the same manner which another generation of musicians might have spoken of having developed a particular "style" of playing or composing. The term "sound" has taken on a peculiar material character that cannot be separated from either the "music" or, more importantly, from sound recording as the dominant medium of reproduction. With regards to the latter, the idea of a "sound" appears to be a particularly contemporary concept that could hardly have been maintained in an era that did not possess mechanical or electronic means of reproduction.

This brings me back to the idea of the "sound hook" mentioned at the beginning of this essay. Once associated with the song through record, radio and MTV play, the "sound hook" begins to exert a force of its own, virtually demanding that any "authentic" rendition of the song be performed with the same or an equivalent sound. It has long been recognized that the dominance of the recording medium in

popular music culture has placed considerable pressure on performing musicians, in the case of local "cover" groups, to try and match the sound of hit songs in their live performances, or in the case of the original pop or rock act itself, to reproduce the sound of their own recordings while on tour. Digital technology has proven to be a powerful tool in this regard, and even guitar-based rock groups have turned to synthesizers and samplers as a means of reproducing studio arrangements of their songs which could not otherwise be played live without a large number of backing musicians. When the Rolling Stones embarked on their "Steel Wheels" tour in 1989, they hired the services of two keyboard players to help with the task of performing and reproducing the sound of songs they had recorded decades earlier.

I'm putting what was there on the recordings into the live performance, rather than adding outlandish electronic noises. People tend to forget the lovely arrangements, which are very much a part of the Stones sound, especially in the early days…and that's the sort of sound that I can put back in.[31]

— Matt Clifford

The grammatical anomaly present in this last statement (that these sounds from the "early days;" "*are* very much a part of the Stones sound") is perhaps significant; once established, it is difficult even for the originators of a given "sound" to change it. The nostalgia for "Golden Oldies" in pop culture demands "authentic" reproduction. The search for authenticity can reach absurd proportions. Clifford describes in

detail how, for one song, he recreated the sound of a Mellotron (a keyboard instrument introduced in the 1960s that used pre-recorded sounds on loops of magnetic tape, much like a sampler uses digital recordings today); the process became what I would call a form of "second-order simulation," where a digital device was called upon to simulate the sound of an analog device reproducing the sound of an acoustic instrument. Perhaps nowhere has the link between "sound" and musical genre been so intensely formed as in rap and various forms of dance music during the 1980s. In the high-fashion world of the dance club, dance styles, fashion statements, musical genres and sub-genres abound; and new sounds and rhythms (often created with little more than a sampler and a drum machine) have come to play a large role in defining the unique sound of each new genre or sub-genre before it exceeds its brief half-life in the seasonal upheavals that seem to characterize the highly volatile club scene. For example, one particular drum machine, Roland's TR-808 (released in 1980), has often been singled out for its contribution to the sound and style of rap music as it moved from its early stages as street and club music, during the 1970s, to mainstream prominence in the 1980s.

> Drum machines — the easiest and cheapest source of drum sounds — were the seminal rap axe. By general consensus, the Roland TR-808 was the instrument of choice, mainly because of its bass drum. "The 808 is great because of the bass drum," Kurtis Blow reports. "You can detune it and get this low-frequency hum. It's a car speaker destroyer. That's what we try to do as rap producers — break car speakers and house speakers and boom boxes. And the 808 does it. It's African music!"[32]

The relationship between the sound of a Japanese-manufactured drum machine and "African music" may seem, on the surface, somewhat tenuous, but this statement draws on what has virtually become a part of pop common sense during the past two decades — the idea that dance music with a heavy bass sound is an expression of African-American cultural identity.[33] Interestingly, the continued popularity of the 808 bass sound led Roland, when it developed a new line of drum machines in the late 1980s (the R8 Human Rhythm Composer and the Boss Dr. Rhythm DR-550, among others), to make available a set of digital samples of the original 808 sounds — another instance of "second-order simulation" — as part of the newer instruments' sound data (some rap producers claim that they appreciate having access to these sounds but complain that the samples are "too clean"; rap aesthetics demand that they work at making them "dirty" like the 808 originals). The digital "repackaging" of musical style goes even further however. Roland, and other companies such as Casio, have included the sound of turntable "scratching" in their drum machines and synthesizers in order to facilitate the imitation of a rap "sound" without recourse to its specific techniques or content.

