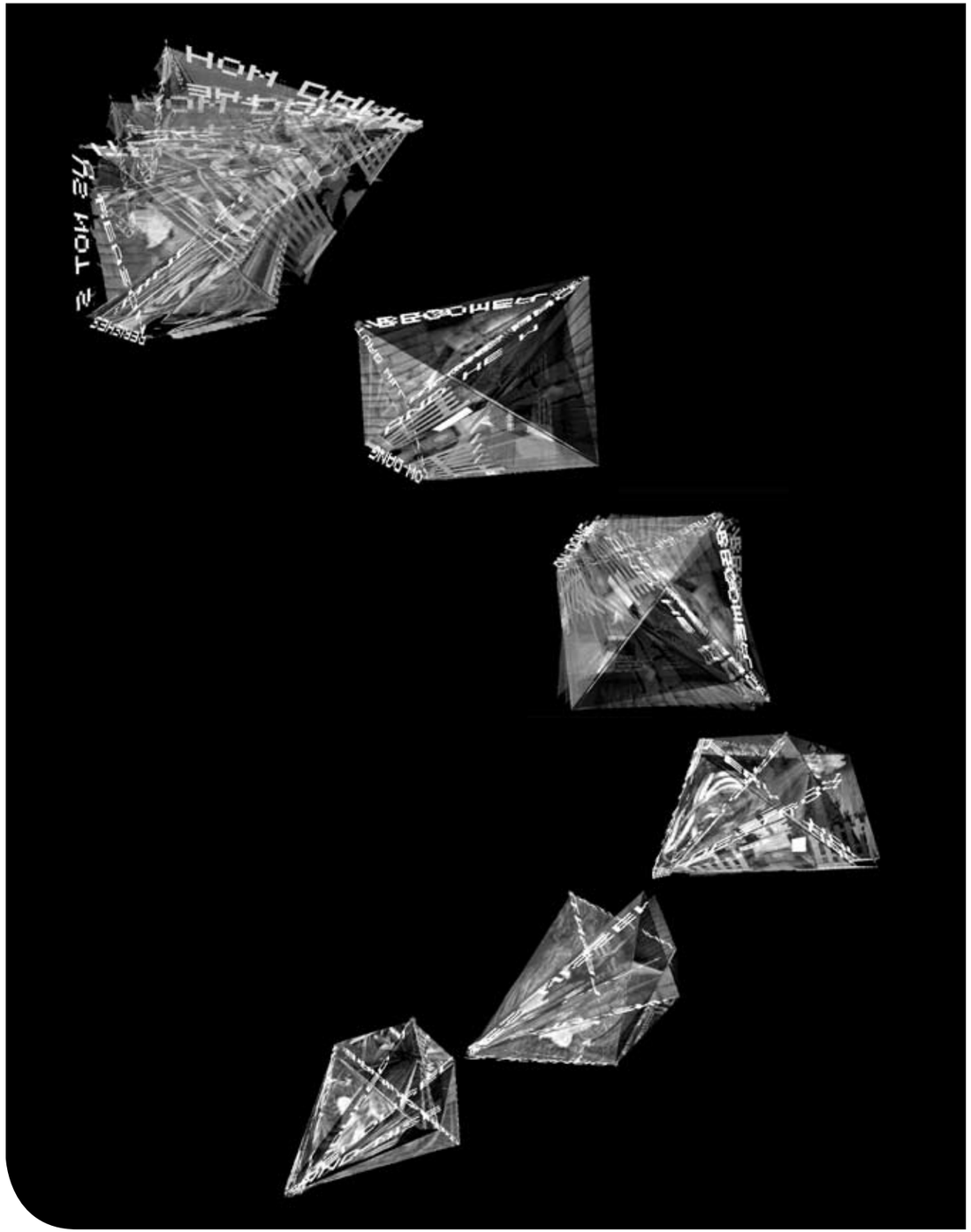
ATAU TANAKA

COMPOSING AS A FUNCTION OF INFRASTRUCTURE

CD TRACK 13



Music is an art form that traditionally has tended to inhabit space. As an acoustic form, it depends on physical space for its manifestation. Yet with the advent of recorded media and audio data storage, music's relationship with space has shifted. The arrival of recorded media, Walkmans, and peer-to-peer music sharing networks, have transposed music out of physical and public space towards personal and interpersonal space. This shift from acoustical space to network space is a transformation that has yet to be thoroughly considered from a musical perspective.

