New Polyphonies: Score Streams, Improvisation and Telepresence

Michael Dessen

ABSTRACT

The author discusses "score streams," a compositional method in which notations are displayed dynamically on computer screens and interpreted by improvisers. These works are informed by contemporary explorations in telematic performance and by the many methods devised over the past half century in composer-improviser traditions, where works by individuals are understood as catalysts for profoundly collaborative real-time acts of creation. Referencing polyphony both literally and metaphorically, the author points to a richly generative dialogue between recent histories of improvised music and new forms of digital networking technologies.

In 2008, I began creating networked "score streams" that are displayed dynamically on computer screens and interpreted by improvisers. These works are not fully notated, single-author compositions but instead resonate with the many methods devised over the past half-century in composer-improviser traditions, where works by individuals are understood as catalysts for profoundly collaborative real-time acts of creation. I conceive these networked scores as streams of possibilities and convergences that improvisers can dip into and out of as they construct music together, with the score as partner.

Convergence is a key piece of this picture because I developed these scores for telematic performances. Since 2006, I have participated in six telematic concerts, some across continents with substantial audio delay, and others linked within a few hundred miles using Internet2 networks and Stanford University's JackTrip software, with audio latency at nearly imperceptible levels [1]. Along with many collaborators, I have used these concerts to explore not only how well we can perform together across distances, but even more important, how telepresence might inspire new methods and conceptions of music making. I created many conventional paper scores for these events, but in addition, I soon began experimenting with score streams (built with Cycling 74's Max/MSP software) out of a sense that they make a provocative pairing with the unique qualities of the telematic, improvisatory stage.

One obvious example is that because each musician's screen can display a different part, the score stream can establish and shift patterns of convergence and divergence within and

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Fig. 1. Percussionist Nathan Hubbard and pianist Dhiren Panikker in Winifred Smith Hall, University of California, Irvine, performing *Polyphonic Embrace*, a score stream composed by Michael Dessen, along with bassist Mark Dresser and trumpeter Edwin Harkins, who are performing at the University of California, San Diego, 2009. The two sites are linked through high-bandwith Internet2 connections, and the large screen presents telematic video created by John Crawford while the smaller screens show unprocessed video of each performance site. Latent Potentials concert, 13 December 2009. (© Michael Dessen. Photo © Mariangeles Soto-Diaz.)
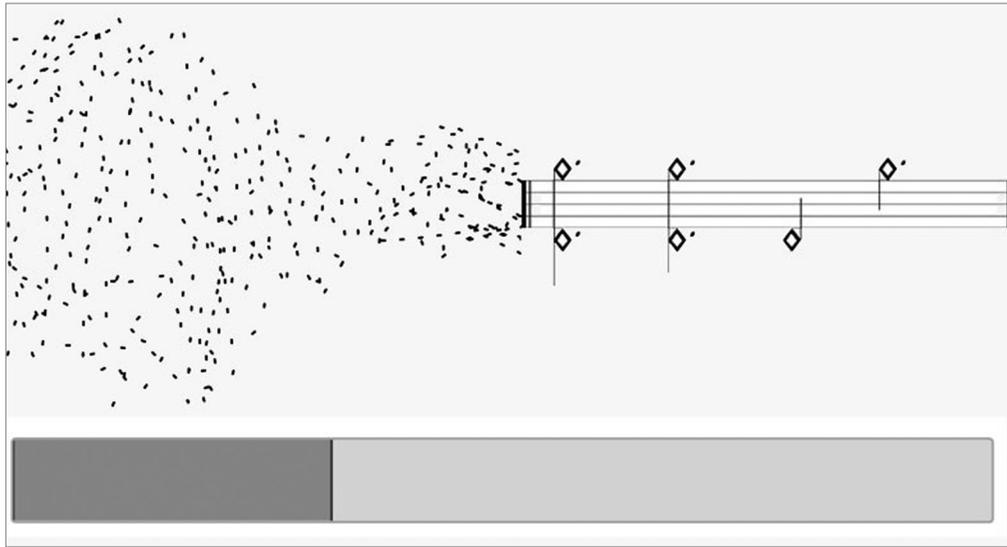
across different performance sites. In a telematic environment, where sensations of distance and intimacy become especially charged compositional parameters, this networking and routing capability of computer-driven scores opens up rich possibilities. The same is true for timing techniques: Not only can screen displays indicate pulses, but through visual objects such as horizontal sliders, they can suggest durations in myriad ways, such as synchronizing complex and unpredictable sequences of materials for subgroups of improvisers to work with. Such functions are central to many existing methods that use conventional paper scores and performative cues, but they take on new meanings and potentials in a telepresent, improvisatory environment that involves human choices and interactions across remote sites in tandem with precomposed content generated algorithmically by the computer program.

