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## Live and technologically mediated performance

Theatre is different from all other forms of theatrical presentation because it is live. . . . “At the heart of the theater experience, then, is the performer-audience relationship: the immediate, personal exchange; the chemistry and magic which gives theater its special quality.”<sup>1</sup>

I use this quotation, from an introductory course document prepared by Professor Kaoime Malloy, to stand for what I shall call the traditional view of live theatrical performance. The key word is *immediate*, which suggests that the traditional definition of live performance is founded on an opposition between the immediate and the mediated. From this perspective, the performer/audience relationship in film, for instance, is thought to be mediated by the camera and the rest of the filmic apparatus; in the theatre, by contrast, this relationship is seen as direct and unmediated.

Such distinctions are largely commonsensical. Whereas stage actors can appropriately be considered the “authors” of their performances, film actors cannot. As the actor Willem Dafoe emphasized when I interviewed him, film actors basically provide raw material that is shaped into performances by directors and editors and therefore need not be as concerned about the through-lines of their performances as stage actors.<sup>2</sup> Audiences witness theatre actors in the moment of performance but see performances by film actors only long after the actors have done their work. Stage acting is therefore temporally immediate to its audience in a way that film acting is not.

Perhaps because of its disciplinary genealogy, performance studies often exhibits a bias toward live events and a resistance to including technologically mediated ones among its objects of inquiry. Performance studies is rooted in the fields of theatre studies, anthropology, sociology, folklore, speech, and oral interpretation, all of which take live events as their major points of reference, whether those events be aesthetic performances, cultural performances, rituals, or everyday behavior and conversations. Even though an interest in mass media was implicit in performance studies from quite early on,<sup>3</sup> only fairly recently did the field begin to draw on

communications and media studies and to consider the kinds of cultural objects with which they engage (for example, television and recorded music) under the rubric of performance. Because the distinction between live and technologically mediated performance remains a fundamental and culturally stratifying one, it is important to interrogate it directly.

Defining the differences between live and technologically mediated performance in terms of the traditional opposition becomes less tenable the more aspects of the question one considers. Speaking of attending the theatre, the playwright and actor Wallace Shawn has said:

I've been spoiled like a lot of people by watching movies and television, where you can see very well and you can hear what the actors are saying. It's really, really hard for me to sit in row HH and not be able to see the faces of the actors and have to either strain to hear their voices or listen to projected voices which I know are grotesquely unnatural and which make it absolutely impossible for me to take the whole thing seriously.<sup>4</sup>

The situation Shawn describes is not at all unusual; it is something anyone who attends a live event of any kind (theatrical performance, concert, sports event, political rally, and so on) may encounter. Under these circumstances, what becomes of the immediacy, the chemistry, the sense of personal contact said to define the experience of live performance? As Shawn suggests, this experience is not at all unmediated: in the case he describes, it is mediated both by the physical characteristics of the performance space, which can either enhance or undo the potential for contact between performer and spectator, and by his own experience as a film and television viewer. He also implies that the sense of immediacy can actually be stronger when watching film or television than at the theatre.

In other words, we cannot treat the qualities traditionally assigned to live performance that putatively differentiate it from technologically mediated performance as inherent or ontological characteristics. They are, rather, phenomenological and historically defined. They are phenomenological (as opposed to ontological) in the sense that they are not characteristics of the performance itself but things experienced and felt by performers and spectators. One cannot say, for example, that a performance in a small space is necessarily more intimate than a performance in a huge space. It is so only if the participants experience it that way, and there may be forms of mediation taking place that either encourage or discourage participants from having the experience. For example, as Mireya Navarro observed in an article in the *New York Times* on the subject of famous rock musicians who sometimes play concerts for relatively small audiences at high prices, "Intimate is, of course, relative. If the performer usually plays to audiences of 20,000 . . . a

concert for 2,000 or so would be downright chummy.”<sup>5</sup> The experience of intimacy in such a case results as much from the participants’ knowledge and experience of the artist’s normal practice as from the circumstances of the performance.