Taken together, it seems to me that these new ways of listening and responding to musical sounds have had a significant influence on

the character of popular music production since the 1980s: in effect, musical production has become closely allied with a form of *consumer* practice where the process of selecting the "right" pre-fabricated sounds and effects for a given musical context has become as important as "making" music in the first place. In this way, musicians have not simply become consumers of new technologies, but their entire approach to music-making has been transformed into one where consumption — the exercise of taste and choice — is now implicated in their musical practices at the most fundamental level. In a somewhat different context, Ross Harley has described this phenomenon as an inversion of the conventional production/consumption hierarchy: "electronic recording establishes a listener who is characterized by an apparatus that precedes him/her."[34]

It is here that the market context of digital instrument manufacturing, including the "software" side of the industry, can be seen to have a mediating effect on musical practice. The past decade has been witness to the growth of so-called "sound libraries" for digital synthesizers, samplers and drum machines. Each instrument comes with a collection (often numbering in the hundreds) of relatively standard instrument sounds — pianos, basses, saxophones, drums, brass and strings — in its memory banks; on most models, additional sounds can be obtained on cartridges, cards, diskettes or CD-ROMS and added to this basic repertoire. The sounds are usually tailored to specific styles of music, and a small cottage industry has developed in order to

maintain a steady supply of new sounds to keep up with changing tastes and musical styles.

In the past, one certainly might have purchased an instrument for its particular sound qualities, but one's own approach to playing could be as important a factor in the kinds of sound produced as the inherent quality of the instrument itself. One need only think of the various means through which musicians have coaxed new and unorthodox sounds from an instrument such as the electric guitar — from the "bottle neck" slide technique to the use of amplifier feedback — to realize that traditional instrument technologies can sometimes be considered as little more than a field of possibility in which the innovative musician chooses to operate. The particular "sound" produced in such instances is as intimately tied to personal style and technique as it is to the characteristics of the instrument's sound producing mechanism.

Ironically, despite the enormous variations in sound generation possible with modern programmable synthesizers, there is a sense in which many musicians have become increasingly concerned with whether the instruments they purchase *already* possess "an interesting sound" or, similarly, whether the instrument in question gives the owner access to a desirable range of easily obtainable sound programs:

> When I buy a sampler, I think in terms of libraries, rather than capabilities. I rely heavily on available sounds, and get variety by layering timbres, EQing them, and finally adding effects during mixdown.[35]

— TV composer, Michael Josephs

Clearly, the emphasis here is on the acquisition and technical modification of pre-existing sounds rather than on their direct production through performance gesture or original programming.

In many ways, high-tech music production has become not only a practice where musicians are increasingly engaged in choosing the right sounds for a given musical context, but also one where layering and combining several pre-fabricated (or pre-recorded) sounds becomes one of the most direct means of achieving new instrumental effects. Thus, as in other areas of consumer culture, *more* is always better and musicians' magazines in the 1980s were filled with descriptions of recording sessions where, for example, a rap artist might layer several sounds from different drum machines or from sampled records in order to create a single instrumental part:

> Drum programming in rap is incredibly complex. These kids will have six tracks of drum programs, all at the same time. This is where sampling gets kind of crazy. You may get a kid who puts a kick from one record on one track, a kick from another record on another track, a Linn kick on a third track, and a TR-808 kick on a fourth — all to make one kick![36]
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> — Bill Stephney, vice-president, Def Jam records

