Abstract

This essay argues that musicians have been at the forefront of the multimedia revolution. Rather than limit multimedia’s creative locus to individuals working with a small range of tools/instruments, we address the increasing dispersion of productive processes across communities, technologies, and spaces. New media culture has reached a point where one can compose on a laptop, sample, loop, and create mashups and heretofore-unknown musics. These developments indicate that contemporary re/mix/digital music culture offers vocabularies, models, and practices for new media writing and culture generations beyond the tradition of text-based composition or the singular work of art. The article traces a genealogy from Wagner’s notion of the “total art work” up to contemporary digital/remix to show how new media extend techniques that have long been developing. Just as the dispersion of production across communities and technologies transforms musical aesthetics, so also the aesthetic experience itself changes. New media culture is less resonant with interpretation than with engagement, and to explain this experiential difference the article develops the concepts of “worlding” and “prosumer.” Additionally, this article considers musical and multimedia attempts to incorporate new input streams, including those too often categorized (and excluded) as noise. Such input streams, in combination with other feedback-driven and distributed forms of production, can be theorized as part of an expansive, immersive, and experiential approach to new media we articulate as worlding.

Keywords: Brian Eno; Distributed cognition; Feedback; The Flaming Lips; GarageBand; Gesamptkunstwerk; Music; Multimedia; New media; Prosumer; Total art work; Yes
1. Introduction

We want to change the way you think about sound.

If we wished to attempt this by grounding ourselves in classical high culture, we might begin with Richard Wagner’s idea of the “total art work” (*Gesamtkunstwerk*) and establish it as a key musical source for understanding what today we call “multimedia.” We could claim that already at the end of Romanticism and at the dawn of the modern aesthetic, Wagner was marshaling multiple media in order to generate an immersive experience for the audience. Wagner’s idea of the total art work brought every aspect of a musical dramatic work under direct compositional control in order to give it its most complete performance. If we were to establish this as a key genealogical moment, such a linking would usefully provide a powerful resonance between contemporary remix digital culture and early forms of musical showmanship. Indeed, the 2001 edited collection *Multimedia: From Wagner to Virtual Reality* has implicitly made this argument, tying Wagner’s ideas about the total art work to other aesthetic advancements in music, painting, theater, and film (Packer & Jordan, 2001).

Randall Packer and Ken Jordan, however, were interested in the advent of virtual reality; our pathway is different. We are interested in production and composition not as the evocation of a virtual realm but as the aesthetic, and especially musical, evocation of a *world*. Rather than see technology moving us toward notions of virtuality, we want to remain grounded in a concrete world, regardless of possible fictionalized content. We want to know what worlds are evoked in sound: how melody, image, noise, beat, genre, fanfare, and band persona prepare a participating listener or user to experience a soundscape, a created world of sensual information. We argue that new media increasingly create these sensory experiences by marshaling a variety of technologies not as a virtual world *qua* “consensual hallucination” but through a sense of “worlding” that abandons the distinction between “real” and “virtual” as a generative resource.

From our vantage point (writing in 2005–2006), we see from the 1960s onward numerous examples of proto-multimedia, from the earliest attempts at multimedia with the technologies of the day to the hip “happenings,” from poorly lit jam sessions to candle-lit slide shows accompanied by music, Andy Warhol and the Velvet Underground, to The Beatles’ *Sergeant Pepper*. And whether or not we might want to claim some direct causal relation, some genetic link, Wagner’s far-reaching ideas about total art—ideas we are transposing as proto-multimedia composition and prosumption—suffuse great swathes of this work. The Beatles are particularly exemplary. They achieved unprecedented aesthetic and commercial success as they evolved from being uniquely skilled songwriters to orchestrators of multiple media keyed to music and lifestyle. They created characters in the *Sergeant Pepper* album, went on stage as the pseudonymous Sergeant Pepper’s Lonely Heart Club Band, even moved into film (*A Hard Day’s Night*, *Help!*, and *Yellow Submarine*, which saw the Sergeant Pepper characters appear in animated form). When Wagner writes of total art in the nineteenth century, he could not have imagined how far such ideas might go, how, with broadcast technology (and *The Ed Sullivan Show!*), stage makeup and garish costumes, a film and a brand, these ideas would help The Beatles become an aesthetic juggernaut selling truckloads of albums and movie

---

1 We will not have space to make as many connections to these aesthetic advancements on the road to virtuality as we would like; suffice it to say here, there is still much to explore in looking back over this work.
tickets, packing stadiums, and, later with John and Yoko, galvanizing the anti-war movement by proselytizing for peace. Nor could Wagner have imagined—a theme we will return to—the emergence of the new media forms artists would utilize to expand their musical vision beyond the bounds of what is “just music.” Such expansion speaks to the movement away from the singular cult of genius propagated by Wagner and his fellow romanticists toward distributed forms of production.

To replay our leitmotif: Musicians have been at the forefront of the new media revolution, as our brief example of The Beatles illustrates, and as we will show below with Jimi Hendrix, Yes, Brian Eno, and The Flaming Lips, artists and musicians have been collaborating and mutually influencing each other, creating feedback loops and immersive media worlds, for quite some time. Wagner’s control over set design, lighting, and costuming as fulfilling and furthering the aesthetic reach of his music compares favorably to The Beatles creating imaginary characters, selecting album cover art, collaborating on movie scripts and costume design, and producing films, also with the idea of fulfilling and furthering their aesthetic reach. Furthermore, there is a technological component to these extensions, dispersions, and feedback loops, a counterpoint that transforms the singular humanism Wagner brought to his conception of the total art work.