From one angle, such methods could be seen as computerized extensions of "conduction" or "sound painting," to borrow terms from, respectively, Lawrence "Butch" Morris and Walter Thompson, two well-known artists who have each established elaborate visual conducting vocabularies for real-time composition with ensembles of performers. Yet, in my case the absence of a human performer as authority figure creates a very different psychological environment for the improviser, who instead is (ideally) conversing in a non-hierarchical way with the visual notations as well as the other performers [2]. From another angle, my score streams are informed by the many notational systems that have been created by composers-improvisers from jazz and other experimental music traditions, which include custom pictorial

languages as well as different approaches to conventional staff-based notations. As an improviser myself, those histories are a natural influence, especially the scores I have played by mentors, peers and collaborators. At the same time, unlike paper scores, score streams take a unique visual form in each performance, even while they contain intricately predesigned content. In this way, they are a natural extension of the craft of composing notations for improvisers, since they visually embody the same alchemy of precomposed and emergent form that improvisers themselves so often seek.

Since the 1990s, improvisation has grown into a vibrant academic field in the United States and Europe, but in my view this makes it all the more urgent to remember that the conceptual and methodological groundwork for these practices was established decades earlier in non-academic communities, many with precious few resources or infrastructural support. Many early texts on experimental music have documented the histories of what George Lewis has termed "Eurological" innovations [3], while other scholarship on "Afrological" trajectories of experimental music has also been on the rise recently, including Lewis's own book on the Association for the Advancement of Creative Musicians, *A Power Stronger than Itself* [4], among many other works. Along with today's increasing access to musicians' own writings, interviews and above all their creative output, we are seeing in ever greater detail how the last century of musical exploration into improvisation and open forms is not a series of parallel, discreet traditions but rather a complex tapestry of transcultural dialogue and innovation. This is tricky terrain, since it is all

too easy in writing about improvisation to embrace overly simple or utopian discourses about its power or to exaggerate the limited impact of music on our world's seemingly infinite problems. But at the same time, I think that those of us who have been genuinely moved by these bodies of musical work, who are aware of the sacrifices that others have made in order to enact such collective rituals of performance, cannot help but keep a hopeful eye out for new openings and new ways of understanding the legacies (literally, "gifts") embodied in these practices we inherit.

One of my recent score streams, a quartet performed in December 2009 between San Diego and Irvine, CA [5], is titled *Polyphonic Embrace* (Figs 1 and 2), in reference to Roy Ascott's work *Telematic Embrace,* as well as to polyphony as a metaphor for the dialogic nature of both compositional and networking technologies. During the months that I was composing and programming this piece, I found myself drawn to the isorhythmic motets of Guillaume Dufay. Revisiting these sounds after many years of immersion in more contemporary music, I was struck by how Renaissance rhythmic notation is a highly complex, elegant system, yet also more ambiguous and open than we typically assume. I was similarly overwhelmed by Dufay's mastery of isorhythmic techniques, with their intricate mathematical proportions coexisting alongside a sublime sensitivity for flow and line.