Such practices are based on the assumption of a virtually unlimited access to sound material and, along with the standard repertoire of Western orchestral and pop sounds, it has also become commonplace for digital instruments to include a set of musical instrument and percus-

sion sounds from different parts of the world (often simply labeled generically as "Ethnic" sounds). The ubiquitous sound of the Shakuhachi (a Japanese bamboo flute) in television advertising, films and popular music during the 1980s is an example of the shifting (and sometimes bizarre) musical contexts in which sampled instrument sounds can be found. During the early 1990s, following on the international popularity of "World Music," the American company E-mu released an addition to their Proteus series of sample playback modules subtitled "World," containing the sounds of close to two hundred different traditional instruments from around the world, including an Australian Aboriginal didjeridu, Indonesian Gamelan and the like. New technology has thus become an important factor in the internationalization of musical sound, and what Wallis and Malm have referred to as "transculturation."[37] Contemporary music-making demands that each instrument sound be as available as any other; technological reproduction guarantees that availability and, in so doing, contributes to the increasing commodification of culture.

Of course, digital musical instruments, especially samplers, not only make use of instrument sounds but *any* sound that can be recorded; even drum machines often include a number of sound effects — breaking glass, gun shots, screeching tires — as part of their memory banks. More importantly, pop musicians during the 1980s began to demonstrate a marked predilection for drawing their sampled sound materials from other cultural and musical texts

as well. Many among them (especially in dance genres such as hip-hop) made use of samplers to collage together bits and pieces of rock, soul and funk records from the 1960s and 70s. Some of the samples were recognizable, others were not: samples of single drum sounds that could then be programmed into new rhythmic patterns or entire segments of a rhythmic groove (the "beats" or "breaks"), electric basses, guitars or James Brown's vocal pyrotechnics. Strangely, as Andrew Goodwin has argued, the most technically innovative forms of pop music in the 1980s had become obsessed with self-referentiality, with the reproduction of pop culture's past.[38] In this sense, the musicians, DJs and producers who created this music situated themselves and their aesthetic at the centre of a culture dominated by consumption and mass media. Their music was both the result of a radically new form of experience engendered by the ebb and flow of media texts and a new definition of what music-making could be. Consequently, it demanded a new way of listening from its audience. To the extent that digital musical instruments and recording devices are no longer *separate* technologies — indeed, for all intents and purposes a sampler *is* a recording device — sound *re*production has become a central element of musical practice. This fact, among others cited above, has changed the most fundamental relationships of popular musicians to the sounds they make, and to the way in which they listen to, experience, and interact with the world around them.

What is essential about all these practices is that, firstly, they operate entirely within the realm of electronic reproducibility (these are not "cover" versions of a song but uses of the actual recordings themselves); and secondly, they reflect a particular type of memory and subjectivity — a form of "technological imagination" which is the result of the experience of technology and everyday life within the matrix of mass media and consumer culture.[39] In this sense, sampling practices need to be understood within a deeper context, where dominant modes of music consumption exist within the context of mass media. With sampling in its most extreme forms, the pop song becomes akin to a "container" within which a large number of references to other music and sounds of the past and present are made; the musical "work" opens up, loses its autonomy and its "aura" — its distance, its inapproachability, its uniqueness — completely and becomes, in a sense, invaded by the music of the past and present and the sounds of everyday life. When confronted with such a work, the listener is immediately struck by a number of radical shifts: the feeling of a fluctuating, multiple temporality; a difference in the perceived relationship between past and present; the nature of one's own subject position as a listener; and the apparent dispersal of the unified subject, or persona, of the composer/songwriter embodied in the work itself.

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The tensions that surfaced throughout the 1980s between musicians who continued to play traditional musical instruments and those who

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took up the new instruments of musical production have often been presented as an issue of "skill" vs. "technology". The long years of specialized training and practice required to play the former seemed to be mocked by the very ease with which one can (re)produce sounds on a drum machine or a sampler. But those who use the new technologies must also learn particular skills and acquire particular kinds of knowledge, and in this sense, the focus of this issue seems to be misplaced. But what I have tried to argue here is that the discussion of this division has tended to ignore a more subtle aspect of what happens when one learns to make music: that playing an instrument or learning to use a recording device directs our attention in particular ways and allows us to listen to music in a specifically structured manner. Furthermore, these varied listening capacities are structured and reinforced in different ways through many kinds of musical activities, whether those activities involve playing a musical instrument, dancing, recording, reading magazines or simply speaking about music with others.