We thereby move from the cult of the virtuoso or romantic genius that holds apart the realm of art from the common and everyday, to a postmodern postpunk re/mix hip-hop culture that values and utilizes all sounds that punctuate common experience and brings art back into the everyday. Such an approach transvalues, reuses, and repackages content—sound, styles, and more—while also scrambling our sense of borrowed and originary. Such a culture fosters the full emergence of the “prosumer” (Toffler, 1980). This term—originally coined by Alvin Toffler in his 1980 book *The Third Wave* but enjoying a resurgence—captures the emergence of practices that join together the formerly separate categories of consumer and producer. As we trace theoretically and historically some key moments in the evolution of musical sound, on the one hand we describe sound’s networking with multimedia whereby sound seeks to propagate its aesthetic worlding through alternate media forms, and on the other hand, we trace the breakdown, akin to Barthes’ distinction between writerly/readerly texts, of what it means to make something and what it means to use or enjoy it. It is our supposition that these two strands go together, that it is no accident they have evolved and coadapted together as they have.

Perhaps all this is to say that we have not yet sufficiently attended to the technological nature of our mediated world. While it is a commonplace that new technologies impact our understanding and practice of communication, we are still only beginning to appreciate how the advent and cross-pollination of multiple media transform our world and our sense of world, the hundreds of books, scholarly and populist, notwithstanding. In looking to theorize, historicize, and bring into pedagogical practice *sound itself*, as the call for papers that inspired this essay asked, we find ourselves playing catch-up to innovations and techniques that have long been in the wind in the world of music. That, we suspect, is one of the largest, if unspoken, thoughts underpinning the call to bring sound into what has heretofore been almost exclusively a text-based field of inquiry and pedagogy. In other words, it is not simply a matter of the computer and other electronica making sound a greater cultural and scholarly concern, nor even a matter of the integration of media forms, although these factors are of tremendous import and ones with which we will engage. Rather, it is that the move to inquire into sound brings with it
a necessary willingness to learn its techniques and aesthetics, which are quite different from those of text and image; and, insofar as sound has in fact been continually merged with other media forms, this complicates, or we might say *complexifies*, even further what we mean by “sound” and extends the range and import of those techniques and aesthetics.

This essay does not offer easy recipes for insertion into existing technology-rich composition curricula; it is a grounding assumption on our part that such recipes are of limited utility. Rather, we are asking readers to reflect on how they think about and interact with music—rock and avant garde music in particular—especially in terms of their experiences with the relationships among aural elements: music, sound, and noise. Such an approach, which transforms how we conceive and in turn presumably how we hear and experience sound, promises far more for composition, invention, and pedagogy. The essay traces the codeveloping trajectories of technologies and techniques that define styles and development and in hindsight become music history. Our inspiration comes from our own idiosyncratic relationships to popular and not-so-popular musical expression, to relationships among bands, and from our understanding of (and participation in) communities of taste. As we have experienced, our students experiment with identities coproduced by fans and artists amid sounds, images, and communities. In this article, we have named this complexly interrelated matrix of community and identity formation, transformative technologies, and the practices it gives rise to, “worlding.” Worlding is key for understanding how new media and its technologies are differentiated from text and its technologies because it describes an entirely different way of experiencing production and reception, and we find that sound is, perhaps surprisingly, crucial for understanding worlding.

2. Feedbacking Hendrix, or what’s all this have to do with composition?

Jimi Hendrix’s use of feedback—whereby sound vibrations from an electric instrument like a guitar get picked up and fed again through the amplification system—illustrates in a germinal form characteristics essential for understanding today’s digital and re/mix aesthetics while also linking quite concretely with debates about modeling communications pathways. Arguably the most revolutionary guitarist of the twentieth century, one of Hendrix’s most important contributions was the use of volume to generate a particular kind of noise—feedback—and the development of techniques for controlling and integrating noise and feedback into a musical setting. This impacts our understanding of communicational models, for example, the clear cybernetic telephony model of Claude Shannon and Warren Weaver (1947/1999; see Figure 1).3

---

2 As authors, we are reminded of Geoffrey Sirc’s (1997) question posed in “Never Mind the Tagmemics, Where’s the Sex Pistols?” He asks, quite emphatically, “Where’s the fun?” As we explore the development of third-order cybernetic language and techniques that value noise, multiply inputs, and resculpt the nature of sound itself, we would like this question to remain hovering in the background.

3 Shannon and Weaver offer their cybernetic model in their 1947 book, *The Mathematical Theory of Communication*, but the image offered here is recreated by the authors so it can be manipulated in subsequent figures: re-recorded (covered), sampled, reworded, revised, remixed, and re-presented in new context. The revised/re-recorded image is based on Michael Underwood’s version, available online <http://www.cultsock.ndirect.co.uk/MUHome/cshml/introduictory/sw.html>, but Underwood’s version is itself a re-presentation of the images included in Shannon and Weaver’s figures from their 1947 textbook.
Contra Shannon and Weaver, for Hendrix noise is not a source of contamination or something to be eliminated but rather an integral input string, a source of “information” worthy of inclusion and manipulation. The roiling harmonics and waves of feedback generate sounds akin to ghosts in the sonic landscape, and Shannon and Weaver’s “noise” now becomes musical. These ghosts—musical or otherwise—are intertextual residues, or traces of an excess that will not be repressed or “squeegeed.” While Hendrix was not the only one developing such new aesthetics, Hendrix’s influence in particular has been massive, to the point where scores of artists, such as Sonic Youth, Glenn Branca, My Bloody Valentine, Ride, Sigur Rós, and more, have formulated entire feedback-based aesthetics. While not all artists go so far, it has at least become a commonplace to incorporate formerly unacknowledged if not illegitimate forms of sound and label them legitimate, thereby reimagining noise as input.