I became especially immersed in the famous motet *Nuper Rosarum Flores*, which Dufay composed in 1436 to consecrate the completion of the Florence cathedral. As I headed into the telematic concert featuring *Polyphonic Embrace*, in a modern techno-shrine auditorium filled

with computers, audio, video and networking gear, I struggled to imagine the opening celebration of that Florentine monument to 15th-century technology, which after over a hundred years of construction finally culminated in Filippo Brunelleschi's spectacular dome made up of more than 4 million bricks. How did it feel, singing Dufay's architectonic counterpoint in that space, surely with a cathedral-induced latency to rival any modern telematic concert? Just as Medieval musicians could not have envisioned how polyphony would flower in later centuries into new tonal and rhythmic forms, and just as Thomas Edison could not imagine how sound-recording technology would enable John Coltrane to syncretize sounds from India, Africa and Indonesia with music of the African American church, bebop and the European avant-garde into a body of work of deep and global resonance, so we cannot possibly envision what new experiences might emerge as digital networking technologies collide with new and old musical practices over the coming century. But as we continue mining the musical potentials of digital networking, whether in telematics, score streams or infinite other forms, the legacies of our past

century's improvised music traditions can help remind us what is at stake in our own performance practices, as they signal us down unknown pathways into the riches of new polyphonies.

Acknowledgments

References and Notes

1. For more details on telematic performance by improvisers, see "Telematic Music: Six Perspectives," *Leonardo Music Journal* **19** (2009) pp. 95–96; and "Mark Dresser: Telematics," an essay in the on-line magazine *All About Jazz*, published 20 August 2008, available at <www.allaboutjazz.com/php/article.php?id=30198>.

2. Although it is not currently part of my own project, it is also enticing to imagine programming a score stream that, like George Lewis's Voyager (George Lewis, *Voyager*, Disk Union-Avan CD 014 [1992]) and other innovative works of interactive computer music

with improvisers, might converse with an ensemble by drawing on an extensive database of visual and orchestrational possibilities in response to individual performers' real-time choices.

3. See George E. Lewis, "Improvised Music after 1950: Afrological and Eurological Perspectives," *Black Music Research Journal* **16**, No. 1 (1996) pp. 91–122.

4. George E. Lewis, *A Power Stronger Than Itself: The AACM and American Experimental Music* (Chicago: Univ. of Chicago Press, 2008).

5. This performance was part of a telematic concert titled Latent Potentials, which took place within the 2009 Digital Arts and Cultures conference at the University of California, Irvine, and featured Mark Dresser (bass) and Edwin Harkins (trumpet) in San Diego and Nathan Hubbard (percussion) and Dhiren Panikker (piano) in Irvine. I am deeply grateful to them and also to Jason Robinson and Adnan Marquez-Borbon, who performed my first score stream in April 2009.

Michael Dessen is a composer-improviser who performs on the slide trombone and computer. He is active with various ensembles as a leader or collaborator, and his music can be heard on labels including Clean Feed, Cuneiform and Circumvention Music. He is a faculty member at the University of California, Irvine, where he recently co-founded a new MFA program in Integrated Composition, Improvisation and Technology.

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Julien Knebusch, "The Perception of Climate Change," *Leonardo* **40**, No. 2 (2007) p. 113.

Andrea Polli, "Atmospherics/Weather Works: A Spatialized Meteorological Data Sonification Project," *Leonardo* **38**, No. 1, 31–36 (2005).

Andrea Polli, "*Heat and the Heartbeat of the City*: Sonifying Data Describing Climate Change," *Leonardo Music Journal* **16** (2006) pp. 44–45.

Andrea Polli and Joe Gilmore, "*N. April 16, 2006,*" LMJ16 CD Contributor's Note, *Leonardo Music Journal* **16** (2006), pp. 71–72.

Janine Randerson, "Between Reason and Sensation: Antipodean Artists and Climate Change," *Leonardo* **40**, No. 5 (2007).

Ruth Wallen, "Of Story and Place: Communicating Ecological Principles through Art," *Leonardo* **36**, No. 3, 179–185 (2003).

Angelo Stagno and Andrea van der Straeten, "*0-24 Licht:* A Project Combining Art and Applied Research," *Leonardo* **40**, No. 5 (2007).