What I find particularly interesting about the uses of digital musical instruments during the past decade (especially sample-based instruments) is the manner in which they appear to have guided the listening process of many musicians towards an outward, objectified form of musical apprehension. "Sounds" have come to possess a kind of autonomy such that, for some musicians, the sounds influence the way in which they play and/or compose music. Specific, instantly recognizable "sounds" have become

part of the way in which we identify and evaluate music within particular genres and, in some instances, they have even become the markers of cultural identity.

Still more important is the "fit" that seems to exist between the ways in which musicians listen to and use these sounds and the general patterns of musical consumption that have characterized pop culture since the advent of electronic means of reproduction and mass media. Indeed, with its ability to reproduce both the sounds of the present and the past, the sampler must be regarded as the perfect instrument for a music industry based on fashion on the one hand and nostalgia on the other. This objective and objectifying mode of listening, with its patterns so clearly based in a type of consumer practice, also demonstrates a remarkable kind of "fit" with the goals of small-scale entrepreneurial capital; the marketing of "sounds" has become the basis for a small cottage industry dedicated to the supply of pre-fabricated musical sounds for use in a wide variety of musical styles and genres.

In placing this emphasis on musical "sound" I do not wish to imply that other elements of musical language, such as rhythm, melody, lyrics and the like, have lost their relevance for popular musicians, but rather that "sound" has taken its place among these elements and may indeed be *the* most characteristic focus of attention for a music based on the technologies of electronic reproduction. In this sense, many popular musicians today have become "listeners" again, and they have come to know, even if

only at an intuitive level, what it means to live within the matrix of mass media. And if popular music is, in its very essence, a commercial form — governed by the pressures and possibilities of a consumer culture — then it should come as no surprise that music-making, at its most fundamental level, is consistent with those same pressures and possibilities. Antoine Hennion, in his analysis of the role of the producer in multi-track studio production, has argued that the producer's ability to deliver hits is based on the assumption that they have internalized the tastes of the audience as his or her own, that they listen with the ears of the consumer. More significantly, Hennion states that the "song-object is not produced first and consumed later; rather a *simultaneous production-consumption* process takes place first inside the studio, and the impact on those present must be repeated later on outside the studio."[40] My argument here is, I think, in accord with the general outlines of this analysis, but extends it further. In a sense, popular musicians have also taken on the role of the producer, have learned to listen with the ears of the consumer and have aligned their studio practices with something akin to a consumer practice as well. They consume as much as they produce and, indeed, the differences between these two modes of action may have become, for all intents and purposes, irrelevant.

Notes

The arguments found in this article were first presented in more abbreviated form in a paper given at the 7th International Conference of the International Association for the Study of Popular Music, July 11-15, 1993, Stockton, CA.

1. Quoted in *Music Technology* 2.11 (June 1988), 32.

2. Simon Frith, "Art versus technology: the strange case of popular music," *Media, Culture and Society* 8.3 (1986), 263-79.

3. For example, see the discussion of DJs and House music in Tony Langlois, "Can you feel it? DJs and House Music culture in the UK," *Popular Music* 11.2 (1992), 229-238.

4. John Blacking, "Towards A Theory of Musical Competence," *Man: Anthropological Essays Presented to O.F. Raum*, ed. E.J. De Jager (Cape Town: C. Struik, 1971), 19-34.

5. Ibid., 21.

6. Ibid., 24-25.

7. David Riesman, "Listening to Popular Music," *Mass Culture: The Popular Arts in America*, ed. B. Rosenberg and D. White (New York: Free Press, 1957), 408-417.

8. Pierre Bourdieu, *The Logic of Practice*, trans. Richard Nice (Stanford, CA: Stanford University Press, 1990).

9. Howard Becker, *Art Worlds* (Berkeley: University of California Press, 1982).

10. David Sudnow, *Ways of the Hand: The Organization of Improvised Conduct* (Cambridge, MA: Harvard University Press, 1978), xiii.

