The four last examples exemplify the ductility of the synthetic material. One can *extrapolate* beyond usual values of sonic parameters, like Chowning synthesizing an extreme *basso profundissimo* voice. One can also *interpolate*, transform, morph; for his piece *Phone*, Chowning's "bells" gradually turn into voices. One can also *stage close encounters* between instruments and synthetic sounds. In the following example, instruments appear like filigree within synthetic tones. Acoustic sounds are audible traces of a visible world, unlike synthetic sounds, which only suggest an illusory world—a separate, internal sonic reality that can also be appealing. When these realities meet, identity can sometimes be an enigma, as in this last example, where the flutist sings into the instrument—flute or voice? Also, the synthetic tones become quasi-vocal—the voice of whom?

"Beauty is in the eye of the beholder." The musical aesthetic experience is our ears and brain. Technology grows according to its own logic, but it can provide us with great resources. Such resources are especially wonderful when they are tailored to help us explore and enjoy unexplored worlds, our inner worlds. That is our task in computer music.

ICMC 2004 Concert Reviews
University of Miami
Concert 5
Rosemary Mountain

The fifth concert of the ICMC was one of the most diverse of the week, both in aesthetics and in presentation. It showed the full array of options, including sound+DVD, sound+dance, live+recorded, computer-generated, and improvised. There was also a certain array of quality, but most of the pieces held my interest for one reason or another.

Id-fusiones by Rodrigo Cadiz was, for me, one of the highlights of the week, due mainly to the innovative treatment of the image-sound correlation. As it becomes increasingly easy to achieve millisecond coordination between audio and visual, the number of failing attempts to combine them convincingly seems to multiply. The perceptual issues involved are still seriously under-researched, but one of the most common factors in producing a sense of poor correlation is the discrepancy between sound and image space. (As this sense is often subliminal, the auditor/spectator may be left with the impression that the piece is simply not very good.) In many cases, multiple-speaker diffusion is in clear contradiction with the portrayal of a virtual 3-D space that is more distant than the sound, and typically viewed through a small, front-centred window. Cadiz neatly circumvented this entire trap by presenting the visuals, at first, like a kind of typewriter notation on a two-dimensional surface coinciding with the screen itself. The manifestation of time was often represented by the single placement of images like letters on the page, usually (but not always, thankfully) in sync with rhythmic aspects of the sound. The typewriter analogy gave way to a more poetic dance, as lines of the pattern were initiated from the right side of the screen and moved left—"backwards" for those of us immersed in the "time as *x*-axis" reading mode. Likewise, colour and size lent character to the sonic layers, which were often, but not always, in keeping with the sonic line. When sound and image diverged, however, one was led to appreciate the counterpoint in full anticipation of their impending resolution into homophony and/or rhythmic consonance. My ears and brain were particularly attracted to a section of the piece that was filled with individual sonic components whose initial fluctuation was balanced with long sustained notes focussed on a single unwavering frequency, reminiscent of certain Indian performance aspects. My aesthetic preference for less continuous sonic glides and nebulous frequency masses in favour of more precisely defined

sonic elements was thoroughly indulged in this piece. The visuals themselves were fascinating for their patterned intricacy.

The impact of visual on sonic was perhaps nowhere so startling as at the junction between the first and second works on the show. The audience realized, at the conclusion of Miyuki Ito's *Réminiscence d'un ancient esprit*, that the ominous hooded figures who stood immobile against the wall stage right throughout were actually waiting to spring into action for Palindrome's work *Ich, mich und mir,* which followed it. I was not the only one who had difficulty in trying to retroactively subtract that visual image from the sonic piece, in order to re-assess the impact of the work as it must have been originally intended, though I will assume that the composer condoned this "contamination." (The same phenomenon recurred dramatically later in the week, when we mistook fireworks outside for off-stage percussion effects in a work by Brian Bevelander.) Ito's work was very emotive, in a way that seemed quite in keeping with the costumes. It would be a good point of departure for a study in sound-image correlations to present the same work with a different stage-set, such as rosier colours and gentler poses.

