

## Things Which Are Imperfect, and Things to Which the Term Imperfect Does Not Apply

**John Bischoff** is an early pioneer of live computer music. He was a founding member of the League of Automatic Music Composers (1978), considered to be the world's first Computer Network Band. He is also a founding member of the network band The Hub with whom he has performed and recorded from 1985 to the present. He has spent nearly forty years in electronic composition and has used a wide variety of technologies, often building his equipment by hand and working for a time constructing instruments at Serge Modular Synthesizer. He was one of the very first people to use a microcomputer, the KIM-1, to produce music in the late seventies. Even when presented with the limitation of having to use machine code to program the KIM-1's scant memory (which maxed out at four kilobytes), he managed to compose stately music that is readily identifiable as his own. It is a testament to his compositional and technical skills that he was able to do so; it is also, not incidentally, the stuff of legend among sound synthesis practitioners.

His long experience teaching music theory, harmony, and counterpoint is evident in his work: in the elegant balance of elements in his pieces can be heard an intuitive understanding of traditional musical forms expressed in sonic palettes far removed from the ones around which those forms were originally constructed. He describes his work as, "a music built from the intrinsic features of the electronic medium at hand: high definition noise components, tonal edges, digital shading, and non-linear motion, all evolving in the variable context of live performance."<sup>1</sup> While these features are all prominent, his work can also be considered fundamentally as a form of "expanded counterpoint," one in which the juxtaposition of sonic elements and their compositional development is a central concern. His work possesses a clear and intuitive sense of formal clarity combined with a nuanced deployment of audio events and textures.

For most of his career, Bischoff's compositional activities have focused on the creation of electronic works for solo performer and the development of projects for computer network ensembles. His work is part of a lineage that includes David Tudor, Gordon Mumma, and David Behrman, all composers who used the electronic tools available to build partially autonomous musical systems that they interacted with in performance. Like them, Bischoff does not approach his constructions as either an extension of a musical instrument or as an augmentation of an expert performance practice—they are not "hyper-instruments" in any sense. Instead they are responsive networks which generate sound automatically and allow for change in direction under partial control of a performer; they are idiosyncratic, strategically imperfect, and function as intermediaries.

I first encountered his work in the early 1980s when a college radio station in Philadelphia, WXPB, put a compilation entitled *Lovely Little Records* into heavy rotation (it is a boxed set of seven-inch vinyl disks issued on the Lovely label). Among the pieces included in this collection is Bischoff's *Silhouette*, in which multiple recordings made inside his Volkswagen Bug while driving a

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<sup>1</sup> Material for this essay came out of discussions with John Bischoff in Berkeley in September, 2011, and through correspondence with him during the following months. Descriptions of his pieces and some of his working methods were adapted in part from notes that he provided to me.

fixed route in San Francisco were layered and their contours traced with square-wave oscillators. Though I was initially drawn to the work because it included two of my favorite things, analog synthesizers and manual transmissions, I kept returning to it because it clearly and concisely presented multiple concurrent images of the navigation through physical space and technological systems, both mechanical and electronic. The conceptual precision and economy of execution found in this early piece is a hallmark of Bischoff's practice and is one of the reasons his work is held in such high regard among creators of electronic sound.

While Bischoff's professional practice has long been solidly affiliated with the experimental music scene in the Bay Area, he has family connections to another significant part of that area's cultural history. His father, Elmer Bischoff, was a noted painter associated with both the abstract expressionist and Bay Area figurative scenes in the fifties and sixties, circles which included the close friend and colleague Richard Diebenkorn. John mentions a strong affinity for Diebenkorn's work from the late forties and early fifties, as well as his later, well-known *Ocean Park* series. It is an apt match, with the earlier work showing a combination of figuration and abstraction that is echoed by Bischoff's blend of acoustic and electronic sound sources in his pieces. Nearly all of Diebenkorn's work, particularly from *Ocean Park*, shares the same kind of formal clarity that Bischoff's work here contains: at once rigorous and sensual, built in part around gestures but not fundamentally gestural, derived from physical and perceptual experience but not literally so. Elmer Bischoff's work reveals many of these same qualities, though it is far more figuratively based; even without knowing of their personal connection, the links between the two men and their approach to color, balance, depth, and form is visible on their respective canvases. It would seem that the lessons derived from Bischoff's early access and exposure to both his father's and Diebenkorn's creative processes were deeply absorbed, and they are clearly audible here.<sup>2</sup>