If it is not clear yet, we want to underscore that we are not merely discussing the musical incorporation of “noise;” rather, we are suggesting that such techniques can productively be adopted in composition classrooms, at the very least in terms of expanding our techniques for invention. In some ways this might be considered a bricolage-like aesthetic of merging different idioms, such as transforming noise into signal and finding new sources of input (as “world music” strives to do). By multiplying the legitimate sources for music or production in general, we counter the tendency to create a separate world of art and aesthetics, blurring distinctions between art and not-art to the point where we can dwell interactively in musico-aesthetic spaces without consigning ourselves exclusively to the aesthetic realm. We thereby come to appreciate the materials already surrounding us in the postmodern fashion of radically expanding the sources and agencies involved in theorizing and conducting creative endeavors.

We might offer, then, a series of revised communicative models that attempt to grapple with the incorporation of noise, the generation of feedback, and the blurring of genre boundaries. Consider first this model loosely affiliated with what Hendrix accomplished (see Figure 2).

The feedback here may well be undifferentiated and messy; we understand it as captured in the moment and rebroadcast through the same electronics that generated it, and in this way it reformulates or rearticulates noise as signal. Such a model values what might have been categorized as waste. We might say, in fine postmodern fashion, that noise is simply a new move in the communicative game, but one that also—in accordance with the principles of feedback—changes the nature of the game (see Lyotard, 1984, pp. 7, 9–11, 64–67).

Having moved from dismissing feedback as noise to valuing feedback as input, we follow recent musical composition practice in articulating a variety of sources of feedback. By articulating these sources of feedback, we move toward valuing them as we name and differentiate...
Fig. 2. Communicative Model A.

Fig. 3. Communicative Model B.

their source and use. As John Dan Johnson-Eilola (1997) reminds us, Shannon and Weaver were describing the technical specifications for effective long-distance communication. But as Michel Serres (1982) indicates in The Parasite, there are different kinds of noise, forms of which can be made helpful. The dialtone, for instance, is a noise that provides feedback; it functions as an indication that the system is ready to place an outgoing call. In French, the dialtone is called le parasite, the parasite, and it is a useful noise accorded a particular value and an idiosyncratic label—and in effect it becomes a new input string. The labels in Figure 3 name useful forms of feedback: Hendrix’s electric static, crowd noise that indicates a track was recorded in front of a live audience, samples and loops that have gained prominence in hip-hop and house music, natural and other sounds occurring in man-made environments and captured for later reuse, as well as visual art and other media input (including writing).

Feedback, then, can take myriad forms, and we show here a few we can recognize and name to illustrate a point: We have moved from a first-order cybernetic sense of the technical need to eliminate noise in the communicative process, to valuing noise produced by the creation of musical sound, to recognizing that noise comes from numerous sources rather than a single source, to naming and distinguishing a variety of these sources.⁴

We are not so much advocating the use of sound in compositions as we are looking to music culture to gain inspiration and models that are applicable to new media. That is, we are

⁴ For a good overview of first-, second-, and third-order cybernetics and their relevance for the humanities and English studies, see Katherine Hayles (1999).
remixing written composition so that it learns from musical culture and takes it as a valued source. Let us not forget all the parents in 1964 American households, covering their ears, exclaiming, “What is this noise?” when hearing The Beatles for the first time, just as German parents wondered upon hearing Wagner for the first time, “Was ist diese Geräusche?” (“What is this noise?”). With time, Wagner has found his “total art work” (Gesamtkunstwerk) enshrined among other high art, brimming with cultural capital while The Beatles are in the midst of a similar sanctification. Yes may yet be waiting a while.

3. Going for the one: Yes as postmodern Gesamtkunstwerk

We have suggested that The Beatles, in moving from songwriters to orchestrators of multiple media forms, further Wagner’s ideas concerning the total art work by developing alternate persona, working in film and animation, and ultimately transforming the very notion of what it means to be an entertainer. And The Beatles were very much a band. They collaborated and wrote their own music, they presented aesthetically considered images of themselves, they consolidated the record album as more than just a collection of songs but as a unified band expression, and they even attempted to gain some control over their means of production (Apple Records). While such moves were not entirely unprecedented, together they initiated a new model of how to create and perform music. In this sense, The Beatles were a direct inspiration to countless bands that took such germinal practices and fulfilled them in their own unique ways.

The progressive rock band, Yes, is such an exemplar, in part because of the uniquely strong aesthetic vision the band brought to all aspects of creative production but also because of the way they provide a direct link to Wagner due to their instrumental virtuosity, which was considerable, and their deliberate attempts to cross rock and classical music. For these reasons and more, Yes are placed at a key point in the century since Wagner, illustrating how music can retain aesthetic continuities despite dispersion across differing media forms, technologies, and contributing personalities. Thus, Yes present a case study for understanding music today in an intriguingly evolutionary sense.5

For the purposes of this essay, we concentrate on a single album, Close to the Edge (1972), as a striking example of the evolution of musical form and production that presents challenges to more traditional understandings of music, challenges that can help us grapple more readily with what we have rather inelegantly labeled postmodern, postpunk re/mix hip-hop culture. Yes pioneer prototypical multimedia techniques, even while in an erstwhile “musical” setting, techniques suggestive of networking that in digital culture transforms disparate media in an experiential world, revealing how compositional work is conducted and how it is received by an audience.

First and foremost, we want to address the album’s composition. We remark above that Wagner was quite successful and influential in transforming opera into a total dramatic pre-

5 For a history of Yes and their evolution from art rock to progressive rock, which included replacing less technically proficient band members with ones who could achieve the sophisticated and complex arrangements they later created, see John Covach (1997), Edward Macan (1997), Bill Martin (1998), and Paul Stump (1997).
presentation; while the music may have remained primary, other elements came to the fore so that for the audience a Wagner production was an intense and immersive experience. Yet, for all that, Wagner remained quite caught up in the Romantic cult of genius; he was the auteur even if others were involved. Like Wagner and other classical musicians, Yes were virtuosic players, and they aspired to compositions that could only be achieved through virtuosity. And yet, at least during this time period, they like many bands resisted the lure of ego and put the music first, submitting themselves to group composition and seeing the music as greater than any individual (see the band’s own comments in Morse, 1996, pp. 16, 33–40, 118, 149).

