Bytes and Backbeats
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Introduction

Reproduction and New Paradigms

The Construction of Music Via Repurposed Audio

Music today is being created, performed, and listened to in ways that are profoundly different from music practices prior to the migration to digital audio. The traditional timeline from the composer through the performer to the consumer has been radically altered under new working paradigms, providing significant new opportunities for musical participation and community. Technology and personal agency interact to undermine the conventionally polarized view of musical functions and experience. The creation and exchange of contemporary music extends far beyond neat categories such as composer, songwriter, musician, performer, consumer, or audience. Much of popular music is constructed from a variety of sources using vastly expanded creative tools. The role of the recordist as collaborator and creative participant has been dramatically increased. The consumer of music has extraordinary new alternatives for acquiring, sharing, and responding to music. Contemporary music is new in part because it can be constructed in utterly new ways.

I frequently use the term *construction* in this book to distinguish contemporary methods of popular music creation from the compositional models of the past. The term *composition* itself suggests a kind of musical construction—music is inevitably a product of the designing and piecing together of multiple elements—but the long history of composition ties it to conventional musical procedures. Compositions are traditionally constructed from a series of motifs or melodies; realized through arrangements of voices and/or instruments in unison, harmony, or counterpoint; and
learned via oral/aural tradition, played from notation, or improvised. Contemporary practice takes us much further along the road of constructed music, a road that is built from a broad new assortment of composition techniques made available by computing power and drawing musical building materials from a wide range of sources. This book tells the story of some of these techniques and places them in a broader cultural and musical context.

My motivation for adopting the term **construction** is to break out of thinking of music creation in terms of conventional composition/performance routines and to identify how it has been transformed by this new array of techniques. I do not intend this reference to constrain the understanding of music creation to a structural model, rather to expand it to include all the tools of the imagination, of design, and of technology. The techniques developed as a part of the digital control of contemporary audio production are paradigmatic because their technological scope has so deeply broadened the process of music creation and reception, and greatly expanded the network of people that may be intimately involved in the composition (read construction) of the final music recording.

As construction is one defining metaphor for these new archetypes, so the notion of **repurposing** encompasses the ways that the age of digital record production has spawned these new techniques of music creation. I adopt the idea of repurposing as central to understanding how every aspect of musical activity has been transformed. This transformation is both tangible in its new approaches to music making and conceptual in compelling new ways of thinking about music. The evolution of audio recording technology has moved both the practice and the critical debate beyond questions concerned primarily with the status of reproduction. The focus turns now to issues surrounding the manipulation and transformation of audio reproductions—in a word the **repurposing** of musical performance as audio recording.

In a sense, recordings themselves represent a repurposing of live performance, but contemporary practices have made the term more distinctively appropriate for referencing the multitude of ways that audio may be used to construct recordings. Webster’s informs us that the prefix re- suggests the use of something again as well the use of something anew. Repurposing audio may accomplish both by creating new music from elements that had been used previously (used again) and/or by transforming elements so as to adapt their use as desired (made anew). The notion of repurposing is suggestive of the rampant explosion in the manipulation of sounds to cre-
ate musical performances. These sounds may originate from any source, including original recordings, samples, sound effects, historic recordings, and so on. Contemporary recording practice frequently puts audio to new or renewed purpose before it finds its ultimate place in the final recording. Recordists cut, copy, and paste; they fix, they enhance, they thicken, they borrow, and they downright reinvent original performances in order to create a final recording. It is often the case that the final recording sounds relatively “normal”—like a rock-and-roll band playing a song for example—but in most cases the process of creation has reached far beyond the simple recording of the musicians playing their part.

Repurposing welcomes the new paradigm of music construction without prejudice. Repurposing acknowledges the ways that reproduction has evolved as both copy and original simultaneously. Repurposing focuses the attention on musical construction as a new beginning with a new purpose, rather than on original sources or meanings. One of the seminal projects in the kind of new construction made possible by computer-based digital audio manipulations was the 1989 CD *Plunderphonics* from the producer John Oswald. *Plunderphonics* took audio from previously released material, some well known and some obscure, and recrafted it into wholly original recordings. At the same time the rap and hip-hop genres had begun using samples of previous recordings in such a widespread fashion as to be redefining the nature of music creation. In both cases the media responses often focused on the source material and issues surrounding copyright violations, rather than on the newly created music, independent of its sources.

