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Liquidon::introduction

Liquidon is an immersive, realtime, audio-visual composition that consists of a virtual environment and an interactive multi-channel soundscape. Liquidon explores the field of ITC. ITC, an acronym for Instrumental Transcommunication, is a field of research pertaining to the use of technological apparatus to facilitate communication with the dead. Liquidon utilizes a custom camera-based interface to capture video from a randomly tuned analog television set. The video frames are analyzed by the system and used to construct a three-dimensional representation of the image. Parametric data is extracted from the video frames and shared via a local area network with the sound composition. The composition is generated by a set of interconnected synthesis and processing modules developed in Max/MSP. Fragments of ITC recordings made by researchers such as Konstantin Raudive, Friedrich Jurgenson, and Raymond Cass are processed by the system, interwoven with a live radiophonic input, and dynamically distributed across multiple loudspeakers. Parameters such as pitch, amplitude, and phase are periodically tracked and shared via the network with the virtual environment. These parameters are used to influence the rendering and spatial distribution of the geometry. Thus, the two systems, visual and acoustic, remain locked in an evolving relationship of interdependence. This gives rise to a non-deterministic composition that is structured by feedback.

Liquidon::transcendental machines

Before elaborating on the specific aspects of the project, I think it best to give a brief overview of the field of ITC. The roots of Instrumental Transcommunication can be traced back to the mid-nineteenth century. An era of characterized by technological and cultural upheaval, the mid-nineteenth century has many parallels to our own historical moment. In 1844, Samuel Morse introduced the electromagnetic telegraph. This new mode of communication catalyzed sweeping changes in the cultural landscape. The telegraph, a nascent harbinger of discorporeal agency, presented a space that was at once immaterial and technologically mediated. The telegraph was a profoundly new 'interface', altering conceptions of time and space. In "Looking Back on the End of the World", Paul Virilio draws parallels between advances in transportation and the evolution of telecommunications. "If every mobile (or automotive) vehicle conveys a special vision, a perception of the world that is only

the artefact of the speed at which it is displaced within its terrestrial, aquatic, or aerial milieu, then, vice versa, each of those visions, those optical or acoustical images of the perceived world, represents a 'vehicle', a communicational vector that is inseparable from the speed of its transmission." [Virilio pg.112-113] Telegraphy's "communicational vector" created a hybrid space, rooted in the physical world but independent of traditional spatio-temporal relationships.

The bodiless space of electronic communications served as an attractive conceptual model for a newly emerging religion known as Spiritualism. "Inspired by the example of the telegraph and convinced of its parallel existence in the world of the dead, many Spiritualists described a host of ever more elaborate yet completely functional 'spiritual technologies' that could be found in the afterlife, each of them centered on the wonder of telepresence and disembodied electrical contact." [Sconce pg. 37] Spiritualism drew upon the structural metaphors of the telegraph in order to adapt to an increasingly technological and materialistic culture. Grounding the movement in scientific paradigms, Spiritualism forged a diffuse yet enduring link between telecommunications and metaphysics. Though the Spiritualist movement eventually collapsed, fragments of its ideology continue to find expression in the conceptual hierarchy of telematics.

While Spiritualism incorporated scientific metaphors, its underlying technology was decidedly unsystematic and rooted in the concept of human mediumship. "Spiritualism's fanciful portraits of a benevolent spirit world gave way in the age of modernity to a program of pragmatic experimentation focused squarely on verifying the act of communication itself." [Sconce pg.59]

Liquidon::Thomas Alva Edison

In 1920, inventor Thomas Alva Edison began work on a device to facilitate communication with the dead. Edison's interest in paranormal phenomena can be traced in his correspondence with British scientist Sir William Crookes. Crookes' collection of spirit photographs helped to convince Edison that technology could play an important role in the research of paranormal phenomena.

"If our personality survives, then it is strictly logical or scientific to assume that it retains memory, intellect, other faculties, and knowledge that we acquire on this Earth. I am inclined to believe that our personality hereafter will be able to affect matter. If this reasoning be correct, then, if we can evolve an instrument so delicate as to be affected, or moved, or manipulated by our personality as it survives in the next life, such an instrument, when made available, ought to record something." [Scientific American, October 30, 1920.]

Edison and his assistants continued work on the device until his death in 1931. Though several witnesses, including famed magician Joseph Dunniger, claimed to have seen a prototype of the device, plans for the apparatus were never located.