11. Ibid., 13.

12. Ibid., 37.

13. Ibid., 38.

14. Ibid., 41-42.

15. Miles Davis, *Miles: The Autobiography*, with Quincy Troupe (New York: Simon & Schuster, 1989), 323.

16. Cited in Steven Feld, "Aesthetics as Iconicity of Style, or 'Lift-up-over Sounding': Getting into the Kaluli Groove," *Yearbook for Traditional Music* 20 (1988), 76.

17. Ibid.

18. Steven Feld, "Communication, Music, and Speech About Music," *Yearbook for Traditional Music* 16 (1984), 16.

19. Ibid., 11.

20. Theodor W. Adorno, "On Popular Music," *Studies in Philosophy and Social Sciences* 9 (1941), 45-48.

21. For example, see Iain Chambers, *Urban Rhythms: Pop Music and Popular Culture* (London: MacMillan, 1985), and Angela McRobbie, "Dance and Social Fantasy," *Gender and Generation*, ed. Angela McRobbie and Mica

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▼ Ambient musician Aphex Twin, World Wide Web page, November 1994.

Nava (London: MacMillan, 1984), 130-161.

22. See Tony Langlois, "Can you feel it? DJs and House Music culture in the UK," *Popular Music* 11.2 (1992), 229-238.

23. Ross Harley, "Beat in the System," *Rock and Popular Music: Politics, Policies, Institutions*, ed. T. Bennett, S. Frith, L. Grossberg, J. Shepherd and G. Turner (London: Routledge, 1993), 223.

24. Quoted in *Music Technology* 4.6 (February 1990), 66.

25. Quoted in *DownBeat* 54.2 (February 1987), 22.

26. Quoted in *Keyboard* 15.12 (December 1989), 78.

27. John Blacking, *How Musical is Man?* (Seattle: University of Washington Press, 1973), 12-21, 109-112.

28. H. Stith Bennett, "Notation and identity in contemporary popular music," *Popular Music* 3 (1983), 215-234.

29. Theodor W. Adorno, *Philoso-phy of Modern Music*, trans. Anne G. Mitchell and Wesley V. Blomster (New York: Seabury, 1973), 172-73.

30. Quoted in *Keyboard* 16.1 (January 1990), 54.

31. Quoted in *Music Technology* 4.6 (February 1990), 40-41.

32. Mark Dery and Bob Doerschuk, "Drum Some Kill: The Beat Behind the Rap," *Keyboard* 14.11 (November 1988), 34.

33. For example, see Brophy's analysis of the soundtrack to the film *Colors* in Philip Brophy, "The Architec-sonic Object: Stereo Sound, Cinema & *Colors*," *Culture, Technology & Creativity*, ed. Philip Hayward (London: John Libbey & Co., 1991), 91-110.

34. Ross Harley, "Beat in the System," *Rock and Popular Music: Politics, Policies, Institutions*, ed. T. Bennett, S. Frith, L. Grossberg, J. Shepherd and G. Turner (London: Routledge, 1993), 214.

35. Quoted in *Keyboard* 15.6 (June 1989), 23.

36. Quoted in *Keyboard* 14.11 (November 1988), 36.

37. Roger Wallis and Krister Malm, *Big Sounds from Small Peoples: The Music Industry in Small Countries* (New York: Pendragon, 1984), 269-311.

38. Andrew Goodwin, "Sample and hold: pop music in the digital age of reproduction," *Critical Quarterly* 30.3 (1988), 34-49.

39. Andreas Huyssen, *After the Great Divide: Modernism, Mass Culture, Postmodernism* (Bloomington: Indiana Univ. Press, 1986), 9-10.

40. Antoine Hennion, "The Production of Success: An Antimusicology of the Pop Song," *On Record: Rock, Pop, and the Written Word*, ed. Simon Frith and Andrew Goodwin (New York: Pantheon, 1990), 203. For a more detailed examination of the role of the producer see Antoine Hennion, "Une sociologie de l'intermédiaire: le cas du directeur artistique de variétés," *Sociologie du travail* 4 (1983), 459-474.