There has been a delicate, and sometimes uneasy, balance between the sources used in construction of new music and the music itself. In the case of *Plunderphonics* Oswald purposely called attention to the connection to the historical recordings. In most of the more contemporary use of repurposed audio the source material is primarily a tool rather than a reference. The implications of the word *plunderphonics*, the negative connotations of the word *plunder* and the apparent pride in a kind of violation of historical recordings, are at odds with the evolution of repurposed audio’s overwhelming presence in popular music construction. While issues surrounding copyright remain significant (and are considered at some length in chapter 9), it is not appropriate for there to be any absolute value judgment associated with the broad practice of using repurposed audio in new music creation. New practices are redefining music creation in ways that profoundly affect our notions of authorship, improvisation, collaboration, and musical timeline. Identifying these developments in the context of re-
purposing helps us redefine the understanding of music recording at the same time that the practice of music recording is itself being redefined.

**Presentation, Performance, and Participation**

This study of contemporary music is organized around presentation in Part I, performance in Part II, and participation in Part III. The continuum from creator(s) to listener(s) encompasses composition, performance, improvisation, and audience with new musical practices transforming each element, while the traditional distinctions between elements are increasingly blurred. The notion of repurposing focuses the attention on the fundamental ways that these age-old musical activities have been made new.

In the following chapters presentation is framed as “art or artifice,” performance as “artist or artisan,” and participation as “integration or (dis)integration.” Each pairing is seen as a flawed dichotomy in judging contemporary music practice. For example, cultural and historical contingencies must be considered central to value systems that attempt to classify musical creation as either “art” or “artifice.” I argue that the tension within presentation between a naturalizing “art” and a self-conscious “artifice” reflects and feeds into our evolving notions of creativity, authenticity, and community. It is reductive to relegate technologically driven effects to artifice. Ultimately it is listeners who must decide whether they approve or reject the results of contemporary practices, and they will do so on their own terms and with their own set of evolved cultural contingencies outside any preconceived notions of art or artifice.

Similar conflicts arise in attempting to elevate performers to the status of artists or relegate them to the role of artisans. The historical forces that have reserved the label of artist for the composer in opposition to the interpretative artisanship of the performer lose meaning when the roles become blurred by contemporary production practices such as those detailed in this book. And the bias toward traditional music participation, whether it is the formal participation by role such as composer, arranger, performer, audience, or the models from other times or cultures, ignores the manner in which new music practice integrates itself into contemporary culture. From the transnational communities of interest on the Internet to the explosive capabilities of home recording, new integrative practices continue music’s power to bring people, communities, and cultures together. The new models of musical presentation, performance, and participation break
down the strict hierarchical dichotomies, revealing much more complex relationships within musical practice.

Within the new paradigms of music presentation questions arise about how much performances should be altered. What are we to make of the effect and impact of such alterations? What are the deeper implications when we supposedly “fix” a musical performance? New models have surfaced whereby composition is a result of the process of recording and editing rather than a precursor to it. In many instances the creation of contemporary recordings partially or completely replaces the model of the original, preexisting composition—and the process is now often collaborative rather than isolated to the individual composer. These creative opportunities are heightened by the technologies that support quick and intuitive responses to music manipulation. The capabilities of computer-controlled digital audio are an integral part of musical presentation. Composition and performance are constantly in play, along with the sonic qualities that embodied traditional recording concerns, long past any project’s initial recording sessions.

The widespread manipulations that create the new paradigms of musical presentation fuel debates surrounding the question of musical authenticity. I argue that there can be no notion of authenticity that is not historically and culturally contingent. The hidden messages behind deterministic claims to authenticity are primarily driven by nostalgia. This is clearly seen in considering prerecording technologies such as the acoustic piano. A combination of nostalgia and the profound historical and cultural connections to the instrument seem to grant it a separate ontological status from a synthesizer, but this cannot be the case in any absolute sense. Ultimately time may well grant the synthesizer the same nostalgic and cultural status as a piano. This process has already started in regards to some legacy synthesizers such as the Moog. Similarly, I argue that Barthes’s famous “grain of the voice” must be extended beyond live performance to include elements that reside in the presentation of vocal recordings, despite his protestations to the contrary. Embracing the breadth of the collaborative model in popular music also serves to undermine nostalgic concepts of musical significance. All of these observations break down traditional ideas about authenticity, genius, and the hierarchy of aesthetics characterized by a division between art and artifice.