Liquidon::Friedrich Jurgenson

Though interest in the application of technology to paranormal phenomena continued into the age of wireless communications, it wasn't until the late 1950s that significant new research emerged. In 1959, Swedish film producer and artist Friedrich Jurgenson noted the incursion of mysterious voices on recordings of bird songs made on his estate, Nysund, in Monnbo, Sweden. Intermingled with the birdcalls was a whispery male voice lecturing, in Norwegian, on the differences between nocturnal and daytime birdsong. The voice was inaudible during the recording process. The following is an excerpt of Jurgenson's description of the phenomenon:

"I heard a noise, vibrating like a storm, where you could only remotely hear the chirping of the birds. My first thought was that maybe some of the tubes had been damaged. In spite of this I switched on the machine again and let the tape roll. Again I heard this peculiar noise and the distant chirping. Then I heard a trumpet solo, a kind of a signal for attention. Stunned, I continued to listen when suddenly a man's voice began to speak in Norwegian. Even though the voice was quite low I could clearly hear and understand the words. The man spoke about 'nightly bird voices' and I perceived a row of piping, splashing, and rattling sounds. Suddenly the choir of birds and the vibrating noise stopped. In the next moment the chirping of a chaffinch was heard and you could hear the tits singing at a distance - the machine

worked perfectly!" [Hausswolff pg.2]

A detailed investigation proved that no radio station in the region was transmitting a program similar to what Jurgenson recorded. In an attempt to verify the phenomenon, Jurgenson made recordings at various locations on his estate. Upon playback, voices of unknown origin once again became audible. After repeated listening sessions, he started to recognize some of the voices, including the voice of his mother, who addressed him as "Little Friedel," his childhood nickname. Jurgenson continued his experiments, publishing his preliminary results in a book titled "Rosterna fran Rymden" (Voices From Space) [1964]. Following the publication of "Rosterna fran Rymden", Jurgenson began experimenting with a new recording technique, the so-called "radio method", which used inter-frequencies as carrier waves. He published the details of his research in a book entitled "Sprechfunk mit Verstorbenen" (Radio-Link with the Dead) in 1967.

Liquidon::Konstantin Raudive

In 1965, well known Latvian Philosopher and Psychologist, Dr. Konstantin Raudive visited Jurgenson's estate and carried out a series of experiments with him. Convinced of the validity of the phenomena, Raudive established his own research project in Germany. After three years of intensive research, he published a book entitled "Unhorbares Wird Horbar" (The Inaudible Becomes Audible), which attracted the attention of English publisher Colin Smythe. In 1971, a revised and translated edition of Raudive's book was published under the title "Breakthrough: An Amazing Experiment in Electronic Communication with the Dead". Following the publication of "Breakthrough", the acronym EVP (Electronic Voice Phenomena) was adopted to describe the phenomena. To coincide with the publication of the English edition, Raudive carried out a number of demonstrations in England. He recorded the phenomena under controlled conditions at the Radio-Frequency-Screened Laboratory of Belling and Lee Ltd. Peter Hale, Britain's foremost expert on screen suppression, supervised this particular demonstration. After the experiment, Hale issued a statement: "From the results we obtained last Friday, something is happening which I cannot explain in normal physical terms." Dr. Raudive continued his research until his death in 1974.

Raudive identified several characteristic features common to the voice phenomena. These features are independent of the recording method employed:

1. The voice-entities speak very rapidly, in a mixture of languages, sometimes as many as five or six in one sentence.

2. They speak in a definite rhythm, which seems to be forced upon them by the means of communication they employ.

3. The rhythmic mode of speech imposes a shortened, telegram-style phrase or sentence.

4. Presumably arising from these restrictions, grammatical rules are frequently abandoned and neologisms abound. [Raudive pgs.31-32]

The polyglot nature of the voices does not seem to be entirely consistent. This characteristic is principally dependent on the linguistic capabilities of the researcher. Multi-lingual experimenters, such as Raudive and Jurgenson, tended to receive polyglot transmissions. Other researchers, fluent in a single language, received monolingual transmissions. Above all, I think it is fair to conclude that the voice manifestations have relevance to the individual researcher. This has implications for the analysis of the speech content of the voice entities, which is often cryptic when isolated from the circumstances of the recording. Taken out of context, the short telegraphic pronouncements seem nonsensical. But, as Raudive points out, in many cases "each word has a wider symbolic meaning, given to it in such a way that the individual experimenter may recognize the voice-entity behind it." [Raudive pg.29] Below are a few isolated examples of transcribed recordings from Raudive's archive:

"Wir nie verlassen." (11g:287/9)

(Germ.: "We never leave.") [Raudive pg.147]

"Wir warten auf Bock."