The Palindrome work maintained the quality that I have seen and heard in their other works; it was striking because the quality of the artistic elements matches that of the technological. *Ich, mich und mir* presented a fascinating counterpoint of real and virtual bodies, the virtual being produced apparently by projections of the dancers, often delayed and displaced, but by varying and unpredictable amounts. The range of sounds and of visuals were also in nice correspondence, from dramatic gestures to a static-type noise produced by a dancer's costume and echoed by visual noise on the screen.

Of the four works for flute and computer, three were appealing to me because of their classical roots. They were full of interesting sounds and audible structures. Ainger's *Pacific Variations III* presented its classical structure with appropriately contemporary modifications, sequences, and other such techniques applied smoothly and with artistry. Even the extended techniques, which often ruin such pieces by their contrived placement, seemed to be organically derived from the sounds' evolution: long, sustained sounds which faded into the air like butterflies; and timbral effects (multiphonics, breath and singing into the instrument) balanced not only by the comforting web of multiple (and interesting) delays, but also by the formal arrangement of the effects into the multi-movement structure. Rowe's *Flutter* and Pinkston's *Lizamander* were less obviously classical in form, but were still musical in traditional ways: they had nice embroideries, and there was a particular skill in timing in *Flutter*.

Lyon's *Onceathon 2* also boasted recognizable structures of juxtapositions. What made the work less appealing to me was not so much the dissonance between the contrasting segments—"classic" atonal interrupting "classic" MIDI keyboard pop sounds—but that the pop elements were noticeably less interesting melodically, harmonically, texturally, and timbrally. (This view was clearly not shared by many in the audience, who seemed particularly delighted at the hodge-podge and the probably defiant sneering at those of us who prefer beautiful things.) The microscopic nuances of tuning, dynamics, and timing of acoustic instruments are, to me, clearly more appealing than the steady-state, dead sound of electronic pop. The whole piece reminded me of a show of kitsch I saw years ago. At the end, the wit involved in identifying and collecting the components as "kitschy" was submerged by precisely the unappealing aesthetics that had earned them the label.

The work *Terra Incognita* by Frank Ekeberg relied on less imaginative ways of creating dissonance and tension, opening the piece with a very short but ear-splitting noise and then teasing the audience with the anticipation of whether we would be attacked again. The level of dark, brooding apocalyptic mood, created in part by low vocal-type sounds, seemed a bit pretentious in its reliance on extreme and almost visceral reactions, which are far from the aesthetic designs that I find so satisfying in many musical works.

My appreciation of the effect of the dancers in the first two works of the concert, and especially the stunning video of Cadiz, might suggest that I am dependent on visuals for total involvement in the music. The dynamic involvement of performers like flutist Elizabeth McNutt also contributes a significant element to the listening experience. However, the "pure" electroacoustic pieces by Paulina Sundin and Robert MacKay were well crafted and appealing throughout their respectively short durations. Sundin, in particular, played with the virtual physicality by some nice uses of spatialization and an interesting preparation of one section by a sudden cessation of sound after a long swell. It was particularly striking for those of us who tend to track music's motion with our bodies. Nevertheless, the effect of these recorded works seemed to be dependent in part on their high-quality diffusion in a large concert hall. The impact of the concert as a whole, therefore, provided the kind of experience that justified the work of the software and hardware developers featured for much of the conference. That is precisely the reason that is leading me to argue in favour of live concerts over the current state of internet music experiences.

Concert 13

Momilani Ramstrum

As I enter, there is a work already in progress. On three screens are gray metallic bubbling masses surging upward and cascading down. The music is dense, with rising bird and insect sounds over a thick pad of rushing water. A deep rumbling bass sound coincides with the vibrating of the bubbles on the center screen. The bubbles on the right screen seem fleshy, or like flesh flowing over lumpy forms. The music shifts from foreground chirps to background water. All coalesce into thunder, then dissolve into white noise. The surf pounds. The left screen becomes dripping gray metal. A man is inverted and dives into a gray puddle. The water rises in pitch like a chorus. The chirping slows and drops. There is a singing noise. The right screen fades to black. The center bubbles become a smooth gray mass. The chirping spirals around the room as the pitch of the water rises. The right screen returns to flesh. The sounds cycle, rising and falling. The left screen fades out as the pitch rises, fades, then is cut short. The installation was entitled *Friction Sticky Rough* and was by Fred Semanski.