Attempts to characterize the composer as artist and the performer as artisan also quickly collapse under the new musical paradigms. I argue that
intervention through technology joins improvisation in blurring traditional categorizations such as composer and performer. Digital technologies emerge as partners in the large-scale shifts in the way compositions and performances are created in popular music. Some of the recording experiences that I describe here provide evidence of how both recording and studio manipulation may embody spontaneous musical creation, despite their roles in the mediation of performance. The fluidity of the working environment further obscures any imagined line between the work of an artist and the applied craft of an artisan. I also challenge the view that portrays the fleeting musical performance as being in conflict with the permanence of audio recordings. Rather, creative modes of record production have come to expand upon and support live performance—an intertwining rather than an opposition.

While collaborative opportunities have expanded, contemporary recording technologies have undermined the traditional reliance on collaboration among live musicians in music performance. The potential for isolating performers in both time and space has yielded wholly new capabilities for recordists to alter performances. Collaboration now occurs on many levels, often starting in the interaction between musicians, but typically progressing on to broader interaction in the editing process. Final performance decision-making may occur in collaboration between musicians and recordists or even unilaterally by the recordist. Producers have traditionally made decisions about which recorded performance to use, or about which elements to use in the case of editing together of multiple performances, but today’s decisions about performance may include the radical reordering of musical phrases as well as the creation of entirely new musical ideas through manipulation of the rhythm, duration, and pitch of notes played. This requires a combination of musical and technical skills that may be embodied in many different collaborative groupings, blurring the lines between performance and composition.

Such practices have not only challenged the hegemony of the solo composer, they have altered the very nature of musical composition. The flexibility of computer-based music construction yields not only an array of new choices for the composer/constructionist but elongates the process such that the ability to make compositional revisions is available from the beginning of the recording all the way up to the final mix. One striking development from this flexibility has been the evolution of a much more random quality to the progression of musical ideas in popular music, undermining traditional song forms and musical phrasings. This is fostered by
the combining of compositional, unintentional, and improvisational elements made possible by current editing techniques. Even more radical are the “mash-ups” created by combining elements from various and often-unlikely sources. Musical composition of this sort had never been even remotely possible prior to computer-based digital audio editing.

New models of participation also feed these new creative models of music production and reception. Expanded networks are an essential part of the creative process of recording, and reciprocity is central to understanding the network of forces at work in popular music. The flow of music from writer to player to recording to listener has become a process of networking and reciprocal relationships. Although the new paradigms of participation may produce cultural aesthetics that are considered casualties of contemporary practices (too many cooks, lowest common denominator, etc.), I emphasize the ways that the new capabilities of music creation lend themselves to positive new forms of music, musical process, and community. Music has always been intertwined with social participation, but the models are changing in dramatic ways. One such example is the implicit communities that have developed in the age of easy transnational communication via the Internet. I argue for the continuing centrality of musical community despite the ways that these communities may defy conventional social structures.

Cultural models for music participation differ around the world and over each cultural history. Each music culture provides unique social models, but they may also help us to uncover the ways in which musical participation is a universal human experience. Some lament the way that computer manipulations allow for creation of music through “knowing” rather than “doing”—that is, if we know what music we want to create, the computer gives us the capability to construct that music, even though we aren’t able to perform it in the traditional sense on a musical instrument. I contend that the basic relationship between tools and creativity remains the same, whether it is an African playing a djembe or an American making music on his computer (or vice versa). And there is a certain democratizing effect to the ability to create through knowing—it makes musical activities including composing, arranging, and performing available to a much wider range of people by radically changing the necessary skill set. This does not alter the demands that music making requires in the form of skills, only the nature of those skills. It does not make creating music any easier—rudimental skill still creates rudimental music, and extraordinary music still demands extraordinary skill levels.
The ability to create so many different kinds of music through knowing has also had a tremendous influence on the current hybridization of different musical cultures and genres. Sample-based musical construction has allowed the integration of musical styles in broader and more accessible forms than ever before. While this is still widely debated in regards to merit, I argue that it should be viewed as a form of social exchange that acts as a constructivist force—it feeds musical participation and provides valuable social and cultural meaning. Thus, I argue for a reexamination of so-called musical appropriation. The issues surrounding hybridization are complex, and later in the book I examine both positive and negative effects, but I embrace hybridization and I argue against the use of the word appropriation, which is highly charged with negative, reductive connotations. I propose the term repurpose as an appropriate reference to the historical and cultural status of musical expressions that may feed or inspire new musical creations. Repurposing embraces the new creation as primary, without ignoring the references to origination. The idea that we might “appropriate” music from other cultures is both inaccurate in implication and inappropriate as a term for describing musical hybridization.