"Stavoklis schwer."

"Konstantin, ta nu jau nav."

"Mes nevaram skaidrak pavestit to." (31g:403)

(Germ., Latv.: "We are waiting for Bock." -"Conditions are tough."-"Konstantin, it is not quite like that."-"We cannot report more precisely.") [Raudive pg.152]

"Konstantin, wir sind." (38g:934)

"Wir sind." (44b:322)

"Wir, Kosti, sind." (45g:322)

"Kosti, vi viva." (Iar:203)

(Germ., Swed., Ital.: "Konstantin, we are." - "We are" - "We, Kosti, are." – "Kosti, we live.") [Raudive pg.148]

"Te daudzi brizi." (49g:627)

(Latv,: "There are many moments here.") [Raudive pg.155]

"Apart from their paranormal characteristics, the voices that manifest on tape show great similarities to those produced by ordinary human speech organs… Differentiations in their speech-pattern also seem to indicate that in some unexplained way, the voices use the same sources from which we terrestrial humans build our speech." [Raudive pg.28] The unusual linguistic construction of the voice entities raises many questions. Language patterns reveal much about the forces that shape communication, including cultural, economic, religious, and political factors. The rhythmic, telegraphic construction of the voice entities may offer insight into the nature of these enigmatic manifestations. In the next section, I will outline the recording techniques that Raudive and Jurgenson developed.

Microphone Method

"The microphone is the easiest, but also an unreliable way of getting the Voice Phenomena on tape. The microphone is used for recording sound vibrations (natural or supernatural) in a room at a particular time; it is merely connected to the tape recorder, which is set for ordinary recording. Sound waves are picked up by the microphone, which converts them into electronic impulses; these are amplified in the tape recorder and passed through the recording head which gives out a magnetic impulse. This in turn is recorded on the passing magnetic tape. The average microphone will pick up sound waves with a range from 60 cycles per second to 12,000 cycles per second. This roughly corresponds to the range of the human ear.

If there are any voices or noises on the tape, then all the people in the room where the recording is made, should be able to hear them when they are recorded, but this is not so." [Bander, pg. 11] "When the tape recorder has been switched to "recording", the person in charge of the session might begin by simply giving the date. Unless the experimenter is alone, he can then give the names of participants…He can follow this up by calling the names of dead friends and acquaintances; he should feel free to say whatever he likes, to ask questions, to explain or to specify what he wishes to know…Recording sessions should not exceed ten to fifteen minutes, because examination of voices received may take several hours. I have found microphone voices to be very soft, quick as lightning, and only too often drowned or made unintelligible by voices of people taking part in the experiment. I therefore advise participants to speak slowly, quietly, and to take time to pause; afterwards, when the tape is played back, to pinpoint every hint of a voice precisely and to repeat that section, so that the utterance becomes audible, the content clear and unequivocally verifiable and identifiable to the human ear." [Raudive, pg.21]

Radio Method

The radio method involves connecting the recording apparatus to a radio tuned to an inter-frequency. "A true 'inter-frequency' would be where nothing but a general atmospheric static noise is audible; this could be generated by a number of factors, for example a light which is switched on or atmospheric disturbances." [Bander, pg.11] The signal from the radio is fed into the recording device and captured on tape or other recording media. "Friedrich Jurgenson maintains in his book *Voices From Space* that no radio-voice recordings can be made without a 'mediator'. This 'mediating voice' is that of a woman (in his case 'Lena'), telling one which transmitting station, wavelength, and hour of the day or night to choose for a recording." [Raudive, pg.22] Analysis of radio-voices is a complex process as there is always the possibility of interference from radio programs and pirate stations. Despite this added difficulty, the radio method has proven to be one of the most widely used and successful recording techniques.