Second, in line with their precursors, The Beatles, the album was conceived as a unified aesthetic object. Not only did the songs share thematic unities, both lyrically and musically, but the album itself was implicated in complex networks of reference (for example, classical composers such as Sibelius and literary works such as William Blake’s poetry and Herman Hesse’s Siddhartha, on which the title track is loosely based, not to mention the politics and lifestyle of the burgeoning Green movement). We also have to point to Roger Dean, an English artist and architect famous for numerous album covers, including Yes’s Close to the Edge (see Figure 4). In fact, Dean to this day is most strongly associated with Yes, and in conversation, he spoke as if he were a surrogate band member (BBC, n.d.). Dean originally sought to be an architect, and the futuristic, otherworldly landscapes he drew reflect that dream as Yes were also creating unusual musical worlds and soundscapes. Dean went on to design complex stage sets, combining his visual art with architectural design. What is important here is the merging of media and the parallel commingling of communities of people: Visual artist and musical group come together to create an aesthetic object greater than each individual involved, one that is also a hybrid of conjoined, mutually interacting media forms.

All this stretches us beyond the confines of Wagner’s aesthetic vision and production, but we have one other consideration: compositional techniques. As reported by the band members, the recording studio and its technologies allowed for new ways to write music. One of the members, typically lead singer Jon Anderson, would bring in a snippet; the other members would begin to work with it, changing it, evolving it. In this piecemeal fashion, larger works would be built up, such as the 18-minute track “Close to the Edge.” There was no original plan or overarching compositional goal; the work evolved out of itself and the shared artistic vision of the group. The producer and engineer, Eddie Offord, was also integral to this process, so much so that his picture appears on the album cover with the rest of the group. Especially

![Figure 4. Musical worlding: inside the cover of Yes, Close to the Edge.](image)
important was his ability to edit master tape. Musicians had discovered that composing in a recording studio was a powerful process, yielding new sounds and processes for making music. The studio could also make music difficult to recreate live, and tape editing, as utilized by Yes, is a technological component that becomes so crucial to the composing process that the music could not have been made without it. We are not talking about the direct application of technology such as using sound effects to change the sound and tone of the instruments (like distortion or echo), to speed up or slow down the music, or to create backwards sounds. Instead, we mean that technology insinuates itself into the composing process, and in the case of Yes, this means the art (as well as technique) of the tape edit. Bill Bruford, the drummer, explains: “Tape editing was fundamental to this band creating this music at all. Because we couldn’t play any of it through until we’d learned it. We’d play a thirty-second segment and say, ‘What happens now?’ We’d stop the tape and write another thirty-second segment. It would go on like that, [like] climbing Mount Everest” (quoted in Morse, 1996, p. 35). We see here a further evolution in the feedback model; if Hendrix was a master at incorporating feedback into his guitar style and making noise musical, then Yes were—among others like Pink Floyd’s David Gilmore6—pioneers in incorporating tape editing as a furthering of a basic feedback model. Indeed, we might label such a method proto-cybernetic composition.

While this analysis has been fairly summary, we hope to have made clear the extent to which Yes pointed toward postmodern re/mix culture and the technologies that enabled its music. Yes as a group brought an aesthetically strong vision to its music, diffusing the cult of the genius/virtuoso in order to make music bigger than all of them and extending the composing process to include technologies like tape editing; but at the same time, they extended the notion of music to include visual art, such as album covers and stage design, not simply as an accessory but as an integral element in their “musical worlding” (Covach, 2003, pp. 179–80). Yes were not just making music to listen to: Instead, music becomes part of a network of aesthetic elements that open up a world one can experience and interact with. Yes, at least at their peak, fulfilled the promise of the Gesamtkunstwerk by bringing together disparate media elements to generate not just music as total art but as an entire aesthetic world. What is crucial is that they do this as musicians; that is, their art form is not, for example, film, which by its very nature merges sound and vision and thereby more directly invites comparison to world-building. It is through the extension of what music is across new media forms and their associated technologies that artists such as The Beatles, Yes, and numerous other path-breakers in their wake have come to be forerunners in techno-aesthetic production and, in so doing, have initiated a transformation in what it means to experience and interact with such aesthetic production.

However, Yes’s accomplishments can still be understood as working within the cult of the virtuoso/genius as the trappings of that ideology remained in the myth of the group; and while

---

6 Interestingly with the case of Gilmore, we see that this method of composition is not without controversy. A review of Pink Floyd’s work by critic Robert Christgau once snipped that Gilmore’s guitar solos were transformed by studio trickery into something more than what he originally played (Christgau, 1981). More recently, the alternative music review Web site, Pitchfork, posted a list of the fifty worst guitar solos of the millennium; David Gilmore’s solo for Pink Floyd’s “Comfortably Numb” was listed as the forty-third worst because he used tape splicing to compose the solo (Sandlin, 1998). The aesthetic brought to bear here demands that a solo be as spontaneous as possible, suggesting that the cult of the guitar hero remains a potent narrative despite the advent of new music forms that directly challenge it.
they perhaps extended notions of composition, still they were very much of their time, which in terms of our essay, means that this period was prior to the emergence of sampling and other forms of digital production and reproduction. We have so far discussed the notion of the total artwork as it has evolved through diverse media forms, technologies, and means of production and have assessed the importance of feedback for challenging traditional, linear communication models as well as pointing to the importance of technological advances. Yes’s compositional reliance on tape editing can be seen as an early example of cybernetic production, but as we will see next when we turn to Brian Eno, this method had far greater potential, not to mention far-reaching implications, for the future of sound.

4. Brian Eno and ambience: the inner experience goes out

Brian Eno is considered the originator of ambient music although it is clear that he had predecessors who could also be so labeled. Regardless, Eno has given ambient music its highest profile, and he has discussed substantially the use of cybernetic compositional methods (see Prendergast, 2000; Tamm, 1995; for connections to rhetoric, see Rickert, 2004). While there is much to say about Eno, here we will limit ourselves to his compositional methods.