The dynamic between creating and consuming music is also being transformed. New forms of musical participation and new communities of music makers are evolving from new technologies. The mp3 format that spawned music downloading; the iPod and other new playback technologies; social networking sites such as Facebook and MySpace that are heavily oriented toward musical tastes; Pandora, Amazon, and other sites that provide personal and collaborative filtering of music preferences; and easily accessed programs like GarageBand and Audacity that provide full-scale recording and composition capabilities are all driving new relationships to music that extend beyond the traditionally passive role of the music consumer. It may be too early to know how far the new creative capabilities will reach into the general population—the extent to which music software in the computer and the interactive models of Web 2.0 are descendants of the piano in the nineteenth-century parlor—but there are indications of movement in this direction and beyond. In any event, the expanded capabilities that run from access to huge libraries of music on the Internet, to the flexibility of playlists on the iPod, to the recording and composition tools that arrive free with the program GarageBand on every Macintosh computer suggest the breadth of possibilities for the future of music.

While it is the intention of this book to represent a balanced analysis of contemporary music creation, it unabashedly embraces technology as an
integral and increasingly powerful partner in music making. When taken in conjunction with the kind of audio manipulation I chronicle here in the various studio and application studies, music making in the digital environment represents not just a change in degree, but a fundamental change in “kind”—a change that strikes at the very heart of music creation. It is a change that requires many new and different skills and sensibilities, where the only fundamental link to traditional music creation lies in the essential need for music makers to use their ears to create musically appealing pieces if they are to attract an audience.

The Breakdown of Traditional Musical Paradigms

In an interview from an unknown source (but probably from the mid-1970s) the producer, ambient music composer, and recording theoretician Brian Eno outlined the future of the intersection of recording studio technology with music composition and performance:

“If you had a sign above every studio door saying ‘This Studio is a Musical Instrument’ it would make such a different approach to recording” he asserts as if unaware that he’d dropped something of a bombshell. “You see my interest for quite a while has been in using the studio not as a machine that you feed input into and have it transferred onto a piece of tape. It’s a means not simply of re-creating but of actually changing a sound. Sometimes it is even a source of that sound.”

The interviewer describes the opening sentence as a “bombshell,” and perhaps it is for the time—but this integration of recording with composition and performance has become the standard for contemporary music. As recently as 1996 pivotal figures in popular musicology such as Simon Frith were still commenting on the “confusion between musician and technician, between aesthetic and engineering sound decisions.” This reference to confusion is no longer applicable. There is a complete integration of recording technology with compositional and performance practices in most recordings of popular music. Most musicians are technicians or at least interface easily and naturally with technicians. And engineering sound decisions are considered an integral part of the more traditional compositional and arrangement decisions that form musical performances.

As Eno suggests, for some of the foremost creators of popular music recordings new production practices had already begun to reshape their working models by the mid-1970s. While technology is the “centerpiece”
of this transformation, it is more specifically the use of contemporary production techniques, including sampling, that are primarily responsible for the more thorough breakdown of the traditional forms of musical activities. Digital audio and the power of the personal computer have pressed Eno’s observation into the mainstream of virtually all popular music production. Timothy Warner observes that “digital technology . . . has fundamentally altered the ways in which musical gestures are created, manipulated and interact with one another.” Warner’s comment identifies the element that is at the heart of these changes—it is the digital environment that has driven the current transformation of music creation.

The extent to which technology is at the center of these changes in music practices suggests changes in the mandate for musicologists. Borrowing from practices in ethnomusicology is helpful in this process. Nicholas Cook observes that ethnomusicologists tend to see the “study of all music in terms of its social and cultural context, embracing production, reception and signification,” and I argue the same for the study of music technology and its intersection with music practice. Musicology must encompass contemporary technologies of recording such as the new paradigm of music construction. Whereas the focus of musicology has tended to be on the finished product (either score or recording), there are calls for a shift toward the study of musical activities that are socially embedded processes. Studies such as mine reveal these processes as not simply socially embedded but also technologically embedded, with production techniques inseparable from music composition and performance.