Live performance is historically defined in that both our experience of liveness and our understanding of what counts as a live performance change continually over time in response to the development of new media technologies. Addressing in 1936 what was then the most important new medium, film, Walter Benjamin observed, “human sense perception . . . is determined not only by nature but by historical circumstances as well.”<sup>6</sup> Shawn suggests something very similar when he speaks of having been “spoiled” by the spectatorial experience of film and television and of expecting something similar when he goes to the theatre. As a historical being, he cannot treat the theatrical experience simply on its own terms – inevitably, his perception of the theatre, of live performance, is mediated by his experience of technologically mediated dramatic forms. Indeed, most dictionary definitions of the word “live” show how closely our experience of live performance is bound up with our experience of technologically mediated forms. We cannot define live performance without reference to the other kind: “Of a performance, heard or watched at the time of its occurrence, as distinguished from one recorded on film, tape, etc” (*Oxford English Dictionary*, 2nd edn).

It is also the case that, culturally, the categories of technologically mediated performance and live, unmediated performance are not mutually exclusive. As Steve Wurtzler has pointed out, a great many performances blend elements of both, blurring the distinction between them.<sup>7</sup> The particular performance with which he starts his discussion was by Whitney Houston. When Houston sang “The Star Spangled Banner” at the 1991 Superbowl, the audience present at the stadium saw her live body, but heard her recorded voice. She was, in fact, singing live, but her live voice was inaudible and replaced by the recorded one. Such a performance is indisputably technologically mediated but it is also simultaneously live and not-live: it contains elements of both live presence and recording. Liveness, then, is not an absolute condition – it is not the case that a performance either is or is not live. Rather, live elements can be combined with recorded and otherwise technologically mediated ones to produce a hybrid event. As Wurtzler suggests, one can better understand live and technologically mediated performance in terms of a set of temporal and spatial variables in the relationship between performers and audience than as a settled binary opposition, as in the following table.

If liveness were a defining ontological characteristic of certain kinds of events, the definition of what counts as a live event would be stable. In

	Spatial Co-presence	Spatial Absence
Temporal Simultaneity	LIVE I	II
Temporal Anteriority	III	RECORDED IV

Some associated representational technologies/practices:  
 Position I: Public address, vaudeville, theatre, concert  
 Position II: Telephone, “live” radio, “live” television  
 Position III: Lip syncing, Diamondvision stadium replays  
 Position IV: Motion pictures, recorded radio and television

Source: Steve Wurtzler, “She Sang Live,” 89.

fact, this is not at all the case: many performances combine live and nonlive elements, and the concept of liveness is a moving target whose definition changes over time in relation to technological development. The default definition of live performance, Position I in Wurtzler’s table, which I call “classic liveness,” is as the kind of performance in which the performers and the audience are both physically and temporally co-present with one another. But over time, we have come to use the word “live” to describe performance situations that do not meet these basic conditions. With the advent of broadcast technologies – first radio, then television – we began to speak of live broadcasts. This phrase is not considered an oxymoron, even though live broadcasts meet only one of the basic conditions: performers and audience are temporally co-present in that the audience witness or hear the performance as it happens, but they are not *spatially* co-present. Another use of the term worth considering in this context is the phrase “recorded live.” This expression comes closer to being an oxymoron (how can something be both recorded and live?) but represents another concept we now accept without question. In the case of live recordings, the audience shares neither a temporal frame nor a physical location with the performers, but experiences the performance later (this is what Wurtzler calls “temporal anteriority”) and in a different place from where it first occurred. The liveness of the experience of listening to or watching the recording is primarily affective: live recordings encourage listeners to feel as if they are participating in a specific performance and to enter into a vicarious relationship with the audience for that performance.

The phrases “live broadcast” and “live recording” suggest that the definition of live has expanded well beyond its initial scope as the concept of liveness has been articulated to emergent technologies. And the process

continues, still in relation to technological development. Along these lines, Nick Couldry proposes “two new forms of liveness,” which he calls “online liveness” and “group liveness”:

*[O]nline liveness*: social co-presence on a variety of scales from very small groups in chat rooms to huge international audiences for breaking news on major Web sites, all made possible by the Internet as an underlying infrastructure . . . *[G]roup liveness*[:] . . . the “liveness” of a mobile group of friends who are in continuous contact via their mobile phones through calls and texting.<sup>8</sup>

Understood in this way, the experience of liveness is not limited to specific performer-audience interactions; it is the feeling of always being connected to other people, of continuous, technologically mediated co-presence with others known and unknown.<sup>9</sup>

The decentered experiences of liveness to which Couldry points are not easily assimilable to a simple performer/audience model; in such interactions, each of us functions simultaneously (or perhaps alternately) as performer and audience member. Although Malloy and Couldry share the premise that liveness is about real-time interactions among human beings, there are crucial differences in their respective understandings of the concept. For Malloy and the writers she quotes, the essence of live performance is unmediated contact between performers and audience, which demands physical co-presence, while Couldry posits liveness specifically as the affective dimension of technologically mediated relationships among human beings. It operates primarily in the temporal dimension rather than the spatial one; its main affect is the sense that one can be in contact with others at any given moment regardless of distance.