In the making of his earliest ambient albums, Brian Eno (1975) explained that he spliced together “two simple and mutually compatible melodic lines of different duration.” He would alter their timber with an equalizer or make other minor adjustments, but these were not the primary factors in the music’s emergence. Instead, it was the systematic unwinding (i.e., the recording of their playback) of the differing tape loops that generated the music (see Figure 5). Eno thereby played the “roles of planner and programmer” and gave “chance its role,” so that ultimately he became “an audience to the results” (n.p.). As in the case of Yes, tape editing was crucial, yet Eno went far beyond what they achieved in making tape editing not just a compositional method but equally a compositional partner. In this way, Eno was highly innovative in creating music that distanced the human subject from the compositional process traditionally understood as the product of more or less direct control. Further, he expands our locus of aesthetic concern beyond what is most obviously considered music to incorporate various landscape or environmental elements. Certainly, we have come a long way from Wagner! And yet, some common elements remain: Eno typically sees his albums as coherent, integrated statements, thereby carrying forward the notion of the total work of art. One could see some of the extensive liner notes he wrote for a few of his albums as being a further continuance of that principle in that our understanding of the composing process will further our enjoyment of or involvement with the musical work. However, we see also a great dispersion of the “work” involved in creating the Gesamtkunstwerk through technological means, to the extent that via cybernetic feedback loops the “creator” of the work becomes “audience;” furthermore, we see a second form of dispersion so that the surrounding environs become part of the music as well.

---

7 Eno developed more sophisticated tape loop techniques for his later ambient albums. For a visual example of a track from Music for Airports, see the exercise at Learningspaces.org <http://www.learningspaces.org/n/eno/>. A graph of the multiple audio loops, accompanied by sound, shows how these tape segments continually change their dynamics in relation to each other.
The artistic implications of dispersing the generative processes of composing through technological and environmental axes emerged gradually in Eno’s work. At first, he considered it high-quality mood music; next, he gravitated toward more specific applications, as the self-explanatory titles of albums like *Ambient 1: Music for Airports* (1978) and *Music for Film* (1978) indicate. *Music for Airports* was even played for a time in one of LaGuardia Airport’s terminals, and these kinds of usages led to Eno’s next move: ambient music for art installations, for which he has done several compositions, such as *Thursday Afternoon* (1985). Additionally, in a manner not entirely dissimilar to Yes’s aspiration to musical worlding, Eno composed several albums that evoke unfamiliar realms, such as outer space in *Apollo: Atmospheres and Soundtracks* (1983); imaginary landscapes, such as *Ambient 4: On Land* (1982); and alternate worlds, such as his collaboration with Jon Hassell in *Fourth World, Vol. 1: Possible Musics* (1981). Lastly, Eno, working with David Byrne of Talking Heads, produced one of the first albums to rely heavily on sampling, *My Life in the Bush of Ghosts* (1981), now recognized as an early and influential model for how everyday speech can be remixed for significant aesthetic–musical impact.

The entwinement of a startling array of media forms speaks to Eno’s creativity even as it disperses it into alternate compositional methods, technologies simple and sophisticated, and diverse collaborations with musicians and found sound. Eno’s innovations challenge our notions of what it is to compose just as much as they challenge our notions of what it is to listen, or consume, a musical work. It is as if on the mixing board of life Eno turned down the “active” volume knob on the “creator” and turned up the “active” volume equally on the “listener” and the surrounding environs without ever adjusting the “passive” volumes for either. Such musical worlding, in other words, is not simply an experience we undergo; in experiencing it, we are transformed in our aesthetic sense of what music is and what it means to participate in music’s unfolding.

Consider, for example, two themes that have been working throughout this essay, feedback and total art. It is not enough to say that these musical features have histories that can be traced and techniques that can be described. Rather, insofar as they are networked to wider cultural and technological transformation, they emplace us differently as regards the aesthetic work. As Jon Hassell (1983), who frequently collaborated with Eno and utilized many of the same techniques, explained about one of his albums, “Like the video technique of ‘keying in’ where any background may be electronically inserted or deleted independently of foreground, the ability to bring the actual sound of musics of various epochs and geographical origins all
Together in the same compositional frame marks a unique point in history” (n.p.). The ability to combine and remix in this manner is already to evoke a new world. Once we pass a certain limit threshold, the way of defining media across genres and/or technologies common to that previous time becomes obsolete, untenable. Those definitional boundaries and the practices that emerge with them blur, bleed, rearrange, becoming different than before. And, as we have been arguing in various registers, sound, especially musical sound, is key to understanding how new media transform notions of “literate” practice not just as a series of new technologies and techniques but actively as a Gesamtkunstwerk worlding us differently than before. To utilize feedback in music, then, is not only a technique emerging from a technology; it is also a new way of engaging the world, a world where feedback is a conceptual resource, a series of practices, a mode of fundamental understanding.

5. The Flaming Lips: quadraphonic ambience

Today, the techniques developed and advanced by Eno are not only common but have been extended even further. Artists are still creating music environments, as for an airport or art installation, but they are also seeking ways to blur the boundaries between performance and appreciation, playing and listening, production and consumption. The Flaming Lips stand as a contemporary example of the dispersal of the creative process into new communal–technological forms. In these artists’ hands, ambience is not just mood music but rock music of a newly participatory kind. Punk rock in the 1970s had already ushered in some of these ideas in its attempt to break down barriers sundering artist and audience by celebrating a do-it-yourself aesthetic (DIY), inspired amateurism and increased audience interaction.8

The Flaming Lips build opportunities for audience participation through experimental projects that nevertheless remain attuned to the band’s original musical intentions. The experiments produce not only music but also participatory, immersive experiences that have deep affinities with today’s sophisticated digital and reproductive technologies and the techniques we see emerging. These experiments attend to the possibilities of bringing as many media forms together as possible, of heightening the total art experience, and of getting the audience involved equally as contributors to the music and affectively as part of the happening. If, as explained above, Eno was an audience to his own results and thereby a key figure in seeing the dispersion of the singular composer-as-agent into multiple agencies, then The Flaming Lips take us even further, highlighting the most significant aspects of prosumer culture through their auditory and visual experimentation.