While musical sounds are still at the heart of a musical culture, we must now allow for the sonic imaginings that have been made possible by digital audio technology. Whereas musical creation has been focused on the musical note, that essential focus has changed in the environment of repurposed audio. Musical creation no longer necessarily emanates from the musical note. The mechanisms that have been employed to arrive at a complete work—from traditional forms of composition and arrangement—have been altered down to the root level. Musical sounds are often imagined and reimagined as sounds that have been repurposed, and they may be sourced from a variety of materials including not only notes but original recordings, loop libraries, sound effect libraries, samples from original or historical recordings, and so on.

As the intentional objects of musical sound have been transformed, so access to those objects has crossed many of the previous boundaries be-
tween the creator of music and the listener. Most listeners understand how samples work and know that music is constructed in pieces and from performances dislocated in space and time. Many have access to music construction techniques on their computer. In the contemporary environment the listeners have a better understanding of the objects of music creation than they ever had of notes. This familiarity with the process of making brings the creator of music and the listener closer together in shared activities that begin to blur the distinction between the two. While recording has physically distanced the performer and the listener, and it is true that the performer in the studio does not usually have the benefit of immediate feedback from a live audience, the digital age has strengthened this connection in other ways. The ability for the listener to respond to the performer is heightened in the age of individual song downloads, online forums, blogs, and even TV talent shows that are driven by audience feedback tallied via Internet voting. Even more collaborative feedback is sometimes given when artists provide the materials for the public to remake videos or remix songs and when artists participate in extensive website interactions with fans.

In regards to music reception Michael Chanan observes that listeners who have even amateur-level musical skills “listen differently from those who don’t, even if they are indifferent or bad performers.” Chanan also notes that, whereas Roland Barthes has suggested that these skills have disappeared, they are actually always present, just changing with “different historical and class aspects.” Contemporary amateur music skills are such that they may involve neither indifferent nor bad performers, but musicians who do no performing at all in the traditional sense of playing a musical instrument. Cook argues that musical culture requires cognitive capabilities whereby people must gain certain understandings in order to create, perform, and receive “acceptable” music within their culture: “If this is the case, then ear training forms the basic means by which the identity of a music culture is maintained.” I agree that ear training is at the center of a culture’s music identity, but I also argue that the nature of that ear training has changed radically under the new musical paradigm. New forms of music creation and performance require ear training for a whole new set of musical practices. In today’s musical culture ear training and musical skills include capturing, compiling, and “fixing” audio as essential to the process of music construction.

The manner in which many listeners, including nonmusicians, adapt
the constructive model of music creation to music reception alters their experience of music as well. Listeners develop their musical ear by constructing and sharing playlists from their entire music library. Listeners have tremendously expanded opportunities to audition music before they buy, and to buy music on a song-by-song basis. In this work I supply particular narratives that provide further opportunities for ongoing ear training and for developing an understanding that heightens the experience of listening.

As the practice of music transforms, the histories of musical practice are also being undone. The idea that a piece of music was written or played by a particular person at a particular time has been a less reliable notion for some time as production techniques have evolved in complexity. But the editing and manipulative techniques of contemporary popular music construction obscure clear distinctions between most all musical functions. The number of people involved and their ability to alter performance, the extended timeline of the process, the complex nature of the large files that comprise the master recordings all combine to ensure that much of the true genesis of the musical creation will be obscured over time. Who was responsible for what element of the final recording? Which elements are actually heard as they were performed and which have been moved, reconstructed, or altered and by whom? What was the source audio for some of the elements in the final recording? On the one hand this speaks to the value of ethnographies and recording histories, but these can only scratch the surface of musical events.

The recordist occupies the central role in the making of popular music and is the best candidate for illuminating the process. Because the task is impossibly large, we will never be able to trace the histories of most recordings, but through the eyes and ears of the recordist we can have a much better understanding of their creation. Recording functions have traditionally been divided between the recording engineer and the record producer, though those responsibilities have become increasingly fluid over time. As I mentioned in the preface, a recent survey from the Recording Academy divided recording functions into five categories: the producer, recording engineer, sound editor, DAW (digital audio workstation) operator, and mixer. It was assumed that the same person might take on more than one of these roles but they might be shared by as many as five people or more over the course of a project. The musicians are also more than just initiators of sound in the fluid production of popular music, often adopting one or more of the recordist’s functions. It is from the point of view of
the complete battery of recordists that the broadest understanding of the making of popular recordings might be obtained.