However, the word “live” has also come to refer to connections and interactions between human and nonhuman agents. Margaret Morse observes that the imaginary developing around interactive computer technologies entails an ideology of liveness, the source of which lies in our interaction with the machine.

Feedback in the broadest sense . . . is a capacity of a machine to signal or seem to respond to input instantaneously. A machine that thus “interacts” with the user even at this minimal level can produce a feeling of “liveness” and a sense of the machine’s agency and – because it exchanges symbols – even of a subjective encounter with a persona.<sup>10</sup>

Liveness is attributed not only to the computer itself but also to the entities we access with the machine. When a website is first made available to users, it is said to “go live.” As is true of the computer, the liveness of a website resides in the feedback loop we initiate: it responds to our input to create a

feeling of interaction arguably comparable (without being identical) to our interactions with other people.

This discussion began with what seemed to be a well-established binary opposition between live, unmediated performance (represented by theatre) and technologically mediated performance (represented by film). Closer examination quickly revealed, however, that the two terms are best understood not as mutually exclusive possibilities but as points on a grid defined by variations of the performers' and audiences' temporal and spatial relationship to each other. Further analysis suggested that the concept of liveness itself is unsettled and subject to historical redefinition in relation to technological development. Whereas classic liveness involves spatial and temporal co-presence of performers and audience members, subsequent situations that have come to be considered live do not necessarily adhere to those conditions. It seems that spatial co-presence has become less and less important for a performance to be defined as live, while temporal simultaneity has remained an important characteristic, to the point that technologies that enable us to maintain real-time contact with others across distances are thought to provide experiences of liveness.

It may be, however, that we are now at a point at which liveness can no longer be defined purely in terms of either the presence of living human beings before each other or physical and temporal relationships between them. The emerging definition of liveness may be built primarily around the audience's affective experience. To the extent that websites and other virtual entities respond to us in real time, they *feel* live to us, and this may be the kind of liveness we now value.

### *GuitarBotana*

Having proposed that we need to see the relationship between live and technologically mediated forms of performance as fluid rather than bounded by a binary opposition, and that we may experience liveness in our interactions with technological agents, I offer an analysis of a performance that explores this fluidity. *GuitarBotana* (2004), by the classical violinist and composer Mari Kimura, is a work for violin and GuitarBot, a robotic musical instrument designed by Eric Singer and based on the slide guitar. The GuitarBot consists of four independently controlled strings, each of which is "fretted" by a mechanical slide and plucked by a plectrum. It is a rather large and imposing sculptural object that moves when played. It cannot be played directly by human hands but only by using a computer and MIDI (Musical Instrument Digital Interface); the computer can be programmed to play it automatically.<sup>11</sup>

Kimura composed the music and wrote the software for *GuitarBotana*; when performing the piece, she both plays from score and improvises.<sup>12</sup> The GuitarBot's part is also scored. Its software enables it to respond to the violinist's playing in various ways.<sup>13</sup> In some cases, it follows the violinist closely and produces tones to fill out the harmony of the piece. In other instances, it is programmed to disregard random pitches played by the violinist, producing more open-ended situations in which its responses are relatively unpredictable. As composer, Kimura also invites the violinist to improvise while keeping in mind that GuitarBot will respond to the sounds produced in particular ways, depending on the programming that governs the particular section of the piece. It is therefore possible for the violinist and robot to enter into an improvisational dialogue in which the robot responds to the violinist's playing and the violinist responds improvisationally to the robot, and so on, all within the structural constraints of Kimura's composition. When Kimura plays the piece, she interacts physically with GuitarBot very much as she might with a fellow human performer: she faces it, leans and gestures toward it, and her facial expressions look as if she were taking and giving the kinds of performance cues that musicians exchange.

A performance such as this can be analyzed from many perspectives. The musical perspective would tend to focus on *GuitarBotana* as a composition, while the technological perspective would emphasize the design and programming of GuitarBot, and so on. The disciplinary lens of performance studies encourages a comprehensive analysis that would examine these, and all other aspects of the performance, as parts of an overall event. The dismantling of the binary opposition between live and technologically mediated performance that I have been proposing enables such an analysis by providing a means of seeing the commonalities among different aspects of the performance as clearly as the differences.

