



interactive Music with intelligent instruments — A New, Propositional Music?

By David Rosenboom

The thought that a musical instrument can be implanted with the motivation to construct and transform, thereby entering the domain of composing beyond the mere production of low-level musical events (e.g. notes) — requires entirely new thinking about composition, performance, and man's interaction with his tools. For several decades now, we have lived with McLuhan's notion of human extension — not man the thinker (*homo sapiens*) or man the maker (*homo faciens*), but man the extender (*homo extendere*). This caused us to verbalize an understanding of media and technology as an extension of human facility and, thus, the computer music system as an extension of the mind and nervous system of the musician. It is a notion that works, to some degree. But now, we have passed the stage of infant birth and early explorations, into the realm of fully realized tools that not only extend that musical nervous system, but turn and return the gaze — looking back at those interacting — or should we still use the words, *playing* with them.

A glance in the dictionary reveals many definitions for the word *play*. The most familiar for music, of course, is: *to perform on a musical instrument* or *to give out musical sounds: said of an instrument*. Children will normally assume: *to have fun; amuse*

oneself; take part in a game or sport; engage in recreation. Consider the last phrase, *to engage in recreation*, and think of *recreation* as *re-creation*. Perhaps the new medium of interactive, intelligent musical instruments invokes the more playful of these definitions with particular emphasis on the phrase, *to engage in re-creation*. The primary difference now is that the instrument, as well, is engaged in *play*. Another definition of *play* refers to the instrument directly: *to lend itself to performance: as, the new piano plays well*. We might now say, "That interactive, real-time, compositional algorithm *plays well*." What have we really said? What do we really mean?

Most of us feel confident that we have a basis in our minds, however ineffable and unverbalizable, of how to ascribe the term, *musical*, to something as an innate quality. Even though we can't adequately describe what it is, we feel quite secure in making value judgments based on it. What does it mean when we say, "That is a particularly *musical* algorithm?"

To answer these questions adequately we must engage in further practice of our craft, not the least of which involves re-conceiving musical education. We have various, carefully conceived ideas about what constitutes "good" musical education. But, do we have

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Interactive Technology Collage

a notion of what constitutes a “good” musical education that is appropriate for our age of global communications and interacting cultures? Luis Valdez, writer and director with the Los Angeles area theater group, El Teatro Campesino, has drawn an analogy between the interacting components on a microchip and the interacting components in our evolving cultural heterogeneity, producing a global whole that must be able to function and process cultural creation effectively.

Since roughly the mid-twentieth century, a musical art form has been emerging in which attention is focused on the interactions among multiple entities in what may be termed a *complex adaptive system*. This may include composing frameworks for interaction between performers and intelligent musical instruments. In the latter case, one may view the system as two complex networks, one the brain and proprioceptive systems of the performer, another the hardware and software of the musical instrument (see Figure 1). In both, musical tracings follow adaptive behaviors of the entities interacting with each other. A musical *state* in such a system may refer to a particular *schema* for interactive behavior. These *schemas* may evolve and change, articulating the landmarks of musical form.

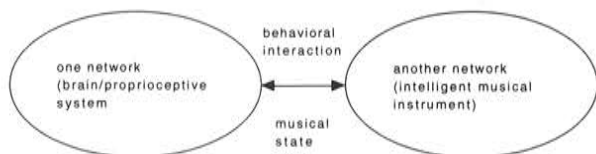


Figure 1

Has this state of affairs — the development of intelligent musical instruments — produced new art forms for us? After much consideration, I believe the answer is yes. What do we listen for in this music? What constitutes a musical event or element in this art form? Although we will ponder these questions for some time to come, some things are clear now.

As we experience the music of *complex adaptive systems*, we are listening to evolution itself. We hear the formation of ordered relationships and patterns. We follow tendencies of behavior and attractions to particular kinds of stability. We hear the drama of conflict and resolution associated with bifurcations in paths of development, often spinning off into uncharted territory. All of this may infect us with a feeling associated with the driving forces of evolution, particularly since the experience is unfolding spontaneously before our very ears.

As we explore this new listening territory, we may be drawn to observe the emergence of *global properties*. This may lead us to our new definition of the *musical event*. The natural processes of perception drive us to extract descriptions enabling us to generalize across events and to group them into identifiable, broad categories.

“Has the development of intelligent musical instruments produced new art forms?”

Configurations of a whole can produce entities of form in perception that transcend those suggested by atomistic, bottom-up construction. We may recognize the emergence of such new entities as a *consequence of a particular organization*. In fact, even consciousness itself may be a consequence of the super-organization of electro-chemical-physiological elements making up the body that could not have been predicted by combining them in an engineering approach. The emergence of formal features at certain levels of organizational complexity among energy-space-time-information entities may be a fundamental principle of the universe. Large groups of such organized entities may create a medium for the existence of higher level, global phenomena.