Terma by Craig Walsh, for soprano (Stella Markov) and CD. After the first electronic phrase, the soloist begins a slow melodic line in Greek. The electronics fade to accompaniment. At the end of the first section, the electronics become syncopated, with spatialized and synthesized syllabic duets. The soprano sings *sprechstimme*. In the background are pulsing, synthetic sine tones. The electronics become broader and slower. The vocal line restarts for the third phrase, slowly and melodically, with a slow electronic fabric behind. There is no vibrato on the vocals. The fourth part is like the second, with hocketing and the vocalist mimicking the electronics with syllabic textures. The mixture goes back and forth between smooth and jagged utterances. A series of increasingly higher notes is imitated by a faint electronic echo. A crescendo of texture and sound. The soprano speaks. Low rumbles of electronics. Pure high tones are contrasted with a counterpoint of spatialized, rhythmic electronics and textured chordal noise. Omega. End.

Mirror Story: Graveside by Alicyn Warren, for soprano (Mimmi Fulmer), video and tape. The singer enters, smiling. There is no music stand. A screen is behind her. The stage slowly darkens. Clouds of smoke rise on the screen. Dark low chords punctuated by metallic synthetic tones glissando upwards. The soprano deliberately looks around. Organ chords, chants, fleeting prayers. Second psalm. Images of trees, graves. The synthesizer tones are out of place. A powerful voice is distorted. Image of rain on the graves. There are some distortions in the sounds. Footsteps of pallbearers. The video work is complex and powerful, moving and detailed. Sounds are simplistic. A man's voice is taken apart. "Ashes to ashes, dust to dust." Candles float around the screen. "Born again."

Solo/tutti by Richard Kapen, for viola (Garth Knox) and live electronics. The violist enters and attaches a wire to his belt. There is a large glass music stand. Three loudspeaker monitors face the performer. The composer is seated at his table in the middle of the hall. The viola begins loudly and quickly. The electronics are a high whine behind the dignified viola. The viola sound emanates from the loudspeaker closest to me. The pitch and volume of the electronics descend. The viola plays slower phases, ending with a long bowed crescendo note. A loud pluck. A bowed note. The electronics rise in pitch and volume. Phrases are varied slightly, with long pauses between subsequent phrases. The bowing of the final note of each phrase lengthens. The electronics harmonize delicately. All fades out, then comes a loud pizzicato note on the viola. Another softer pizzicato note begins frenzied sequences in the electronics. A pause, then more soft pizzicato on the viola. An eerie echo in the electronics. The sounds are subtle and shaped. The plucked notes increase in rhythm. The synthesized sounds echo with variations. Short phrases on the viola are captured and spatialized. Both sounds are elaborated, and the sounds of the violist appear around the room. The sounds have clarity, detail, texture, and pace. The texture and gestures thicken and quicken. The electronics merge into a roar. The violist is going so fast that he seems to be ahead of himself. He stops, plucks, and the electronics dissolve backwards. The room expands, then calms as the array of violists tune into silence. Perfect fourths—there is a thin, hesitant new beginning. A hollow echo ringing in the loudspeakers. The hollow ringing moves around the perfect fourths. A romantic trill and many pizzicato plucks. A few quick, whispered phrases. The violist keeps looking left, as if remembering something. *Sul ponticello*—hollow and metallic, a long, light bowing of fourths.

Obsessions Delicates by Arne Eigenfeldt, for tape. Initial sounds zoom around. Obsessively metallic. Textures close around the room. Singing in the background. Sounds are transformed with space and echoes. Metallic hits crash, amplitudes increase. Objects become larger, sound is embodied. Giant toys. Rattles fade away, and giant sizes dwindle to human.