Although Kimura's status as a live performer is clearly not in doubt, there is an important sense in which her performing is technologically mediated. Kimura describes the experience of performing with GuitarBot as follows:

I find that performing with the interactive system requires very fast, split-second decisions that are musically coherent overall. In my mind I have a trajectory of what happened before⇒now⇒future when I improvise, or perform any written music, and any given moment must make musical "sense" in relation to the trajectory. In performing with a robot, I assume a dual responsibility – for my own musical trajectory as well as that of this metal partner that doesn't think . . . So my job as a performer is to merge with the robot in terms of musical thinking during performance . . . This is what intrigues me as a classical musician, since this kind of new musicality, or new way of listening, has not happened until today.<sup>14</sup>

The mental processes Kimura describes as essential to her performance with GuitarBot are necessitated by the fact that her musical partner is a machine rather than a human being. Even though there presumably has been musical improvisation as long as there has been music, it has never before been the case that a musician must assume responsibility for the musical decisions made by an entity that lacks the capacity to assess its own choices in the light of larger musical objectives. The speed at which the human performer must respond to the robot's output in relation to the desired musical trajectory entails, as Kimura suggests, new modes of listening and playing that are explicitly artifacts of engagement with interactive digital technology. It is worth noting the contrast between Dafoe's comment on film acting and Kimura's on performing with GuitarBot. Both are technologically mediated forms of performance, but whereas Dafoe suggests that film actors are less responsible for the overall trajectory of their performances than stage actors, Kimura suggests that the type of technologically mediated performance in which she is engaged entails assuming greater responsibility for the overall trajectory of the music than is necessary when playing with human musicians.

If Kimura's live performance can be said to be technologically mediated in this way, what of GuitarBot's "performance"? There is a complex philosophical discussion to be had concerning whether or not machines can be considered live performers. Suffice it to say that since GuitarBot executes performances in real time before its audience (it is a technology of production, not a technology of reproduction like a playback system) and is capable of improvisation, thanks to Kimura's software, there is a basis for describing its performance in *GuitarBotana* as live even though the machine is not alive.

It is also the case that Kimura's performance mediates GuitarBot's in a way that parallels the impact on her of performing with a machine. Kimura's goal in the performance is for the audience to perceive GuitarBot as a real musical partner despite the fact that it cannot think for itself:

My compensating for the robot's or computer's lack of musical "integrity" as the performance goes along should be hidden from, or unnoticeable to, the audience. In short, my aim is that the performance as a whole come across to the audience as if the robot or computer is thinking, feeling, and being sensitive; that it possesses the "rights and responsibilities" of a true musician.

In *GuitarBotana*, then, human performance is technologically mediated in that Kimura must adopt a way of thinking and responding that is determined by the capabilities of digital technology, and machine performance is humanly mediated in that Kimura's interactions with the machine are



designed to make the audience perceive it as analogous to a human musician. She thus engages the affective dimensions of liveness on GuitarBot's behalf. As Kimura suggests with her image of "merg[ing] with the robot," these mutual mediations test the boundaries between human and machine, spontaneous and programmed, live and mediated.

Having thus far taken the terms technology and mediation in their most commonly understood senses, I shall now argue for a wider perspective. After all, the primary meaning of the word technology has nothing to do with machines or electronics. It derives from the Greek word *techné*, generally translated as craft or art. A technology is "a particular practical or industrial art" or the study of such arts (*Oxford English Dictionary*, 2nd edn). Performance is a technology in the first sense, as are particular performance practices such as acting, playing musical instruments, dancing, and so on. Performance studies is a technology in the second sense: it is the field that studies the broad spectrum of the practical arts of performance. Rather than seeing *GuitarBotana* as involving a human performer and a robot, we can see it as a performance that merges and juxtaposes different technologies: human performance, machine performance, the violinmaker's craft, musical composition, and digital technology, among others.

Likewise, mediation does not refer specifically to communications media; it means (among other things) "the state or fact of serving as an intermediate agent, a means of action, or a medium of transmission" (*Oxford English Dictionary*, 2nd edn). In my earlier discussion of Shawn's comments on theatregoing, I indicated that Shawn's experience of the theatre is mediated both by his position in the performance space and his experience of watching films and television: these are experiences that intervene between himself as theatregoer and the theatrical event and affect the way he perceives it. There are what we might call internal mediations and external mediations: the internal are aspects of the performance situation itself, such as the nature of the performance space, while the external ones are historical and social factors, such as the impact of television and film on our perception. Even though internal mediations are aspects of the performance itself, they influence the audience's response to the performance as much as external ones. It is also important that the two kinds of mediations interact with one another: it is presumably because his perception has been conditioned by film and television that Shawn finds his physical relationship to the actors in a conventional theatre space unsatisfactory.