The Evolution of Recording Technology

Audio recording changed the basic relationships between music and culture that had evolved with the oral and notational forms of musical record-keeping. Scores had separated music and performance, but only for those who could read them. Recordings allowed the general public’s reception of music to be dislocated from its performance, and over time recordings came to occupy the lion’s share of musical sound occurrences in the world. This change affected the entire music continuum from composer to consumer. Digital audio has further disrupted this continuum. Popular music is often made from a convoluted process that extends far beyond the simple timeline traced by the 4 minutes song. Recordists are now responsible for much of the actual content of the music we hear, though they are not usually listed as performers. And music consumers get their music from a dizzying array of delivery and reception technologies: from CDs to mp3s, from ambient music to iPods, and from the Internet to wireless handheld Blackberries and iPhones.

There are enormous socially embedded forces participating in the technological evolution that feeds the current state of music production. New technologies don’t simply appear as some inevitable progression of scientific research. Current audio recording technology emerges in the interaction between cultural desires and innovation. Invention is limited to scientific capability but directed by creative aspirations. Steve Jones notes that “without technology, popular music would not exist in its present form.” We must add to this the inverse proposition that without popular music we would not have the existing audio technology. Although the musicians and technologies feed off each other, it is human desires that are the primary motivators of the technological developments. Developers are constantly surveying their users for input on how to improve their particular products and what new products to develop. The latest devices are, first and foremost, the manifestations of the wishes and dreams of the music community—though the technologies may channel these desires, and the devices may themselves inspire new and original musical expressions in their specific application. Songwriters will sometimes compose entire songs inspired by a sound they happened onto while auditioning sound...
patches on their synthesizer. As Chanan observes: “The truth is that the changes that have revolutionized musical perception and practice over the past hundred years are part of a protracted dialogue between music and science, technology and the sonic imagination.” This balance between device and desire, between technology and agency, is explored more thoroughly in chapter 3.

In popular music the ultimate conflation of desire and technology is the recording studio itself. Early recordings were made primarily on location or in rooms full of the necessary recording equipment. The separation between the studio room used for the musicians (the recording space) and the room used for making the recording (the control room) came from the desire to isolate the noise made by the equipment as well as to separate the monitoring of the recording from the actual production of the sound. This corresponds to the separation between musical activity and production activity. As the desire and ability to manipulate both sound and recording grew, the focus of activity has shifted from the recording space to the control room where the performances are manipulated through the use of production technologies that yield the final recording.

The Evolution of Commentary on Recording Technology

In 1936 Walter Benjamin’s essay “The Work of Art in the Age of Mechanical Reproduction” was published. Since that time his essay has served as a focal point in the ongoing discussion regarding the meaning of reproduction of artworks, including recorded music. However, well before the appearance of Benjamin’s analysis, issues regarding mechanical reproduction of art had been addressed in significant forums. Early skirmishes over the meaning of reproduced art occurred just after the beginning of the twentieth century. Nonetheless it is Benjamin that sets the groundwork for the larger cultural debate by establishing an essential difference between the original work of art and its reproduction: “Even the most perfect reproduction of a work of art is lacking in one element: its presence in time and space, its unique existence at the place where it happens to be.” In probably the most frequently quoted passage from the essay he taints reproduction when he asserts that if one incorporates this unique presence in the term aura, then “that which withers in the age of mechanical reproduction is the aura of the work of art.” And lest there be any doubt about value, Benjamin declares that as a result of mechanical reproduction of an original work of art “the quality of its presence is always depreciated.”
Benjamin this value is contained in the historical and traditional features in original works of art, and he identifies these as elements of authenticity. He maintains that the authority of original art objects is jeopardized by reproduction and that the result is a decay of “aura” in society as a whole. This follows from the contention that “the unique value of the ‘authentic’ work of art has its basis in ritual, the location of its original use value.”

At this point Benjamin surprises. What has seemed a clear bias toward the negative impact of mechanical reproduction shifts on this issue of ritual. For Benjamin, what begins as ritual steeped in magic, and becomes religion, is the enslaver of art. The tone shifts abruptly and he reveals two radical and important concepts: “for the first time in world history, mechanical reproduction emancipates the work of art from its parasitical dependence on ritual. To an ever increasing degree the work of art reproduced becomes the work of art designed for reproducibility.”