Synthecisms No. 6, by Brian Bevelander, for percussion ensemble (University of Miami Percussion Ensemble) and tape. Six percussionists: one marimba, two vibraphones, tom set, gong, bass drum

and timpani, timpani, marimba, and tom set. The tape begins slowly, with pointillistic timbres. Scales up and down on the xylophone and marimba. It is the beginning of a symphonic work. An expansive start with a slow swell, then an ebb. A beautiful timbral portrait. It hangs almost motionless on the concert stage. There is an expectation of something greater about to appear, furthered by a sporadic low booming sound. Everything fades without having gone too far. The low booming that I thought was a part of the piece is continuing after the applause has stopped. There is a musical event with fireworks outside that we hear in the concert hall, probably the Young Republicans Club. It was an effective part of the work, though I had wondered how the composer had gotten the floor to shake without blowing out the loudspeakers.

Chaotika by James Harley, for percussion (Rod Thomas Squance) and tape. Zipping sounds increase in pitch and density. Metallic hits. The lights are still on, so we aren't sure if this is the piece. The sounds stop and a few in the audience clap. Harley stands and says that Gregory Cornelius collaborated on the piece. The sounds zip and restart, and the percussionist stands. He hits two metal objects that look like lampshades. They make varying pitched hollow metal sounds. The volume increases. The rhythm is steady on twelve beats, then varying and accelerating. The percussionist has regular beats, but the electronics do not. Bongos. Five timbres: two small cymbals, two metal lampshades, one set of bongos, electronics, and tamtams. A rattling rhythm is contrasted with regular beats and no syncopation, all even rhythms, with rests and longer notes at the ends of phrases. Interesting, strongly contrasted timbres. Paul Lansky later said that he liked how this piece set up constraints and stayed within those bounds—that it was a mature piece. When I asked James Harley about the piece, he said that it was missing a layer of processing of the live sounds.

Les Forges de l'Invisible by Elizabeth Anderson, for 8-channel tape. Two squiggling parts, vibrating textures, bells chime, rushing and retreating. Space sounds whir around the room like a science fiction film. Night star sounds, the gravity of stars are placed around the atmosphere. There is a rumbling of outer space or a forest fire circling the building. Crickets or metallic planes blare with heat. Glossy intrigue. Silence for five seconds, then a loud restart. Long, phasing sounds over singing crickets. Expansive swirling attack. Everything fades except for the crickets.

Qin Music by Christopher Ewing, for qin and computer. The delicate tones of the qin are quiet and engaging. The computer's sine tones quickly and seemingly randomly obscure the ethereal sounds of the qin. Ending the piece alone, the flowing qin is weightless.

Mellipse 2 by Mara Helmuth and Allen Otte, for percussion (Allen Otte) and tape. The solo percussionist is caged behind metal objects. Triangles, metal cymbals and gongs are suspended in front of him in a metal frame. He swims in metal. The percussionist is ringing a bell without stopping. There is natural phasing. I think the electronic part has begun. Time shifts as the tapping of metal swerves to a different suspended cymbal. Now I am sure the electronics have started, because there is a high ringing tone not connected to the force of the percussionist. There are ambiguous transitions between the tape and the performer that question reality. For an instant I'm sure, then I'm not. The dominant sound is the metal tamtam and the suspended cymbal. The percussionist skillfully dances with the percussion, bringing a metal cymbal that is not suspended close in order to shift to another instrument. Now, the sound has moved to the side loudspeakers and the electronics are obvious. A gong signals the switch to a buildup of pitch density, texture and amplitude. The electronics hover on the edge of consciousness, extending and elaborating the bell resonances. I'm not sure if I am imagining the sounds on a hot shimmering day, or if they exist outside of myself. A bored scream, a rubber mallet is dragged over the gong. Repeatedly, I am seduced, and I believe that metal can resonate that long. He returns to continuous percussion and the electronics intensify. I think. Not sure how sound is made at all. I am left not knowing what is real, and unable to trust my own mind. The work makes me believe in a new world of extended resonant metal over a lifetime of my own experience. Later, the percussionist said that he created his part as a response to the electronic tape that Mara had composed, purposely blurring the borders between their sounds. This work was the highlight of the evening.