Next The Flaming Lips released Zaireeka (1997), an unusual album in that its music was spread across four CDs meant to be played at the same time. Also included with the album

---

8 To add another wrinkle in audience participation blurring performance boundaries, consider the way the disappointed, angry, or merely cynical media-savvy prosumers turned Ashlee Simpson’s Saturday Night Live lip-synch fiasco into new texts for further inquiry:

(a) <http://www.ebaumsworld.com/ashlee-snl.html>
(b) <http://media.ebaumsworld.com/index.php?e=eb_ashlee_sax.wmv>
was a postcard that explained that the Flaming Lips were conducting a series of experimental concerts in parking lots and banquet rooms. Using car stereos and portable tape players, up to three-hundred pre-recorded and pre-arranged cassette tapes, and utilizing audience participation, they have created multi-dimensional, surround-sound events that are challenging the conventional ideas of what a concert can be. (np)

Before the release of *Zaireeka*, The Flaming Lips were experimenting with headphones, FM transmissions, and multiple sound sources—all of which required audience participation. The first were called the “Parking Lot Experiments” and involved fans synching tapes on their car stereos; then came the “Boombox Experiments,” which asked audience members to control prerecorded elements. Later, the experiment was conducted through headphones; ambient sound was played underneath the prerecorded elements, and these sounds interacted with the quieter, individually broadcast elements piped into the audience-members’ headphones. These collective experiments resulted in a decidedly prosumer feel to Lips’ shows that began to redefine the experience of a concert, since they further blurred the distinction between live performance and recorded music and between artist *qua* producer and audience *qua* consumer.9 The Flaming Lips were overcoming the limitations of the concert form by recapturing the experience of a happening. In this case, the happenings were also multimedia events where the music was but one element in an immersive, total music experience, constituting yet another evolution in the *Gesamtkunstwerk*. However, this discussion only begins to scratch the surface of the Lips’ musical worlding, for technological innovation has a much larger role to play than we have so far indicated.

The Flaming Lips continued their experimentation as introduced in their boombox concerts to include advances in audio technology, exemplified by the 2003 release *Yoshimi Battles the Pink Robots*. It included a bonus DVD remixed to take advantage of advances in surround sound to include all five speakers (plus subwoofer) of the Dolby 5.1 standard (see Dolby Laboratories, 2005). The widespread dissemination of Dolby 5.1 as a standard assured Warner Brothers, the label holding The Flaming Lips distribution rights and ultimate copyright holder of the Lips’ intellectual property, that there would be equipment available to play what the band had envisioned. The Dolby technical standard provided an avenue for the band’s expression, yet it also served as a corrective to any technologically determined sense of sound mixing. That is, Dolby 5.1 was integral to the distribution of the sound experiments the band was already producing, as on *Zaireeka*’s multiple CDs and the Parking Lot and Boombox Experiments. Before and without Dolby 5.1, The Flaming Lips were producing groundbreaking, multiple-channel, audience-involved rock and roll. But the widespread acceptance of the Dolby 5.1 standard by music producers and distributors, coupled with the parallel marketing and purchase of modestly priced surround-sound stereo equipment for home use, ensured that The Flaming Lips had a base of newly installed equipment as well as curious audiophiles who were looking to take advantage of their multi-channel, audio–video investments. It would be difficult to separate the Lips’ experimental successes from these other parallel advances, and the DVD becomes an example of The Flaming Lips’ appropriately *kairotic* response: a band taking advantage of

---

9 In an interesting turn of phrase, the band is calling its more recent shows “Multitainment” (*The Flaming Lips*, 2002).
a cultural moment where technology and desire align with their sound experimentation (or, just as plausibly, the cultural and technological moment bring the band’s experimentation into being).

These projects highlight the ways digital tools can make creation in multiple media forms available to aspiring auteurs, musicians, photographers, animators, and more. Equally, they speak to the necessity of an undergirding technological network that functions akin to a covalent bond in chemical reactions. This constitutes, with increasing importance, the second sense we ascribe to the term “worlding.” The experiments require the surrounding technologies to thrive, aesthetically and economically—the technologies open up the aesthetic realm within which the experiments can come into being. This realm also includes those who utilize these technologies. Since they are part of the network that feeds back into the band’s performance, they are integral to the process. The band needs users and technologies in order to enact the performance and find in such experiments new cultural aesthetics and the strategies for achieving them. All these elements come together to open up the world of technological possibility, both in terms of production and enjoyment.

The Web site description (2006) of the DVD version of *Yoshimi* does not mention one of the more unique features of the release, a feature we wish to highlight: Frequency Waveform Cartoons. Above, we described how Yes pursued album cover art and stage design to further their musical worlding; here, we see yet another advance in this direction, this time rather directly achieved through technological mediation. The liner notes (*Flaming Lips, 2003*) explain:

> These color burst patterns are designed by George to act as a kind of soothing visual companion while you are listening to the intense surround field. With each track particular frequencies have been animated to bounce and pulsate according to the dynamics of the sounds within the song. (np)