The title of this collection refers most literally to the methods of assembling the elements of Bischoff's work. In one brief phrase it describes both a methodology that is used to build the pieces and the concrete results of that activity. By terming the process "combine" rather than "combination," he focuses on the act and experience of juxtaposing sounds over their semantic results once they are combined. Though some of the processes heard here involve recycling timings or sounds, their deployment is always in the present and they are imbued with a clarity that only listening in the moment can provide. As new combinations and permutations of sonic materials emerge, the perceptual focus is always on the physical sound, whether acoustic or electronic in origin. Several of the pieces incorporate bell sounds, and their presence does not function as the sound of a bell, meaning a sound that references the object that produces it. Instead what is heard is the sound that is made by the bell, a sound that is a presence but not a sign. This is perhaps the essence of Bischoff's combine process: the identification of sonic origin carries no compositional weight, only the combination and counterpoint of sonic events has value and significance.

There is another reference in the title, to that of a combine harvester. The name of this farm machine too comes as a reduction, in this case of the three actions that the machine completes:

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<sup>2</sup> Entire books could be (and have been) written about the Bay Area Abstractionist and Figurative movements. Of the many works on Diebenkorn the two listed in the bibliography appeared to me to be the most comprehensive. Susan Landauer's book on Elmer Bischoff is the definitive text on his work.

reaping, threshing, and winnowing. Though the similarities might initially seem unlikely, both Bischoff's work and the combine's function share a technique of collapsing input, activity, and result into a single operation, one that displays precision, concision, and natural flow in equal measure.

Along with this connection there is a second, perhaps subconscious, reference to a part of Robert Ashley's *Perfect Lives* opera cycle near the end of the segment called *The Park*. Bischoff studied and worked with Ashley at Mills College in the early seventies and was still in close touch with him a few years later during the time in which *The Park* was being developed (Ashley produced the compilation mentioned above that included Bischoff's *Silhouette*). The opera cycle—there are seven segments altogether—is set in a small town in the Midwest and is narrated by a single voice, Ashley's, rather than sung by the characters. In *The Park* he describes events in and around the town park as well as frequent references to the motions of a camera that is filming the piece for television (the opera was written for the medium and eventually produced for it). At the very end of the piece, after describing a camera movement away from a closeup of the main character to a long view of the street next to the park, Ashley says:

And there is some machine approaching, wider than it is high, as they say,  
a pack of motorcycles, a herd of elephants, a tribe of Bedouins,  
something from the east, barely moving in a cloud of haze and heat and dust  
in utmost telephoto, gold and green and flat.  
The idea of the slit. The eye of the needle.<sup>3</sup>

The machine depicted here is a combine, or perhaps a fleet of them, generating a dusty wake while moving across a field. It is the only point in the text to refer to something beyond the town, changing the scope of the world described in it and requiring a subtle reorientation of attention on the part of the listener. This reorientation of perceptual space is something that is critical to Bischoff's work in *Audio Combine*. While the veiled reference to the combine provides a connecting textual thread between the two works, its function of changing the scope of the narrative space points to an entire methodology for Bischoff: one in which shifts in acoustic perspective and sonic counterpoint serve to expand and articulate both the listening space and the compositional range.

Ashley's description of the view of the scene being "gold and green and flat" could equally apply to a number of paintings from Diebenkorn's *Ocean Park* series, in which fields of color are set in various geometric arrangements. Though the colors derive from the neighborhood in Santa Monica where Diebenkorn had his studio for two decades, the shapes look very much like aerial views of Midwest farmland. They are both abstractions and objects, pointing to one perceptual experience, that of the local light, while providing a very different one for the viewer: the reflection of that light via the intermediary of an object made of canvas and paint.

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<sup>3</sup> *Perfect Lives* has been released in audio, video, and print formats several times between 1978 and 2011. The earliest portion of this, a recording of *The Park* (issued on vinyl with *The Backyard*) is the version of the opera that is referenced here in discussing *Audio Combine*. The quotation from it is taken from the book version listed in the bibliography.

Bischoff's compositional output in recent years has focused on blending acoustic sources into his electronic systems. In most of these pieces the nuances of the timing and timbre of the performers' acoustic actions are analyzed in real-time and used to generate an electronic audio response. The compositional structure of these works is circular: sounds initiated by the performer trigger a set of responses by the electronic system, which then provides a context for the performer to make further sounds, which in turn further influences the response process, and so on. His "expanded counterpoint" takes on another dimension in the performance of this loop beyond the balance of input and output, acoustic and electronic: the function of the intermediary shifts between performer and electronic system. As it does so it opens up another mode in which to listen, one in which focusing on performer or system agency is the primary agenda. This shift in agency, attention, and perspective is something that is accentuated in the recording and mixing process (more on this below). Most importantly, it elegantly foregrounds the actions, decisions, and timings of the performer in the core of the compositional process. As a result, the works here all have natural cadences and the refracted timings, in their recapitulations and successive iterations, seem to breathe.