Benjamin has identified what he considers to be a very positive effect of mechanical reproduction—the democratization of art—at the same time acknowledging the dynamic between original and copy that creates a kind of reciprocity. At the apogee of these ideas lies photography, a relatively new art form where there is no original in the traditional sense. Instead of ritual, artistic production becomes based on what Benjamin identifies as a political dynamic: the political influence on aesthetic expression wrests art from religion by focusing the production of art on a desired outcome, without resorting to moral justification. Beyond the copy’s obvious debt to the original, the copy is seen to have a profound effect on the original.

These ideas are essential to understanding the continuing relationship of technology to the mechanical reproduction of music. Does “aura” exist in the performance alone or is it bestowed by cultural attitudes? Does each new advance in technology bring the equivalent claim of degradation that Benjamin identifies at this watershed moment in the analysis of mechanical reproduction? The phonograph record epitomizes the degraded copy in Benjamin’s model, yet fast-forward to the present and the contemporary fetishizing of vinyl records suggests a strong aura. And in the wake of such attitudes digital audio is seen by some as having diminished the LP record experience, but how will CDs be perceived seventy years from now? Benjamin’s ultimate ability to recognize the reciprocity between original and copy begins to break down his own reductive attitude that claims a diminished presence to any mechanical reproduction of art. And in what should be a predictable outcome of technological advance, the copy challenges the original and finds ways that may surpass the capabilities of the so-called
original object of art. The fruits of technology find their own source of originality and aura whether it’s the Beatles’ “A Day in the Life” or DJ Danger Mouse’s *The Grey Album* (which combines the vocals from Jay-Z’s *The Black Album* with reprocessed tracks from the Beatles’ *White Album*).

In the last twenty-five years a variety of writings have expanded and commented on Benjamin’s essay in ways directly related to music recording. Michael Chanan’s work in the 1990s deals directly with the impact of contemporary audio production techniques and with issues raised by Benjamin. Chanan portrays the dislocation inherent in mechanical reproduction as a change in the musical community as well as in the scope of the musical work. Both are dispersed—in his words “atomized”—and Chanan considers this “both a symptom and one of the causes of the condition of postmodernism [whereby] reproduction pushes music into the realm of noise pollution.” Chanan further identifies the postmodern condition with a “fluid heterogeneous mix of styles.” It is my contention, throughout the following chapters, that there are many positive developments contained in the postmodern expression of musical community and in the mixing of musical styles that lie within what Chanan refers to generally as *musica practica*—“the practical aspects of music making.” Just as postmodernism itself has evolved from a primarily dark view of the cultural condition as fragmented and alienating, to a culture that has embraced fragmentation as stimulating and animated with possibilities; so many makers of music have embraced its ubiquitous presence and hybridized identity as positive elements of contemporary aesthetics.

For all of Benjamin’s interest in the loss of aura that results from mechanical reproduction, he still suggests the transformative potential of new technologies by referencing Paul Valéry’s *Aesthetics*: “We must expect great innovations to transform the entire technique of the arts, thereby affecting artistic invention itself and perhaps even bringing about an amazing change in our very notion of art.” Such transformative changes characterize the new paradigm of music construction described here. However, whereas recording may have changed the nature of music’s presence in the world, contemporary recording techniques have fundamentally changed the way music is created. The extended timeline of music production and the process of editing and repurposing allow for a process that repeatedly shifts back and forth between creation and performance. Musical creativity is witnessing its own transformation, fueled by the evolving technology.

Jonathan Sterne challenges many of the assumptions that have followed in the wake of the Benjamin essay. Sterne argues that the emphasis on “face
to face communication and bodily presences [making them] the yardstick by which to measure all communicative activity”\textsuperscript{30} taints sound reproduction before it’s even truly considered “by virtue of its ‘decontextualizing’ sound from its ‘proper’ interpersonal context.”\textsuperscript{31} Much of my work here describes the conditions in which live interaction is receding in the wake of the postmodern condition of fragmentation and dislocation that pervades modes of communication, allowing for the embrace of that condition as well as acknowledging what might be considered the negative effects. There are innumerable examples in contemporary life where both the decontextualized modes of interpersonal and musical communication are preferred. From the legacy telephone that was reborn in the cell phone, to email, to Facebook, to YouTube, to video Skype, the prevalence of alternative modes of communication dwarfs the face-to-face paradigm. Similarly, the CD, the mp3, the download, the iPod, satellite radio, the webcast, and so on have broadened the reach of reproduced sound and further eclipsed the primacy of live music performance. In fact, live music performance is itself often reinforced by sound amplification, augmented with samples accompanying performance, and even visually enhanced via large-screen projection. Live music performance is often judged in comparison to recorded performance, and not always favorably. It seems that “So much better than the recording” is no more likely a judgment than “Couldn’t stand up to the recorded version.” And ultimately these various modes of communication and reception are subject to a constantly shifting perception of value. It is by breaking out of the culture of nostalgia that these modes typically progress from disdain to reluctant acceptance to embrace.