Almost as an afterthought, The Flaming Lips invent and distribute a new and exciting addition to the sound-video multimedia landscape. Rather than producing visuals to accompany the music, the DVD offers a data stream that presents a “soothing visual companion” on the screen while the music is playing. This visual companion is actually a machinic interpolation of the equivalent of an oscilloscope run through a Flash interpreter. It translates sound frequencies into color, shape, and movement reminiscent of 1960s multimedia slideshows but at an intensity and digital mastery that Warhol and the Velvet Underground could only produce in an imaginative (or chemically enhanced) trance. These Frequency Waveform Cartoons (FWCs), as the liner notes name them, are something we have not experienced before or seen in any other form (see Figure 6); they are different from the (we assert mislabeled) “ambient” video presentation in Microsoft MediaPlayer and similar tools that generate “visualizations.” Indeed, these FWCs inspired one of the authors to design a living space around them!10

---

10 In one of those odd parallels that is stranger than fiction, it should be mentioned that Roger Dean, Yes’ semi-official group artist, merged his drawing motifs with his architectural interests, designing unusual round and womb-like rooms and places on the theory that such spatial qualities create a deep and resonant sense of comfort. These rooms and places, sometimes called “retreat pods,” can be seen on some of the album covers Dean drew, and he also includes photographs of several he has constructed in his book, Magnetic Story (*Dean & Dean, 1986*). Dean’s rooms thereby extend the aural experience of Yes’ music into architectural space. Similarly, The Flaming Lips inspire the creation of an extension of the visual experience into the design of a room.
Although the screenshots presented here begin to represent the visual component of these FWCs, because of the limits of the static page and black and white reproduction, they necessarily fail to capture the combination of movement, surround sound, and code that makes the DVD such a magnificently integrative experience, a multimedia art work looking back to Wagner’s Gesamtkunstwerk even as it pushes through toward something else. It presents a networked whole greater than the sum of its constituent parts, which requires the band not only to compose music, write lyrics, and play their instruments, but to paint images to accompany the songs, write liner notes, collaborate with mixing technicians, work with software and web-development tools, and develop innovative uses for input streams (what we now refer to as data streams). The last item, developing new uses, in turn allows programmers to devise visual output from sound input, revising still further the cybernetic diagrams we presented earlier; we must begin again to accommodate the various sources, transmitters, feedback loops, and output streams that multi- and hypermediated “total art” encompasses (see Figure 7). Note in the diagram how the signals are simultaneously differentiated and conjoined; they are no longer mere “feedback” or “noise” but crucial elements for the sound-becoming-mediасscape. Contemporary artists such as The Flaming Lips who are working in digital multimedia collapse distinctions among the source or native signal media and see sources simply as varieties of input generating new forms of output, varieties that can be marshaled together. Wayne Coyne described these technological/musical composition crossovers: “[The new Flaming Lips Album] is like if Stevie Wonder got together with Led Zeppelin and they
had Pro Tools” (2003, *Yoshimi* DVD extras, emphasis added). In the process of bringing together digital design tools with multiple media streams, The Flaming Lips offer examples of immersive new media environments that can be composed. What such innovation confronts us with is the growing sense that we may carry with us outmoded layers of media definition based on technological differences that no longer exist, at least not in the same way as before. In this regard, The Flaming Lips are at the forefront of those beginning to realize some of the implications of the liquidity of digital manipulation for media forms, where the formerly naturalized sense of genres such as “film” or “music” dissolve or morph. As Jean Baudrillard (1996) comments,

I think that it [new technologies] will no doubt explode in all directions, because this is a sprawling medium, and it will grow in all of the domains. But do the ends remain the same; that is doubtless the main problem. (np)

So it may be that the diagram is unnecessarily complex because we retain in our minds habits, definitions, and vocabularies that separate “visual” from “video signal,” “computer signal” from “television,” and “telephone” from “radio.” But as The Flaming Lips and others demonstrate, these are convenient, once-plausible fictions that are changing more and more. In other words, distinctions between media are increasingly blurred. Even at the technomaterial level, digital media are strings of 1s and 0s regardless of our ultimate perception of their differences, manipulated to create worlds in our imagination, without deference to whether they enter through our eyes, ears, or through pulses against our skin. Among other things,
this elevates the role and importance of sound even as it allows us to refocus and learn from sound manipulation and composition techniques. And, as digital signals do not differentiate by the media of transmission, digital tools for sound such as Garageband blur the boundaries between producers and consumers of the signal itself.

6. Redefining authorship, redefining expertise: GarageBand

GarageBand is the name of a powerful Apple-created software program (already now in its third version) for composing and recording music. It is the latest program in a suite of Mac programs designed for using and manipulating digital content, including iMovie, iTunes, iPhoto, and iDVD. Collectively, these programs are known as iLife, a term that highlights the extent to which digitality, as manipulation and consumption of media forms, is marketed as a lifestyle. Despite the earlier programs with which GarageBand has significant similarities in interface design and operation, it is not an overstatement to claim that GarageBand is unique. The power of the program is such that one needs no particular musical or instrumental skill, nor even a way to input content, in order to make music. The other iLife programs, by their very nature, require at the least that one provide some content—images, video, and songs. While GarageBand is designed to work with outside content, it also comes with a large number of preprogrammed beats, riffs, and melodies with which one can work. The power of GarageBand is that it makes anyone, at least potentially, a composer. And the new 3.0 version integrates images and video with sound, making anyone a potential composer of multimedia.

GarageBand’s library of prefabricated sounds is limited, naturally, but one can supplement it with Jam Packs, of which there are now at least four; they provide thousands of additional rhythms, beats, riffs, and melodies for scores of instruments. Further, GarageBand allows for other forms of input, from real instruments and voices to samples and digitized instruments played through an interface bundled with the software. Indeed, GarageBand can handle and intermix nearly all forms of musical input as we understand them today. Once inputted, layered together, looped, mashed up, or otherwise assembled—in a word, composed—one can transform the work in still other ways, including changing pitch, tempo, time signature, tonal color, and so forth. The interface allows one to listen to the sounds while at the same time visualizing how the parts go together (see Figure 8).