It is also not always clear whether a particular mediation is internal or external. For example, Kimura consistently wears a formal black dress, the standard uniform for a female classical musician, when performing *GuitarBotana*, a work that hardly qualifies as traditional classical music. The black

dress is a mediation that Kimura uses to communicate to her audiences that they are to perceive and understand the piece and its performance within the context and tradition of modern concert music rather than as a technological experiment that would be more at home at a robotics conference than at Carnegie Hall.

I have always maintained that so-called “experimental” work that is presentable and able to sustain an audience deserves and must receive the same level of respect and integrity as music written 200 years ago, never forgetting the fact that many of those works were indeed contemporary and experimental in their time. I consciously try to convey to the audience the fact that Bach, Brahms, Cage, Berio, and Robots belong together in the same evening’s program.

The black dress is a technology in the primary sense of that term, a product of a practical art. It is what I am calling an internal mediation, in that it is part of the performance. Yet it is also an external mediation in that it functions as a framing device to inform the audience how to perceive the performance culturally and socially. Not only is the audience to take the music as seriously as they would Bach and Brahms, even though it is performed in part by a machine, but it is also to observe the norms of audience behavior appropriate to a classical music concert, just as Kimura observes the norms for a classical musician in her appearance and onstage behavior.

It is not a big leap from the idea of internal and external mediations to suggest that the concept of performance itself is an external mediation. Calling something a performance places it in a specific, though very broadly defined, category of human action and distinguishes it from other kinds of action. Consider Richard Bauman’s definition of performance (which, I stress, is but one of many possible definitions):

Briefly stated, I understand performance as a mode of communicative display, in which the performer signals to an audience, in effect, “hey, look at me! I’m on! watch how skillfully and effectively I express myself.” That is to say, performance rests on an assumption of responsibility to an audience for a display of communicative virtuosity. . . . In this sense of performance, then, the act of expression itself is framed as display: objectified, lifted out to a degree from its contextual surroundings, and opened up to interpretive and evaluative scrutiny by an audience both in terms of its intrinsic qualities and its associational resonances . . . The specific semiotic means by which the performer may key the performance frame – that is, send the metacommunicative message “I’m on” – will vary from place to place and historical period to historical period . . . The collaborative participation of an audience, it is important to emphasize, is an integral component of performance as an interactional accomplishment.<sup>15</sup>

For Bauman, the identifying characteristics of performance include a marked distinction from normal quotidian behavior, a display of skill, and the offering of that display to an audience for its appreciation and evaluation. The fact that a particular action is to be understood as a performance and apprehended that way is signaled by some means to a group of people which is then in a position to behave appropriately as an audience for the action rather than, for example, as mere bystanders. As the example of Kimura's black dress suggests, the signs that signal that an event is to be understood as a performance generally also signal what particular kind of performance it is, thus providing further information to the audience as to what to expect and how to participate. When the full scope of the terms technology and mediation are considered, we see that there can be no such thing as technologically unmediated performance because performance is itself a technology and the idea of performance is a mediation that shapes audience identity and perception of an event.

### Conclusion

There are many questions to ponder when considering the relationship between live and technologically mediated performance. Is liveness an objective characteristic of performances? Is there a set of necessary or sufficient conditions that, if met, qualify a performance as live? What degree of technological mediation is permissible before a performance ceases to be live (think of the Whitney Houston example)? Or is liveness primarily an affective experience on the part of the audience rather than a characteristic of the performance – are performances live to the extent that we experience them that way as an audience (in which case, GuitarBot may be a live performer)? If we are willing to admit interactive technologies into the category of the live, what must they be able to do to create the affective experience of liveness? These questions, and many others like them, are ones we must address as we consider the fate of live performance, and the concept of liveness itself, in the twenty-first century.