Concert 15
Jeffrey Treviño

The concert began with Adrian Moore's *Dreaming of the Dawn* (listed incorrectly in the afternoon's program as *Dreaming of the Drum*), a large-scale, multi-section piece for eight loudspeakers originally commissioned by the Groupe de Recherches Musicales in 2003. The composer felt it appropriate to remind the audience of the work's inspiration before its diffusion, because the title of the piece is drawn from Emily Dickinson's poem "Dreams—are well—but Waking's better." Mr. Moore first read the eponymous poem aloud to the audience. His reading was met with contemplative silence, and the concert seemed off to a fairly solemn and meditative start—until

Moore said under his breath (to some tittering) as he returned to his seat, "Don't ask me what it means."

Although many found Moore's comment funny, it pointed to a dogged creative struggle, intertwined with the comprehension of the poem, that is an original quality of this work and others by Moore. As François Couture has said of Moore's work (and specifically of his piece *Sieve*), "The large number of sound sources used and the constant analysis the listener must do to relate them to their manipulated counterparts make for a busy, rich, exhausting work. [*Sieve*] leaves an impression of fulfilling creativity." Although the former part of this assessment is true of much good electroacoustic music, the latter part is not, and I too was left with the sense that the creation of *DotD* was a deeply involved and probing artistic endeavor.

So how exactly does one create a piece of music that leaves the impression of a fulfilling creative process? The answer, in this case, lies most apparently in the relationship between the large-scale formal structure and the more local development within a given section of the piece. Save a few disruptive suffocations due to sudden bouts of digital silence between sections, the entire multi-movement work seemed to be, like Dickinson's hyper-articulating punctuation in the original poem, an engaging, iterative process of expression. The composer has compared the local detail at any given moment in this piece to driving a stick-shift car. However, although the piece might be careening recklessly through an amazing variety of altered orchestral timbres—beautiful sounds in their own right—it pauses occasionally to reconsider its path and begin anew. This music is beautiful because it expresses an impossibility of precise expression through a series of masterfully calculated, ardently executed, and subsequently abandoned outpourings. The composer reproduces Dickinson's poem and discusses the work as a search for a meaningful structure here: http://www.shef.ac.uk/~mu1ajm/docs/dreaming.html.

The next work on the program, *one thousand and seven hundred and fourteen questions* by Michael Gurevich and Lindsay Manning, was a testament to the effectiveness of simple algorithmic composition in the face of the human psychological apparatus. The idea is straightforward enough: over a thousand contestant responses from the popular American game show *Jeopardy!* (in the form of questions, according to game rules) were diffused into eight channels, with a sum decrease in the density of responses as time went on. The piece's effective moments—and some of them were very effective, though they were few and far between—came from the mind's propensity to associate events by proximity in time and space. The piece left me with a variety of memorable experiences, ranging from poignant (a brief cloud of responses ending with "What is memory?" followed by a particularly sparse moment) to delightfully absurd ("Who is Wagner?" followed immediately by "Who is The Flying Nun?" heard across the room).

As an American from Bakersfield, CA—the country music capitol of the American West and the cradle of Buck Owens's "Bakersfield Sound"—I appreciated the next piece, Chapman Welch's *TELE*, which was a monumental salute to one of the genre's most auspicious axes. A tribute to jazz, rock, country, and rockabilly guitar virtuoso Danny Gatton (known to fans as "The Master of the Telecaster"), the piece features several of Gatton's signature guitar techniques—chicken pickin' (playing each note with both pick and fingers), open-string rolls, and slide guitar techniques—as well as several more common vernacular electric guitar extended techniques, such as volume swells and tremolo picking. Also remarkable was an effective deployment of that oft played out but frequently effective dichotomy between "human" sounds and "machine" sounds: Welch juxtaposes his warm, analog, human virtuosity with digital sounds like noise and sine tones to create what seemed, at times, to be a dueling relationship between soloist and accompaniment.