How can we learn to hear global properties in dynamically evolving musical logics? In hearing the often high speed peregrinations of a master improviser, one finds pleasure in scanning the implicative power of the player’s tonal choices. Are these implied relations based on references to possible syntaxes of music, innate tonal references (i.e. harmonic series), musical semantics (i.e. phrase structure meaning), the morphogenesis of new ideas, or all of these?

When we scan a stochastic cloud of Xenakis or the chance relations contained in a sensory construction of Cage, we enjoy the discovery of relationships among the minutia within, in the same way that we seek empirical findings in nature’s phenomena, and are exhilarated by their discovery, or just simply by making their proposition.

When we experience an interactive composition based on complex adaptive systems, we may be thrilled by the chance to observe a proposed model of nature made animate in musical form. What, then, does this kind of experience have to do with language or, more properly, linguistics and its attendant ideas of syntax, transformations, grammar, lexicon, phonetics, and semantics? Is there a musical language? Or is part of the pleasure of composition to be found in the

construction and subsequent parsing of possible or propositional languages, each potentially unique, complete, and coherent on its own? What then does this bode for the listener, the composer, music appreciation, and music theory?

I propose the term, *Propositional Music*, to refer to musical thinking that includes the view of composition as the proposition of musical realities, complete cognitive models of music, using propositional musical language accompanied by a propositional language of music theory. This may also be called speculative music and speculative theory as well, since the term experimental music has become distorted by historical and stylistic associations at this point in music history.

A central question: Is music to be considered an autonomous human activity emerging from the brain, body, and the social order, containing its own innate phenomena to be probed, divined, studied and theorized about, until sufficient understanding emerges to allow comprehensive characterizations to be written, revealing for all time its a priori properties?

Or, is music to be considered a dynamically evolving domain of potentialities whose boundaries are defined merely by those who consider themselves to be practitioners of something *called* music?

If so, we can not parallel the linguist's travails in attempting to write a description of a thing called musical language unless we impose severe restrictions on what can be called music. Music com-

position involves the invention of uniquely ordered musical realities or cognitive models, whether conscious or unconscious. It is a fundamental tenant of propositional, interactive music that it be perceived and enjoyed within this frame of mind.

Where will all this lead us in the present cultural context? Hopefully, to expanded means of intelligent hearing, a new kind of musicianship. When I look at the dynamic forms of nature, I see a complex filigree of patterns and relationships and derive great pleasure from the interaction between these forms and those of my own makeup as a human being. And though there is true emotion in this experience, it is not that normally associated with the cadences and neo-romantic formulations of conservative musical consumerism. Yet, these are increasingly demanded by the pressures for audience successes that characterize even avant-garde culture in a world that presents ever increasing economic and environmental tensions — lessening the freedoms encouraging exploration — and heightening the psychology of urgency to produce the short-term gains required by a debtor society. Music has become focused on production rather than exploration. This mitigates against the evolution of forms. If it would help matters, one could easily formulate an argument asserting that exploration may be seen as product.

Finally to reiterate the title question, is this a new art form? I believe, yes. Will it survive and last? Who knows. Remember, evolution will continue — no matter how hard we try to stop it. To quote Dr.

Chao — the inimitable, 400-year-old samurai in George Manupelli's movie, *Almost Crying* — who belted in an ancient, guttural voice of wisdom — "Everything is temporary, you *must* know that!"

"Music has become focused on production rather than exploration."

The Los Angeles area component of New Music Across America 1992 is a collaborative effort which includes several events exploring this new world of interactive music. The L.A. County Museum hosts a concert by Anthony Braxton on winds with the trio Challenge (Rosenboom on keyboards and Winant on percussion) in conjunction with the New Century Players, while Beyond Baroque, a literary / arts center presents chamber ensembles, improvisation, and world music.

At the California Institute of the Arts, an interdisciplinary initiative is growing. It is called CEAIT, the Center for Experiments in Art Information and Technology. In collaboration with the Electronic Café in Santa Monica — CEAIT presents demonstrations and performances designed to give a forum to this new music and to allow audience interaction with its creators. For the past two years, CEAIT and the Electronic Café have produced a series of such events. An important feature of all of them has been a telecommunications link — including pictures and sound — among the artists and audiences present at the Electronic Café and artists, developers and, sometimes, audiences in other locations where related work is taking place. In this way, the concept of dynamic interactivity is extended beyond the limitations of local geography and into the global communications arena.