Diode Method

A diode, also known as a "cat's whisker" consists of a slightly tuned coil and a short

(3-8 inch) aerial. A diode conducts electricity one way and not the other. "It acts in a similar way to radio, but is not as sensitive." [Bander pg.10] The diode offered many of the advantages of the radio method but eliminated the possibility of interference. "Results of diode-recordings can be heard without great difficulty even by an untrained and unprepared ear. One has the impression that the voices speak directly on to the tape; they have a spaceless quality, an immediate impact and their diction is remarkably clear." [Raudive pg.27]

Liquidon:: representational systems

Technology, in its mediating capacity, serves as a fragile interface between the world circumscribed by man's perceptual apparatus and the broader spectrum of extant forms of energy. Technology is, in many regards, conceptually transparent. Scientific rationalism has separated the apparatus from the observer, championing technology as an objective means of representation. EVP embodies a disconcerting glitch in this hermetic system. These incipient communications, whether of supernatural or stochastic origin, illustrate mankind's convoluted relationship to technology. Science is a descriptive system predicated on a normalized system of measurements. Like all perceptual processes, it remains locked in anthropomorphous subjectivism. It differs in that the apparatus masks this inherent subjectivity. The emergence of EVP called into question the objectivity of technologically mediated forms of representation. Man has long known that scientific instruments can extend the range of his limited senses, allowing a mediated glimpse of phenomena beyond the narrow bandwidth of his five senses. But this extension has always been profoundly remote in human terms. Scientific discoveries, temporally and materially distant, operate on a scale that is difficult to fathom. The voice entities presented an entirely new dilemma, a scientific phenomenon that confronted mankind with an impossibility, at once abstract and profoundly human.

In the recording process, the subject is translated into the idiom of the recording media. The idiom is a culturally accepted mode of representation. The apparatus provides a technical means of normalizing this idiom. The recordist 'frames' the subject, and utilizes a limited parameter set to control the rendering of the 'image'. While this is a very generalized model which ignores the many nuances that structure the recording process, it serves to establish a fundamental link between

the representation and the viewer's faith in the implicit reality underlying the recording. Once the recording is registered on the medium, its separation from the circumstances of its creation is complete. It acquires an independent existence and, as such, can be subjected to scientific analysis. The recording as 'object' renders the mediated experience reproducible. What made EVP unique was the fact that the phenomenon was implicitly connected to the recording process itself, calling into question the objectivity of established modes of representation.

Liquidon::parallel structures

Liquidon addresses issues of technologically mediated communication and the mutability of encoded representations. Liquidon is composed of two interpenetrating layers, visual and acoustic, bridged by a computer network. These layers provide a means of mirroring the relationship of the voice entities to mankind. The visual and acoustic systems evolve individually but exert varying degrees of influence on one another. The network serves as a bridge, circulating parametric data between the layers. This circulation creates an evolving architecture that engenders an adaptive interpenetration of the acoustic and visual spaces. The data provides an intercurrent that prevents either system from reaching stasis. This structural noise "no longer remains inextricably locked into empiricism but is transformed into an abstraction of another noise." [Kahn pg.25] This abstraction is reactive, recursively modulating the internal dynamics of the component media layers. The two systems remain suspended, locked in an embrace that becomes actualized in brief moments of synchronization. These temporal synch points collapse the visual and acoustic spaces, creating a hybrid topology. This collapse is produced by what Chion terms synchresis, a word derived from synthesis and synchronism. Synchresis is "the forging of an immediate and necessary relationship between something one sees and something one hears at the same time." [Chion pg.224] This phenomenon causes the observer to merge and normalize the disparate elements of the visual and acoustic fields. This produces a unified audio-visual environment.

The synchronization between sound event and the visualization of its source engenders causal listening, described by Chion as "listening to a sound in order to gather information about its cause (or source)". [Chion pg.25] This mode of listening is part of the audiovisual contract, a "symbolic pact to which the audio-spectator

agrees when she or he considers the elements of sound and image to be participating in one and the same entity or world." [Chion pg.222] The intrinsic volatility of Liquidon's visual and acoustic systems prevents this unified space from persisting. The audiovisual contract fails and the component spaces separate. This process of synchronization and dissolution models the incursion of the voice entities, whose mercurial manifestations imply points of synchronization between our world and another.