It is nostalgia masquerading as value that drives the initial rejection of new modes of communication. This is not to say that technologies are completely benign, subject only to the irrational preferences born of nostalgia, but it is the sense that something (or many things) has been sacrificed that frequently dominates the reception of new technologies. The interventionist capabilities of new audio technology that are detailed in the following pages violate the primacy of authorship that prevailed in the music hierarchy from Beethoven through Dylan. Yet these same capabilities have generated new forms of creative expression; new opportunities for creative collaboration; new pieces of art that excite and stimulate, challenge, and provoke new generations. Of course, the progression that leads to the eventual embrace of new modes of experience may also morph into the new nostalgia. One day the iPod may inspire something like the affection some people currently have for vinyl records.
The history of recording is a history of creative collaboration, of a network of participants that share in the responsibilities that ultimately produce recorded works of music. This is a history of collaboration between people and machines as well. The difference in the contemporary landscape, however, is not just one of scale. Contemporary capabilities, such as the ones I present in the following chapters, are indicative of levels of involvement and influence that incorporate whole new working methodologies. The compositional timeline constantly shifts as it proceeds through networks of writing, recording, repurposing, editing, processing, and mixing. Music is made new through these expanded networks of process that have been transformed by the application of digital technology.

The breakdown of traditional modes of communication, the exploitation of repurposing, and the deliberate confusing of the distinction between original and copy have also been witnessed in media other than music. Commentaries on the relationship of the copy to the original may take a more literal kind of interpretation in the visual arts. For example, the pop artist Roy Lichtenstein’s large-scale reproductions of comic book images emphasized the highly reductive nature of that form. They were, in part, a comment on the sense that the public seemed to process these comic images as “real” while the artist’s work revealed how little resemblance they bear to the objects they represent. At the same time Lichtenstein was exploding the notions of the “high” and “low” status of visual communication and artistic expression. Lichtenstein’s work anticipates certain kinds of electronic synthesis that reduce musical sounds in ways that reveal similar postmodern aesthetic experiences. His creation of original works based on ubiquitous, mass-produced images also suggests contemporary musical constructions that use well-known recordings through sampling. Many other contemporary artists, including the bulk of the work categorized as “pop art,” share qualities with current music practices that blur the lines between original and copy, often employing various technologies such as photocopying or video in the process.

Photography is at the center of Benjamin’s essay, and ultimately it is photography that yields some of the most dramatic developments in the art of reproduction. Susan Sontag comments that “photographs have become so much the leading visual experience that we now have works of art which are produced in order to be photographed.” Artists such as Christo, Robert Smithson, and Andy Goldsworthy create original works meant to disintegrate or to be dismantled, leaving only a photographic record. Yet Sontag maintains: “The photograph is not, even ostensibly,
meant to lead us back to an original experience.”

Benjamin recognized that photography presented early examples of the elevation of reproduction in contemporary culture. Photography remains the touchstone in the breakdown of the original/copy dichotomy.

To some extent this book represents the ongoing encounter with Benjamin and his successors. The methodology, as befitting the point of view, borrows from a wide variety of disciplines. I challenge many traditional attitudes about the creation and reception of music through a combination of designed recording projects, ethnographic studies of contemporary music practice, and critical analysis. An integral part of the work is three original audio projects using newly imagined techniques of computer-based recording. These application studies draw from rock and roll, jazz, and African folklore music respectively. These original studies pinpoint areas of contemporary practice that are particularly significant in the cultural evolution of the musical experience. Parts I, II, and III also include a studio study that highlights the experiences of music practices in the field, from the professional recording studio to the weekend warriors making music in their bedrooms. These application and studio studies provide context for the final chapter in each part, which considers broader social and cultural conditions of contemporary music.