Certain electroacoustic traditions try to create a virtual acoustic space by masking the existence of eight discreet sound sources and the room in which they diffuse. A venue like a church can leave the art and its presentation space at cross purposes (and, according to several composers' opinions following the concert, did so). Fortunately, the program's fourth piece, Christopher Cook's *The Castle of Otranto* for live trombone and tape, deviated significantly from such traditions. The trombonist entered the stage after the piece began with tape alone, pausing to look up at a gigantic illuminated cross hanging at the front of the church's central knave. From this point on, the soloist engaged in a series of theatrical gestures reminiscent of Luciano Berio's trombone Sequenza, only with a more explicitly programmatic point of departure. The trombonist seemed to represent the hero of the Gothic novel treading carefully through a haunted castle, and the piece reveled in the instability of the taped response to the soloist's stimuli. Cook took advantage of the highly directional nature of the trombone's sound by placing three microphones left, right, and center of the soloist's bell, to allow and make visually apparent the soloist's transgression into the virtual space of the loudspeakers. The result was an observable joy of ventriloquism, brought on by the soloist's ability to map his sound easily onto various

combinations of the eight loudspeakers. Although the theatricality seemed a bit stilted at first, the final gesture—in which the soloist loses hope, stops playing, and hangs his head in despair while sitting on the steps to the altar—was marvelously executed by trombonist William Bootz. If the content of the tape part aspired to capture the supernatural element inherent in the genre of the piece's program, the loudspeakers' sounds bore too close a resemblance to others heard at this festival (in less intentionally eerie contexts) to be effective. This, however, is more a criticism of much of electroacoustic music's propensity to represent unstable, negative, and ambivalent states than it is of the sonic choices in this particular piece.

The next piece, Ivica Bukvic's *Legisonitus #1: Gone in 8 Minutes*, came with a concise and heady program note attached, which I reproduce here in full:

> Posing as one of the most polarized artifacts through superimposition of the extreme right-wing Musique Concrete and sporadic touches of the Cologne dogma, this piece is an experiment in relegating the creator's responsibility to the world of chance and circumstance, where author's [sic] final touches but enhance the flavor of the moment preserved in time.
>
> That is all.

I don't know what this means, but I'm fairly sure it's political; the piece of music, on the other hand, was a recording of someone driving somewhere. At the outset, a collage of brushed garments, propositional speech, and intimate breaths created an atmosphere of anxious waiting in advance of an engaging narrative trajectory. That this trajectory turned out to sound like an uneventful recording of an uneventful car trip from point A to point B was wholly disappointing. Although I admire the composer's sense of experimentation in the context of certain politicized traditions, with experimentation comes the possibility of failure, and this one failed in more ways than it succeeded.

The concert finished with Yu-Chung Tseng's *Burning Up*, an homage to Iannis Xenakis's use of hot coals in *Concrete PH* that engineers natural sounds from sampled instrument sounds. The direction of the eleven-minute piece seemed to mirror the process of creating the synthesized natural fire timbre: the disparate sounds combined over time to form an ultra-clear digital representation of the sound of a crackling fire. Although the form of this piece, as well as its author's description of it, drew attention to the timbral processes at work, most interesting to this audience member were the music's rhythmic profiles. This piece contained some of the masterstrokes of spatialized rhythm at the conference, and it is unfortunate that they were heard in an environment as soupy as a church.

Considered as a concert event in its own right, this was a show marked by an amazing diversity of compositional goals, materials, and media. Considered as a single event in a weeklong festival of our organization's activities, I take great pleasure in reporting that this diversity is representative of most of the concerts heard throughout the conference. It was a joy to hear such an assortment of projects, and I can hardly wait to hear what these composers come up with next.

Interview with Chris Chafe, July 22, 2005

Jeffrey Treviño

Composer/performer Chris Chafe began experimenting with networked musical performance in 1998. In 1999, he received a grant from the National Science Foundation to initiate the SoundWIRE (Sound Waves on the Internet from Real-time Echoes) research group at Stanford's Center for Computer Research in Music and Acoustics (CCRMA). The group develops sonified evaluations of network Quality of Service and experiments in real-time musical performance via networks with high Quality of Service.