The title track, *Audio Combine* (2009), uses sounds from small sound-making objects (a toy chime, a music box, a detuned ukulele, and a hand drum). The objects are activated sequentially, the resulting sounds are amplified, filtered, and replayed in fractured form based on the timing patterns of their initial occurrence. The piece is a real-time collage in which the pacing and spare textures allow plentiful room to experience the alignments and realignments of the acoustic materials. While all the pieces here bear the mark of the performer's hand, *Audio Combine* sounds the most audibly hand-made.

In fact it may be the next piece, *Sidewalk Chatter* (2010), that literally employs the most hands-on time of any in the collection. It employs an analog "crackle box" circuit (a small instrument made by STEIM in Amsterdam) as a sound-making input to which a computer listens and responds. As a performer plays the circuit by laying hands on exposed metal traces, the computer analyses loudness and frequency components of the sounds produced and generates its own voices in part from those patterns. Though this piece and *Surface Effect* seem to be the most electronic works in this collection, their dense analog palettes most clearly reveal the acoustic changes in listening perspectives enabled by the recording and mixing process; they also share a complex form of audio synthesis that rewards very close listening (more on both these points below).

*Local Color* (2004) features synthetic bell-like tones, sustained tonal clusters, and computer-triggered acoustic bells struck in complementary patterns that are sometimes random, sometimes human-triggered, and occasionally combinations of both. While the timing here is a primary focus, there is a stately and somewhat disorienting blend of acoustic and electronic bell tones; as mentioned above, these have a real presence as physical sound that seems true even of the electronically-produced tones. The piece contains the only moments where a handful of steady pulses can be heard; it is enough to reference the idea of a tactus, but not enough to be used as an organizing element. This is one of the points where Bischoff's "strategic imperfection" comes to play. In nearly any other setting, the introduction of what seems completely foreign musical material for such a short time relative to the rest of the piece would be an occasion for editing. Here it serves to highlight one of his strategies of counterpoint as it appears to ask us to consider whether we are listening to sounds in time or sounds organized by time. It's a false choice, of course: we are listening to both things concurrently, just not in ways that may seem intuitively clear at first.

In *Decay Trace* (2006) a performer activates an amplified brass rod and the resulting sounds trigger fragments of pre-recorded samples. As layers of fragmentation accumulate, synthetic tones and field recordings gradually occlude the initial samples to articulate a slowly evolving sonic counterpoint. It is the piece in which the compositional development is the most linear, with its changes in texture articulating a trajectory that moves evenly from heavily clipped and filtered samples toward a more open soundscape. Along the way many small details of the recurring sounds can be heard to emerge and recede as they combine and recombine. This is arguably the most elegant of the pieces here, its textures and timing at once stately and vivid.

*Surface Effect* (2011) is, like *Sidewalk Chatter*, built from interactions between an analog oscillator circuit and a computer running software sound generators. As the performer operates the analog circuit, the computer listens and responds. These responses are made by a complex set of oscillators and filters that are varied continually by numerous pairs of ramping (control) functions that follow carefully constrained random paths. As the paths unfold, the performer can shape the resulting sonic textures by switching the ramps off and on in various combinations. Here Bischoff has set up a system that allows deep and detailed access to both input material and output responses. Though the sounds heard here are the densest in the collection, a careful listen reveals not only great depth to the textures, but also the clear influence of the control functions as they are used. It would not be surprising to find that processes used in both *Surface Effect* and *Sidewalk Chatter* end up being very closely analyzed by future generations of sound synthesists: they are not only rich systems, they are systems that reveal the skilled and idiosyncratic qualities of Bischoff's hand as he explores, in his terms, "the intrinsic features of the electronic medium."

The pieces here were all recorded in live performance with minimal editing and no overdubs. There is one notable addition to that process which is provided by Philip Perkins, who recorded the performance and worked with Bischoff on the mix. The performance was recorded direct from Bischoff's setup and also—at Perkins' suggestion—from three pairs of microphones placed at various points in the concert hall. The mix heard here switches between these four perspectives as the pieces are played. The distance and space incorporated into the recordings from the various microphonic angles give a clear sense of the space of the performance, and the objectness of the sounds. That space and our place within it then become the final part of the material for Bischoff's "expanded counterpoint": when the listener has no fixed point of perspective, then the position from which listening is done becomes one of the elements of counterpoint. In effect Perkins serves as a kind of intermediary between Bischoff's performance and the listener, and is the last point of modulation of the compositional material. Bischoff has worked with the form of an intermediary frequently, in the League, then the Hub, and now in the systems deployed in his solo work. However, this is the first time that he has allowed someone else to actively add to his pieces after their execution. While Bischoff had final say over Perkins's mixes and they worked together to make a number of changes in them, his permission to let someone else—however trusted—shape the representation of his music in this way is new to his methodology.