Raudive recognized the fundamental interdependence of mankind's conception of reality and the existence of an opposing system. "A world establishes its reality by its relationship to an anti-world; and the anti-world is a condition for the relative existence of the world and of all that is portrayed as reality in man." [Raudive, pg.9] This conception of countervalent reference systems serves as an important structural and conceptual foundation for Liquidon. The visual and acoustic layers, representing divergent but related compositional systems, symbiotically describe and actualize one another. This definition is accentuated along the temporal and spatial synch points, wherein the intersection of these systems becomes apparent to the viewer. This intersection is in a perpetual state of flux, reacting to the internal states of the component systems. This creates a flexible architecture that incorporates the viewer into a dynamic perceptual framework that bridges the coexistent visual and acoustic compositions. Chion writes: "in order to describe perceptual phenomena, we must take into account that conscious and active perception is only one part of a wider perceptual field in operation." [Chion pg.33] The viewer intuitively constructs relationships between the visual and acoustic fields, allowing patterns and, by extension, rhythms to evolve. "The object does not extend itself to the waiting individual: the individual finds it. And if meaning and feeling resides there, it is because the individual finds a piece of himself or herself." [Kahn pg.27]

Liquidon::visual layer

Liquidon is designed for the AGAVE, a low-cost portable VR system developed by the Electronic Visualization Laboratory, University of Illinois at Chicago. The AGAVE consists of: a dual-processor PC running Linux, two DLP projectors with linear polarizing filters, and a rear-projection polarization-preserving screen. The AGAVE utilizes passive stereo projection. "To achieve the stereo effect, two projectors are

used for the single screen, one for each eye's view. Differently polarizing filters are placed in front of each projector lens, …users wear polarizing glasses where each lens only admits the light from the corresponding projector." [Pape, Anstey, Dawe pg.2] The passive stereo display requires two separate channels of video, one for each eye. To accomplish this, the PC is equipped with a dual-channel graphics card.

Liquidon was implemented in Ygdrasil, an extensible VR authoring environment developed by Dave Pape at the Electronic Visualization Laboratory, University of Illinois at Chicago. Ygdrasil is written in C++ and incorporates SGI's OpenGL Performer visual simulation toolkit and the CAVERNsoft G2 networking library. Ygdrasil features a modular architecture that is based on dynamic shared objects. Customized DSOs are seamlessly integrated with the core library, which is designed to handle basic interaction and navigation. From a development standpoint, I found Ygdrasil's modular authoring approach appealing. It enabled me to subdivide the piece into a number of discrete components, which were developed independently and incorporated on the script level.

I began work on Liquidon with the idea of using image-based modeling to construct an environment. Image-based modeling uses image data to construct three-dimensional forms. The goal of this technique is to create accurate three-dimensional models from conventional photographs. The first step was to develop an efficient algorithm. While researching height-field generators, I discovered a freeware application called CyberMesh. CyberMesh, developed by programmer John Knoll, reads image files and extrudes a polygonal mesh based on the luminance value of each pixel in the image. I found the effect compelling and decided to adapt this algorithm to a video stream, enabling the dynamically generated model to be continually updated. I wrote a Ygdrasil node that generated a surface composed of cubes. The node read a sequence of images into a buffer and used the luminance of each pixel to scale a corresponding cube in the Y-axis. It was effective in conveying form but necessitated working at very low resolutions to maintain an acceptable framerate. Running at a quarter NTSC, the application averaged less than ten frames per second. I decided to experiment with other forms of geometry to see if I could reduce the latency. I chose light points, a geometry type specific to OpenGL Performer. Light points are emissive objects that exhibit properties not found in

standard point primitives, the most important of which is perspective behavior. This approach proved to be very efficient; using light points I was able to consistently achieve over thirty frames per second.

After settling on light points as my chosen geometry, I began to experiment with multiple video buffers. I built in a set of messages to dynamically change video streams and control rendering attributes of the surface. This afforded me a fair degree of control over the system but I was dissatisfied with the static nature of the prerecorded video material. Generating new imagery meant that I had to record, digitize, scale, and format each frame. This methodology ran counter to my goal of developing a flexible non-deterministic compositional system. In addition to this, I realized that storing multiple uncompressed video streams in memory would place finite limits on the amount of material the system could process. I began to investigate the possibility of using a camera as a live input. I discovered the Video4Linux API, which seemed well suited to my needs. "Video4Linux is intended to provide a common programming interface for the many TV and capture cards now on the market, as well as parallel port and USB video cameras." [Cox pg.1] I began working with an AVerMedia TV98 capture card. After some initial testing, I began to develop a Ygdrasil class to communicate with the capture card.