The SoundWIRE project has led to several notable collaborative real-time musical performances via high QoS networks. In 2000, the team's real-time networked reverb won the "Most Captivating and Best Tuned" research demo award at the SC2000 supercomputing conference in Dallas, Texas. Chafe played his celletto (an electric cello that he designed and built) in Dallas, sent the audio back to CCRMA's stairwell in Palo Alto, California, and then sent it back again to Dallas for a lush reverb created by a real space miles away. The team expanded their demonstration for SC01 (Denver, Colorado) to include over 320 channels of audio streamed in real-time between Denver and Palo Alto. (All the channels contained plucked string sounds in delay lines caused by the network latency.) 2002 saw the group's first successful multimedia collaboration, with low-latency video by McGill University's Jeremy Cooperstock. For his senior thesis, Stanford undergraduate and SoundWIRE contributor Daniel Walling distributed his dramatic improvisation ensemble between Los Angeles and Palo Alto; the resulting CyberSImps show can be seen online at http://ccrma.stanford.edu/groups/soundwire/cybersimps/. In the spring of 2004, musicians in Palo Alto, California; Missoula, Montana; and Victoria, British Columbia collaborated in real-time for a week to determine the form of an improvisational composition, which was performed at a meeting of CCRMA's industrial affiliates. Acclaimed documentary filmmaker Kris Samuelson joined Chafe and company for a summer 2004 collaboration that paired the improvisations of two duos of musicians, one in Palo Alto and the other in Stockholm, with flowing video of jellyfish and lunar landings. At the Audio Engineering Society's October 2004 convention in San Francisco, Chafe and his colleagues triangulated Mariachi Cardenal de Estanford into three recording studios around the Bay Area. The three studios' sound outputs were mixed back into a mariachi band in a San Francisco concert hall for the conference attendees.

Composer Jeffrey Treviño, Chafe's student while at Stanford, caught up with his former professor in Palo Alto on July 22, 2005. The two discussed Chafe's artistic interests, their relationship to the SoundWIRE project, and future directions for his work in the realm of networked performance.

JT: The last time we talked, your most recent networked performance project involved piping a mariachi band from three different locations around the Bay Area into a performance at the Audio Engineering Society's convention in San Francisco. Was that the most recent major event for SoundWIRE?

CC: Almost the last thing. Roberto Morales and I had a demo when I was in Europe about two months ago. I went to the art institute in Zurich, which is teamed up with the music conservatory, and we wanted to find out if you could play together as a duo between Zurich and here [Palo Alto, California]. Every time you set up for a networked performance somewhere, there's a whole bunch of new problems that you never knew about, you know. This is still kind of the very bleeding edge—this is the hemorrhaging edge, sometimes. The duo was an improvisation with Roberto Morales on flute and electronics and me on celletto. We've been doing a lot of weekly playing together, recording everything we do, so we have this down to where a lot of our reactions and musical thoughts just happen and we're having a good ole time; we're going to keep doing that every week. So it made sense in this case to have Roberto on the California end (since I was traveling in Europe), and we just made a date to try this thing out. There was enough wonderful support on the technical side to get the machines in place and connected up, but then we discovered that, beyond the basics, there was a crummy problem in one direction where packets were being dropped, and—it's interesting, maybe this is a word to the future, you know, for me, note this on a post-it—the thing to really avoid is promising the world to anybody in a show like this before you've actually tried it for real. And I had that misgiving, so I told them, "Don't do any publicity for this demo." You want to say, "Interested and forgiving people are allowed to attend," and it was a good thing I did it, because in this case, we really couldn't spend any time ferreting out the cause of the technical bottleneck. Unfortunately, the audience was in Zurich, and it was the to-Zurich direction that was dropping, whereas back to Roberto was great. At that point, we just yanked it down to one channel of 48