One of the early projects of performance studies was to develop “a general theory of performance” by looking for “universals of performance” across cultural differences and genre boundaries.<sup>16</sup> While this totalizing approach is probably unfeasible, it nevertheless makes performance studies an ideal platform from which to examine the relationships among live and technologically mediated forms of performance without resorting to the traditional oppositions. Even though performance studies is historically invested in the idea of live presence, it is equally invested in defining performance in expansive and dynamic ways. This latter investment tempers the former one and

opens up performance studies to the broad range of performance practices located on the grid mapped by the temporal and spatial coordinates I have discussed. It also allows for the possibility of setting aside the distinction between performances that are technologically mediated and those that are not, in favor of seeing all performances as internally and externally mediated confluences of varied technologies.

### Notes

- A portion of this chapter is adapted from Philip Auslander, *Liveness: Performance in a Mediatized Culture*, 2nd edn (London: Routledge, 2008).
1. Kaoime Malloy, "Theatre and Film," [www.uwgb.edu/malloyk/theatre\\_and\\_film.htm](http://www.uwgb.edu/malloyk/theatre_and_film.htm). Accessed July 12, 2007. The internal quotation is from Edwin Wilson and Alvin Goldfarb, *Theatre: The Lively Art*, 3rd edn (Columbus: McGraw-Hill College Press, 1999), 19.
  2. Philip Auslander, "Task and Vision Revisited: Two Conversations with Willem Dafoe (1984/2002)," in Johan Callens, ed., *The Wooster Group and Its Traditions* (Brussels: P.I.E. – Peter Lang, 2004), 103.
  3. See, for example, Richard Schechner, "News, Sex and Performance Theory," in Schechner, *Between Theater and Anthropology* (Philadelphia: University of Pennsylvania Press, 1985), 295–324.
  4. Anne Nicholson Weber, comp., *Upstaged: Making Theatre in the Media Age* (New York: Routledge, 2006), 9.
  5. Mireya Navarro, "Star Turns, Close Enough to Touch," *New York Times*, July 12, 2007, B1.
  6. Walter Benjamin, "The Work of Art in the Age of Mechanical Reproduction," trans. Harry Zohn, in John G. Hanhardt, ed., *Video Culture: A Critical Investigation* (Layton: Peregrine Smith Books, 1986), 31.
  7. Steve Wurtzler, "'She Sang Live, But the Microphone Was Turned Off: The Live, the Recorded, and the Subject of Representation,'" in Rick Altman, ed., *Sound Theory Sound Practice* (New York: Routledge, 1992), 87–103. The table on p. 110 is reproduced from p. 89.
  8. Nick Couldry, "Liveness, 'Reality,' and the Mediated Habitus from Television to the Mobile Phone," *The Communication Review* 7 (2004), 356–7.
  9. Couldry is a communications scholar rather than a scholar of performance. The understanding of liveness to which he responds in his essay developed within communications theory in relation to television, in particular.
  10. Margaret Morse, *Virtualities: Television, Media Art, and Cyberculture* (Bloomington: Indiana University Press: 1998), 15.
  11. For a technical description of GuitarBot, see Eric Singer *et al.*, "LEMUR GuitarBot: MIDI Robotic String Instrument," *Proceedings of the 2003 Conference on New Interfaces for Musical Expression*, ed. François Thibault (Montréal: Faculty of Music, McGill University, 2003), 188–91.
  12. Two videos of Kimura performing *GuitarBotana* are available online. The piece's 2004 premiere is available on *YouTube* at [www.youtube.com/watch?v=9I4ra4B-yg](http://www.youtube.com/watch?v=9I4ra4B-yg). A studio video by Liubo Borissov of Kimura performing the

piece, as well as still images, are available from <http://music.columbia.edu/~liubo/guitarbotana/>. Both accessed July 21, 2007. My descriptions are based primarily on Borissov's video.

13. For a technical discussion of Kimura's interactive musical software, see Mari Kimura, "Creative Process and Performance Practice of Interactive Computer Music: A Performer's Tale," *Organised Sound* 8 (2003), 289–96.
14. All quotations are from Mari Kumara, "Re: Query," July 16, 2007, email to the author.
15. Richard Bauman, *A World of Others' Words: Cross-Cultural Perspectives on Intertextuality* (Malden, MA: Blackwell, 2004), 9.
16. The idea of a "general theory of performance" comes from Jon McKenzie, *Perform or Else: From Discipline to Performance* (London: Routledge, 2001), *passim*. The phrase "universals of performance" probably originates with Victor Turner, "Are There Universals of Performance in Myth, Ritual, and Drama?," in Richard Schechner and Willa Appel, eds., *By Means of Performance: Intercultural Studies of Theatre and Ritual* (Cambridge: Cambridge University Press, 1990), 8–18.