# TRANSCENDING INTO THE VIRTUAL: PRESENCE PROGNOSTICATIONS AND THE RE-CALIBRATION OF TELEMATIC ART

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Telematic Art is artistic collaboration over robust 1gigabyte fiber optic research networks. This paper explores recent experiments in telematics with 3D Virtual worlds, improvised performance, motion capture suits, spoken word, video art, live and pre-recorded dance, VDMX VJ effects, MAX/MSP/Jitter and various music and sound programs with live audiences and on-line performances.



*Fig 1. The dancer's outline of herself in the "Nuclear Sweet" video, produced when her motion became sound and the sound became dark pixels of herself mixed into the video sent through a network connection.*



*Fig 2. Text poem in white, four video clips projected on boxes, Actor reading on Skype, motion capture studio with dancer on grid from Hong Kong for Syneme Summer I.*



*Fig 3. Pixellation, chroma and drawing (blue lines) manipulated by finger bending in "Here and There".*

## The Wonder of the Ancestral – In a Post Modern Kind of Way

Telematic Art originated from developments in computer art, hardware and networking technologies based on algorithmic and mathematical art. This has enabled new forms of representation and interactivity in group authored artworks over networks. For the most part sound, or sonic arts has formed the basis of development for many experiments at Syneme Labs based in Calgary, Canada. New media with each new iteration tends to develop and embellish the framework of older mediums it references as a kind of augmented proxy. In that sense what Syneme has done resembles the early experiments with the telephone when Alexander Graham Bell uttered his famous sobriquet, "Watson, can you hear me?" Initial connectivity for Syneme focused on uncompressed audio over high speed fiber optic research networks, especially but not limited to IpV6. [1]

The first piece of computer-based art appeared in 1951 when John Whitney used left over bits from defunct analogue computational devices. Most technology now in vogue, including "3D goggles, network art, computer-generated choreography, bio-computer interfaces, expert systems, robot art, ... were already common currency in the 1960s and 1970s." [2] Roy Ascott in his essay "Is There Love In The Telematic Embrace" [3] clearly understood the implications of of the confluence of "video, sound synthesis, (and) remote-sensing. He defined telematics as "Computer-mediated communications networking involving telephone, cable, and satellite links between geographically dispersed individuals and institutions that are interfaced to data-processing systems, remote sensing devices, and capacious data storage banks." The observer/participant and the system they are working within are in a constant state of change and even instability because the content is electronic and digital until it reassembles itself as one of a number of different art forms. The art object changes into a "cultural communication system." Telematic communication "extends the gaze, transcends the body, (and) amplifies the mind into unpredictable configurations of thought and creativity." [4]

There were few instances of these developments; Kit Galloway and Sherrie Rabinowitz's ground breaking 1977 *Satellite Art Projects,* Roy Ascott's clever 1980 *Terminal Art*, and at ISEA'94 in Helsinki, Paul Sermon's *Telematic Vision.* It showed a video camera recording events on two separate couches. A person sat on a couch in each location. On a monitor that mixed the images both individuals could see themselves in virtual space sitting together, and could interact and respond to one another. Since this paper is not on the history of digital or telematic art, these examples are just a tiny slice of the work that has preceded these investigations. Not all Syneme performances and concerts in the past two years are mentioned, just those that this author participated in.

## In The Beginning Was Sound: A Sense Of Urgency – Making the Connection

### 2009 - OCTOBER

On October 27, 2009 I sat in the auditorium at the China Electronic Music Center (CEMC) at China's Central Conservatory of Music in Beijing. This was the first time that the Central Conservatory of Music used its new high speed fibre optic connection to initiate a telematic concert with Canada. Bruce Gremo's played *Calgary Interventions* on his Cilia flute controller using MaxMSP. For improvisation he took a soprano saxophone signal from Jeremy Brown in Calgary and let three continuous streams from that data control his output. I watched Bruce on stage, and saw Jeremy projected on a screen overhead. An image

of a whirling graphic appeared on another projection screen. This was the first telematic concert I had seen and I secretly hoped someone would jump out of the screens and do something on the stage. [5]

The technical obstacles to this concert, which included other musical compositions between China and Canada, were formidable. Before any of it could occur, a fiber optic line had to be taken from a Beijing research university and physically cabled over to the music conservatory. The Jack OS software that enabled the connectivity needed to be implemented, tested and stabilized. Wang Ke (Haku) a Beijing music student and programmer modified the original Jacktrip program to make it compatible with Ipv6.

## 2010 - JANUARY

In January, 2010 I began my studies in telematic art at the University of Calgary with the Canada Research Chair in Telemedia Arts, Ken Fields. Ken had laid down the fiber optic line in Beijing and set up that first concert. By the end of January I was working with other students on the NetTets 2010 Happening Festival facilitating a concert between the Central Conservatory of Music, China, Tavel Arts Technology Research Center, Indiana University Purdue and the Yong Siew Toh Conservatory of Music and the Arts and Creativity Lab, Interactive and Digital Media Institute of the National University of Singapore. A percussionist played live time at the Rosza Theater at the University of Calgary watching musicians on a projection screen in Singapore, Beijing and Indiana. Everyone could see one another and play together. The average latency of sound between node points was about 300 milliseconds. This setup had been accomplished using JackTrip audio software and a Lifesize video conferencing system that compressed the video signal.

It was thrilling we made the connections work between four timezones and everyone played together in front of a live audience. [6] This proved that four countries could play a concert together live time, and was an important next step for our research.

You Can See Me - Now What?