GarageBand is significant for our article because it brings together rather concretely a number of the themes we have been discussing. First, it operates forthrightly on a feedback model. To compose on GarageBand is not so much a matter of drafting as revising. That is, one must continually move among and manipulate the layers through the interface’s audio and visual feedback protocols. This feedback model is integral to the compositional work of Garageband, and, thus, we can see a direct link with artists such as Eno. Second, insofar as GarageBand is designed as digital production software, its purpose is to enable consumers to produce digital sound. While this is not unusual per se, the scope and power of the program is, at least for now, unique to the extent that it grants nonmusicians great musical capacity. And, of course, since the music is digital, it is potentially infinitely manipulable, reproducible, and distributable.
This last point is worth underscoring because it brings us back around to the concept of “worlding.” We have discussed how Wagner and Yes approach the *Gesamtkunstwerk* whereby different media are integrated to fulfill and further the musical aesthetic. We then extended that discussion beyond this notion of the total art work in order to understand how feedback loops set up among artists, audiences, and technologies become ingrained in the music and musical experiments. Artists are not isolated, that is, but they in turn depend on the availability of certain technologies and the aesthetic possibilities they open up, as well as audiences that are also attuned. In short, networked feedback loops are integral to musical production and experimentation, and when we step back to analyze how these visual-musical works are generated, distributed, and received, we find that the works are in a very real sense inseparable from the complex modes of production from which they emerge. Worlding, then, carries this double sense: It is the aesthetic realm that a visual-musical work invites us to both enter and immerse ourselves in, and it is the constellation of production pathways and inputs—people, communities, technologies, and networks—that are simultaneously evoked with each aesthetic world. These two senses of world are tightly imbricated if not inseparable.

With the above in mind, we can see that GarageBand, by enabling even nonmusicians to create, reproduce, and distribute music, is also worlding: It marks the latest step in the development of prosumer culture where every act of consumption will in turn be an act of production. If we have learned nothing else from the great transformation in contemporary life instigated by the advent of the World Wide Web, it is that the combination of infinite
reproduction and distribution creates networked communities, and these communities in turn generate feedback, even noise, as songs are remixed and redistributed on the Internet to be remixed again by others, which necessitates further transformation. Feedback, in other words, is the guarantee against stasis, the infinite promise that new compositions are inevitable.

7. Conclusion

We have argued that musicians have long been forerunners of techniques and concepts and possibilities common to contemporary digital-multimedia production. We have advanced terms such as Gesamtkunstwerk, feedback, prosumer, and worlding to show genetic links among artists as diverse as Wagner, Hendrix, Yes, Eno, and The Flaming Lips and to demonstrate that new, innovative software such as GarageBand can be seen as an outgrowth of trends going back decades. But, where does this leave us? We suggest first that integration of media will continue. That is, as it becomes easier to generate and combine media, such recombinations—hybridizations—will advance, often in new and surprising ways and, we assert, in ways we are unable to predict. Further, this integration will take place not only by combining different media forms, such as sound and image, but it will be increasingly produced, reproduced, and distributed through technologies, networks, and communities. Indeed, we might say that in some ways it is becoming more difficult to separate out these terms as they seem to presuppose each other. This inter-relationship and (inter)presupposition of technologies, communities, and agency is another fold in our sense of worlding.

We would like to conclude with an anecdote that furthers our arguments but does so by showing that we are only in a moment whose supercession can already be gleaned. First, prior to drafting the section on GarageBand, we spent an entire evening learning the software and composing on it. Feedback and remixing were crucial to the proceedings, as were networking and community. We made our fair share of noise, and some of it even made its way into the compositions. We did indeed feel fully our roles as prosumers! Nevertheless, the software, while relatively easy to use, stops short of being intuitive. It takes real work to use GarageBand, and not just the affective work one normally associates with sound production. These are not idle criticisms, for they show that as advanced and wonderful as GarageBand is, it can be still better, or even superceded. For example, in a Web site devoted to reviewing new media tools, Spencer Critchley (2004) discusses the use of music software from the perspective of an online community of musicians. What repeatedly comes up are specific kinds of frustration, and their criticisms of GarageBand in particular are telling. Among the complaints leveled by the reviewers is the assertion that the interface is too complicated: It is hard to learn and remember, and the learning that must take place is intellectual rather than musical. The review presents the critical perspectives of musical rather than technological experts, and the appeal to pathos is especially significant:

---

11 We plan that the digital companion to this essay will contain the fruits of these rudimentary efforts. In so doing, we hope to bring together text, image, and sound. We have already constructed two sound files (we dare not claim they are “music”) that are intended to be heard independent of any text. A third is linked to a slide show that we imagine readers may want to play while reading this static text.
The interface is not aesthetically pleasing as a design. It either doesn’t look good or feel good to work with (or both); it’s not loveable. Performance on the instrument may also be uninteresting as performance, as in the case of digital DJs hunched over laptops (looking, as one participant pointed out, like they’re busy at a desk job). (n.p.)

Note the emphasis on feedback and other affective factors. Apple, it should be noted, bills GarageBand as itself being an instrument. That is, when we are considering production from the perspective of digital life (e.g., Apple’s iLife), software is no longer limited to combining or transforming pre-existing content; rather, it produces content itself no differently than a musical instrument. The complaints of the musicians indicate that they too take software like GarageBand to be an instrument. This is seen most clearly in the complaint that the interface design is ultimately displeasing—that it is not loveable. Perhaps here we see a key insight into what the future will bring—a more complete integration of technology into the affective realm and thereby a further blurring of lines distinguishing media from each other, especially software from instrument. This also suggests that sound will increasingly be of greater importance in understanding what it means to compose (in) a world and that techniques emerging from feedback-driven processes, the breakdown of the line sundering consumer from producer, innovative forms of input, and emergent, networked communities of production and sharing will continue to be of the highest value.

References


Eno, Brian. (1975). Discreet music EG.