I noted to him that this seemed like a rather "un-Bischoff" idea, and he agreed, but it makes both literal and conceptual sense for his work. Bischoff's work is about both the material and reality of electronic sound, and this recording process highlights both its material and physical presence. It allows us to hear the pieces as compositions and as objects, as both the piece and an instantiation of the piece. Just as a close viewing of painting forces us to see its material (paint and strokes)

instead of its overall form, the switch from a direct electronic signal to one of its acoustic presence in real space requires us to hear its tangible form concurrent with its compositional form. In Ashley's terms this is both "the idea of the slit" and "the eye of the needle" melded into a single entity.

There is another way to look at this as well, in relation to the place the performances were recorded. Bischoff is intimately familiar with the Mills College Concert Hall,<sup>4</sup> having presented many concerts there as a student, performed in and attended many more once he had graduated, and spent still more time there since he started working at Mills in the early nineties; it is a relationship that spans forty years. The hall has shaped and informed his work on many levels (as indeed it has for many in the Bay Area's experimental music community), and it is in this space that the recordings heard here were made. Perhaps his comfort with this space gave him the confidence to engage in the "strategic imperfection" of the recording and mixing techniques used in the production. When we hear the pieces' physical presence it is not in *a* space, but in *the* space, the one that Bischoff has inhabited for most of his professional life. This provides not only a home-field advantage, but a home field. One whose silhouette is revealed, piece by piece, as we listen in it and into it. A field for which he built an audio combine to form and transform, winnow and thresh, filter and reap.

—*Ed Osborn*

Providence, December 2011

*Ed Osborn is an artist and composer whose work includes sound, video, sculpture, and installation. He has performed and exhibited worldwide and is on the faculty of the Visual Arts Department at Brown University.*

**John Bischoff** (b. San Francisco, 1949) has been active in the experimental music scene in the San Francisco Bay Area for more than 35 years as a composer, performer, and teacher. He is known for his solo constructions in real-time synthesis and the pioneering development of computer network music. He was a founding member of The League of Automatic Music Composers with Jim Horton and Rich Gold. He co-authored an article with Horton and Gold on the League's music that was published in *Foundations of Computer Music* (MIT Press, 1985). In 1999, he was awarded a grant in recognition of his music from the Foundation for Contemporary Arts in New York. He was also a recipient of an Alpert Award/Ucross Residency Fellowship in 2002. He is currently an Associate Professor of Music at Mills College in Oakland, California.

#### SELECTED DISCOGRAPHY

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*Boundary Layer*. The Hub. Tzadik TZ 8050-3 (3 CDs).

*The Glass Hand*. John Bischoff. Artifact Recordings CD ART1014.

*The League of Automatic Music Composers: 1978–1983*. New World Records 80671-2.

*Lovely Little Records*. John Bischoff et al. Lovely Music EP 101-06. (LP)

<sup>4</sup> The Mills College Concert Hall was renamed the Littlefield Concert Hall in 2009 following an extensive renovation. The old name is used here as that was its designation for most of the time that Bischoff worked in it.

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Producer: John Bischoff

Edited and mixed by Philip Perkins and John Bischoff

Mastering by Xopher Davidson at Mixture 181

Digital mastering: Paul Zinman, SoundByte Productions Inc., NYC

Recorded by Philip Perkins on January 5, 2010 and May 2, 2011 in Littlefield Concert Hall, Mills College, Oakland, California.

Cover art, including size, gallery credit, date, format of art (pastel, etc):

Design: Bob Defrin Design, Inc.

Special thanks to Molly Holm, Phil Perkins, Ed Osborn, and the Music Department at Mills College.

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**This recording was made possible by a grant from the Francis Goelet Charitable Lead Trust.**

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Francis Goelet (1926–1998), *In Memoriam*

JOHN BISCHOFF (b. 1949)

*AUDIO COMBINE*

80727-2

1. *Audio Combine* (2009) 12:53

2. *Sidewalk Chatter* (2010) 12:32

3. *Local Color* (2004) 11:47

4. *Decay Trace* (2006) 11:46

5. *Surface Effect* (2011) 11:00

TT: 60:00

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