This text seeks to examine the potential impact on compositional practice proposed by such changes of infrastructure. An approach built on the understanding of the acoustical relationships of sound and space can be expanded to investigate the possibility of a social language for music occurring across networks. I describe the composition of a work for radio and the Internet to lend concrete examples to the concepts proposed. Ultimately I hope to chart out a possible methodology for addressing new spatial paradigms in music.

MOTIVATIONS Prométhée Numérique is a radio art piece commissioned by German radio SWR2, for network installation, live performance, and radio broadcast in 2002. The work is structured around a web-site and relies on input from Internet users. The challenge was to create a composition that made use of radio and Internet, mixing the two media while maintaining their distinguishing dynamics and characteristics. In composing the work, I sought to recreate in musical microcosms the social dynamics observed in each respective medium. The result is a work that extends upon the dramatic and experimental traditions of *hoerspiel* [radio drama] to propose a critical investigation of the humanistic implications of network media.

When asked to create a piece for radio and Internet, my response was to seek out a dynamic that would differentiate, not amalgamate, the two media. Although Internet audio streaming has had some impact in democratizing audio broadcasting, most net-radio projects have simply replicated models of traditional radio. Meanwhile, commercial broadcast radio has seized the opportunity to mirror programming on the Internet as a means to extend geographical reach.

I was interested to explode this scenario of one medium duplicating, worse yet being co-opted by, another. I sought to exploit each constituent medium for qualities particular to its infrastructure and using one as a foil against the other. I investigate and question the claims staked out in defense of each medium: Is the Internet truly democratic and open? Is radio really free and ubiquitous? My goal was to create a musical piece that would traverse these different infrastructures, a single work that would have a distinct identity and mode of listening in each.

WORK The online component of the piece is an open content database that comprises the materials of the piece. These materials are available on a dynamic web site for viewing by the public before the performance. Visitors see a moving text/image/sound mass onscreen, a lifelike "creature" to which they are invited to add to its evolution. The web-site is not an informational resource about the piece, but rather is an integral component of the work itself. It is a manifestation of compositional structure outside traditional musical time/space dimensions. It lends a different light to the materials and "houses" the machine performer of the piece.

Prométhée Numérique's metaphorical basis is found in literary references, called upon to build a dramatic trajectory. The principal source texts were PROMETHEUS BOUND of Aeschylus, and FRANKENSTEIN by Mary Shelley. Also included were excerpts from PROMETHEUS of Goethe, L'HOMME MACHINE (Man a machine) by La Mettrie and CYBORG MANIFESTO by Donna Haraway. Each of these sources provides a historical view of the assimilation of technology by humans.

In the secondary source texts, La Mettrie describes human function in terms of clock-like mechanisms, concluding that Man is a machine. Haraway's text is a manifesto, a definition and declaration for cyborgs—the post technological human, the modern day Centaurs. If we fear the take over of humanity by technology,[1] La Mettrie and Haraway are historical and contemporary harbingers of this potential. All the source texts are used in four languages: English, French, German, Japanese. The different translations were stored on the online database of the piece, and were used to score the trans-continental performance.