## 2010 APRIL

On April 24th Syneme Labs presented a 15 minute performance at the Indiana Intermedia Festival,aproduction of the Donald Tavel Arts Technology Research Center, Indiana University Purdue University Indianapolis. This performance consisted of Syneme Labs, musicians at the Tavel Arts Center and a group of 3D artist at the HR School of Fine Arts in Bloomington. [7] The artists 3D world made in 3Dvia Player was sent to Syneme Labs from Indiana utilizing the LifeSize and Tandnburg systems, and projected onto our right most wall. At various times Syneme had its own 3D world created in Maya3D projected onto the left wall. A dancer moved back and forth between the two worlds, and a third image on right projected what our studio camera was recording. This image was sent to Indiana for projection on stage at their Tavel Arts Center. At different times pre-recorded effects from VDMX, a VJ software were projected onto the dancer. Pre-recorded music in the Syneme lab also played in the background. All of this was sent back over the network to Indiana where three sets of live images were projected while musicians on stage improvised and played their own scores.

During the concert Syneme could not see the live stage in Indiana, though Indiana could see whatever images Syneme chose to send throgh its live camera feed. We were able to shift back and forth between

the 3D virtual worlds and the VDMX projected worlds by using the LIfesize conferencing system software. By introducing a robust visual intervace and a life dancer interactivity and presence factors were greatly enhanced.

## JULY 2010

The First Annual Syneme Summer Institute in Telematic Art was launched with participants from Calgary Canada, Beijing China, Bournemouth United Kingdom, Waikato New Zealand and Indiana Purdue, USA,i using a variety of technologies and means to project video, poetics, motion and sound into the studio. One person read over Skype excerpts from the Bible and Chairman Mao's Book of Quotations. These excerpts were translated into 85 English letters aligned equidistantly without spaces between words or punctuation, as they would be in classical Chinese and ancient Hebrew. The visual texts were displayed and read by viewers. The text was projected onto a horizontal square. Underneath the text, projected onto white vertical boxes were videos that had been FTP'ed from Hong Kong and projected through a MAX/MSP VPT (Video Projection Tool) patch. On the right was a live animation of a dancer in a motion capture suit performing on a green grid. Our aim was to have the motion of the dancer control simple parameters in the video such as on/off or brightness, or saturation. Music originated from New Zealand and Calgary. [8]

There was a time lag between the movements of the dancer in Hong Kong and the movements of the dancer appearing on the grid screen in Calgary, but it did not affect the performance.

There were many technical issues to resolve. Since the Summer Institute lasted only three weeks, the deployment of Hong Kong PolyU's staff including the HARNET, the Hong Kong fibre optic backbone required constant debugging. A programmer in Beijing opened up the SDK of the motion capture system to change its parameters. The frame rate of motion capture had to be reset to work at the unusual rate of 60 frames per second so the x, y, z coordinates of the animated motion capture software could be streamed to Calgary.

## DECEMBER 2010

In December Syneme facilitated ResoNations, Arts for Peace of the UN-NGO WAFUNI. Renowned musicians from New York, Beijing and China participated. Not all partners were on IpV6, some were on IpV4, so Syneme acted as the switching station in routing network information between these countries. [9] This concert resembled the January 2010 NetTets concert because it connected three disparate locations together for a music performance

## JANUARY 2011

On January 29th, 2011 at the NetTets2011 Festival I premiered "Nuclear Sweet" [10] a telematic performance based on formerly classified videos of nuclear explosions from the 1940's-60's that were filmed and narrated by a cadre of Hollywood elite sworn to decades of secrecy. This distributed performance event worked with a live dancer who, through movement was able to generate and manipulate sound in real-time with the interplay of imagery. The dancer's movements were captured in the camera and processed with a motion capture function in Isadora Software. The velocity of her movement was then sent over the network to a MAX/MSP granulator patch. At various times in the performance the sound

or pitch from the granulator patch was routed over the network back into the videos playing behind her, disrupting the pixellation with a ghost-like image of her form appearing in the video. Simultaneously music was sent over the network live time from Indiana U.S., by a musician who was watching the performance via a live video feed. His audio connection was over JackTrip.

## APRIL 2011

On April 21, I worked on the visual component of "Here and There," [11] a musical piece for ham radio written by Stuart Saunder Smith 30 years ago. For this piece I made a flex sensor glove that was connected to an Arduino board and worked with effects in MAX/MSP/Jitter. These effects consisted of changing the pixellation and brightness, contrast and saturation of an image by moving my fingers. I could also blend muliple images and awkwardly draw a crooked line across the screen, then erase the line with a flick of one finger. These images were sent over the network using Skype and projected on a screen in front of a live audience. They were manipulated in response to the live time music in Indiana. These crude effects proved live time manipulation of a broadcast image could be sent over the network in response to music and other stimuli.

## SYNEME SUMMER INSTITUTE II

Returning to Hong Kong for Syneme Summer II, I created "I Move In Decades," a telematic performance about the tenth year anniversary of the attack on the World Trade Towers. Using the talents of professional dancers, musicians and video artists, it built on the research done in Syneme Summer I of converting motion capture data to OSC. For this iteration dancers were rigorously mapped with their x, y, z coordinates using specific trigger points on the wrist, elbow and ankle. A clear range of motion was codified. The data was successfully converted to OSC. However, the MAX/MSP patch was not ready to be used in time for the performance, so the live time OSC data was stored. An asynchronous use of it will be used with a MAX/MSP patch. [12]

## References and Notes:

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