David Rosenboom, currently Dean of the School of Music and Co-Director of The Center for Experiments in Art, Information and Technology at the California Institute of the Arts, is a composer, performer, writer, and researcher known for innovations in American contemporary music. He has written for all forms of instrumental and electronic media and has been a pioneer in real-time, interactive performance with computer music systems.

References

1. Rosenboom, D.: "Cognitive Modeling and Musical Composition in the Twentieth Century: A Prolegomenon," *Perspectives of New Music*, Vol. 25. Nos. 1 & 2, Winter and Summer, 1987.
2. Rosenboom, D.: "A Program for the Development of Performance-oriented Electronic Music Instrumentation in the Coming Decades: 'What You Conceive Is What You Get,'" *Perspectives of New Music*, Vol. 25. Nos. 1 & 2, Winter and Summer, 1987.
3. Rosenboom, D.: "Extended Musical Interface With the Human Nervous System, Assessment and Prospectus," *Leonardo Monograph Series*, International Society for the Arts, Sciences and Technology (ISAST), Berkeley, CA, 1990.



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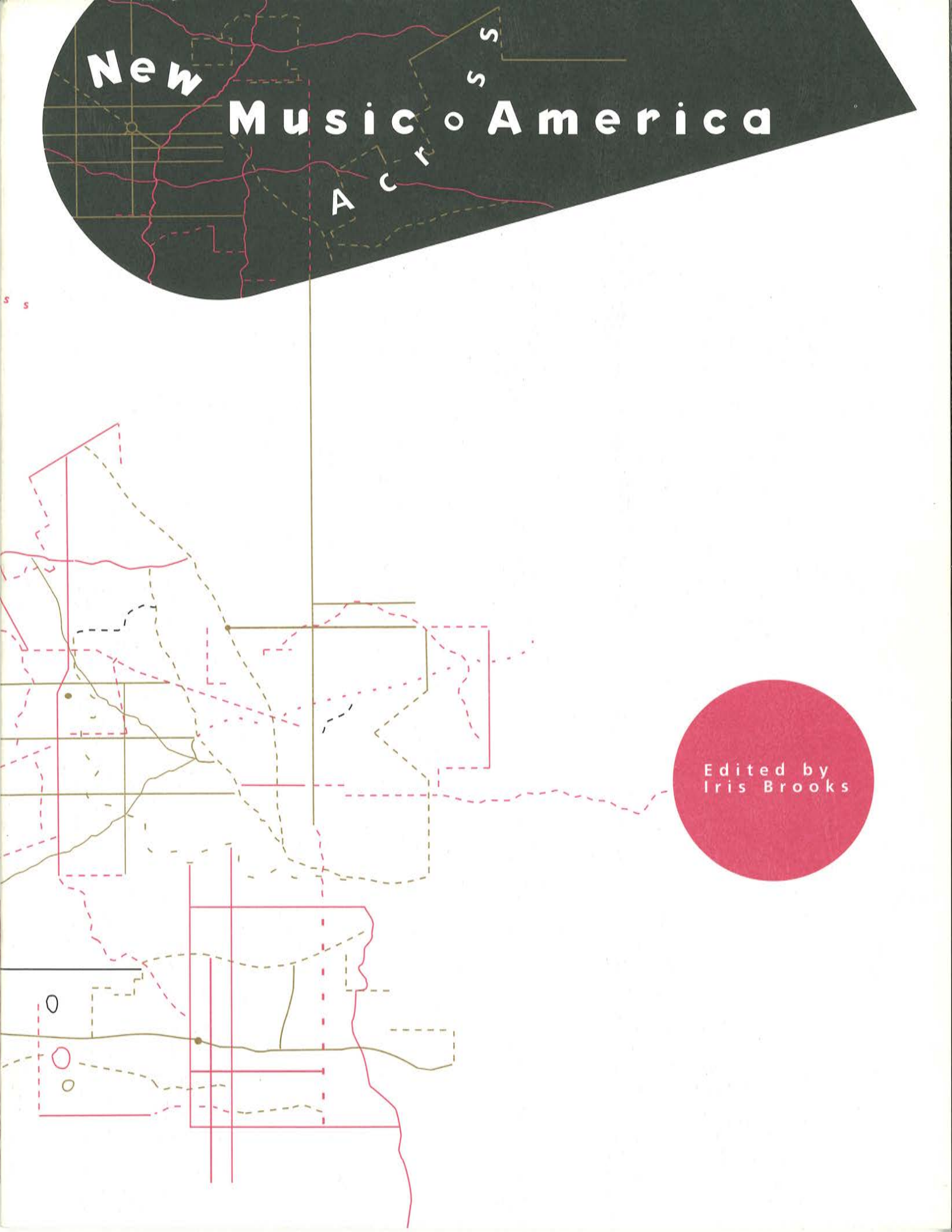
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