The surface DSO generates a 160x120 grid of light points. Each point is mapped to a corresponding pixel in the scaled video buffer returned from the capture card. The points are offset based on the luminance of the associated pixels. The surface is updated each frame, generating a fluid topology. The rendering of the surface is controlled by a set of messages that update light point parameters. Messages are received from the sound composition via the network. This network based synchronization provides a high degree of flexibility and minimizes latency. For the performance, I choose to aim the camera at an analog television set. The television is tuned by the performer. This technique of using live transmissions references the work of pioneering EVP researchers, such as Friedrich Jurgenson, who captured voice manifestations impinging on commercial radio broadcasts.

Liquidon::acoustic layer

The acoustic layer is constructed of a series of synthesis and processing modules developed in Cycling '74s Max/MSP authoring environment. Max/MSP is "a high-level graphic programming language, written in C." [Winkler pg.47] Max/MSP is designed for authoring real-time computer music applications. The modular nature of this graphical language enables authors to create applications of arbitrary complexity. The "programs are created by connecting *objects* on the computer screen graphically. Objects are algorithms that precipitate actions." [Winkler pg.]

Sound plays an important role in the perception of immersive computer generated environments. In most VR applications, sound serves a predominantly diegetic function. The sound is integrated into the environment, providing the user with additional feedback. "The goal of a fully accurate binaural 3D sound-rendering system is to present the listener with an audio experience that is indistinguishable from reality." [Foster, Schneider pg.137] The construction of a transparent system that perfectly mimics the "audio experience" of the real has long been a goal of the simulation industry . I designed Liquidon's audio system with the intention of creating an acoustic space that would interact with the projected environment, yet retain its autonomy. The compositional system facilitates network based synchronization of the component media layers. The sound composition evolves autonomously, structured loosely by the performer's actions and the incoming data from the visual processing system. The interface to the underlying synthesis and processing modules provides control over a small subset of the available parameters. These parameters feed into individual branches of the signal processing network. The collective interaction of the various branches produces the composition. The interface allows the performer to react to the visual processing system, which is itself influenced by parameters extracted from the audio system. This recursive interaction creates a form of structural feedback.

Liquidon's audio system is built around a granular synthesis engine. "Granular representations are a useful way of viewing complex sound phenomena - as constellations of elementary units of energy, with each unit bounded in time and frequency. " [Roads pg.168] The grain is a discrete unit of sonic energy derived from a waveform. The duration of a grain is typically between 5 and 100 milliseconds. The grain generator atomizes the incoming waveform, storing the resulting grains in a

buffer. The stored grains can be played back non-sequentially and at an arbitrary rate, creating rich sonic textures. I implemented the granular synthesis system using software developed by Nathan Wolek. Nathan's Granular Toolkit is a set of externals and abstractions developed to facilitate efficient realtime granular synthesis in Max/MSP. For the performance, a short-wave radio was used as the input to the synthesis engine. Incorporating a live radiophonic input seemed an ideal way to further engage the experimental methods employed by EVP researchers.

The use of radio has a long tradition in avante garde composition. Describing John Cage's experiments with radiophonic composition, Frances Dyson writes "live and improvised radiophonic transmission liberates sound from the objectification recording imposes" [Dyson pg.381] This statement embodies my own feelings in regards to the simulated chaos of compositions based on quasi-deterministic systems. Digital representations of chaotic systems are inherently problematic. The computer "is an almost pure vacuum, devoid of unpredictability." [Rokeby pg.45] Random number generators use deterministic algorithms to produce low-frequency streams of pseudo-random numbers. If the generator is initialized with the same seed, it will always produce the same results. Since the sequence of numbers is purely deterministic, it can only approximate a true random sequence. The objectification these algorithms impose is less apparent but implies some of the same limitations as the recording process. At some level, the composition becomes reproducible. Radio provides a means of transcending this determinism. Tapping into the continually variable informatic space of wireless communications, radiophonic composition offers a profoundly analog chaos. "The existence of noise implies a mutable world through an unruly intrusion of an other, an other that attracts difference, heterogeneity, and productive confusion; moreover, it implies a genesis of mutability itself." [Kahn pg.22] This "mutability" becomes a pathway to subjectivity.

Liquidon::conclusion

Liquidon is a hybrid composition that is based on a non-deterministic paradigm. The visual and acoustic layers of the composition create discrete spaces that evolve in complex permutations of interdependence, actualizing a unified audio-visual field in transitory moments of synchronization. This interdependence creates a complex set

of relationships that recursively modulate the structure of the composition. Liquidon draws its inspiration from the field of ITC, a research discipline dedicated to technologically mediated communication with the dead. It addresses the mutability of encoded representations and explores the emergent properties of stochastic phenomena.

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