While these literary sources provide the basis for the libretto of the work, fundamental network principles become the root of musical process. The work invites the public to enter the creative process whereby participatory Internet activity drives the evolution of the materials of the piece. A network media server is built on algorithmic processes that take the form of an autonomous life-like entity. Visitor contributions nurture the growth of the media database, constituting a continuing evolving data-organism. The work addresses the myth that there might be life and identity in the machine. Through the agency of musical network interaction, the work explores human-human interaction in a machine-mediated world.

WEB The online creature is made up of sounds, images, and texts that comprise the core compositional materials. It is the entity that will be the machine performer alongside the human performers at the premier of the piece. If its form is constituted of elements from the media database, its actions and behaviors are programmed by the use of lifelike algorithms. It is a dynamic visual form that serves as graphical interface to the database server. By interacting with this entity via the web-site, we prepare it for a performance debut. The creature embodies the information-repository nature of the Internet. The graphical form reacts to visitor actions and evolves to reflect media contributions. It can acknowledge the arrival of a visitor, and expresses appreciation when it is fed. It lives on a life cycle of "behaviors," different modes of action and interactive tendencies varying across time. These behaviors affect onscreen appearance and movement, sound generation, reaction to user provocation, and its overall "mood," be it active, dormant, or out of control.

It is through the creature that we perceive the different elements of text, image and sound of the piece. Text from the literary sources is used to construct a 3D-like polygon frame that constitutes the skeleton of the beast. Lines from the text are mapped to the skeletal frame structure of the creature's body onscreen and scrolls through the bones as the creature moves across the screen. The skin of the creature spans the space between the bones. Images from the database are called up and stretched across the non-rectangular surfaces delineated by the text skeleton. Media uploaded by visitors are integrated into the skin of the creature. The behavior state of the creature determines the uniformity of images mapped across the different surfaces, as well as the rate of change of the images, affecting the visual stability or erratic shape. Points of intersection of the bones are the joints where sounds emerge. The source sounds are also culled from contributions held in the media database. The mood of the beast determines the choice of sounds and their rate of change. The geometry and sound is determined by the elemental and behavioral state of the creature at any given moment in time.

These basic elements are distributed and interconnected onscreen to embody the creature and at the same time reflect their distributed network origins. One part of the interface proposes enigmatic statements, excerpts drawn from the texts of the piece. These provocations proposed by the creature instigate the visitor to contribute sounds or images. The user selects a media element on his own computer that answers to the proposition, and uploads it via the web interface. The user may or may not see his element appear immediately. The creature reacts to acknowledge these injections of media by sending e-mail and SMS (short text to cell phone) messages to the contributing user. If the user has just contributed a media element, the creature is kind and thankful. If the user has not visited the site in some time, the creature begins to nag the user, behaving like a jilted lover. Through this treatment of the various precomposed and web contributed elements and a dynamic of reaction provoking reaction, I sought to give form to the notion that Internet activity and content could be considered a living entity.

PERFORMANCE The performance took place on March 23, 2002, and connected three geographic locations via the network: Karlsruhe Germany, Ogaki Japan and Montréal Canada. Each performance site was equipped with multiple client/server systems for transmitting and receiving audio streams and live images with one another. The remote performance configuration is a critical investigation of the effects of the network on human communication. We are told that the modes of communication made possible by the Internet can collapse physical geographical distance. In attempting to carry out this promise, one quickly confronts the reality of time delays and quality loss. I did not wish to hide these realities but instead to consider them as qualities contributing to the compositional process. Network transmission latency became the "acoustic of the network"[2] to be respected and used as one does when composing for specific resonant spaces. If the web component explored spatial domains, the performance addressed temporal domains.

The time delay of data transmission in each direction was thirty seconds—far too long to even try to compensate by performative anticipation. Simultaneity took on a new meaning, expanding the notion of a musical instant to a swath of time. Connecting three points in this way added a multidimensional complexity that created a different combination of time-of-arrival of sound sources at each performance site. This precluded the possibility of imposing a single temporal displacement as a corrective measure. The result was a music exploiting time in a relative, and not absolute, manner.

This configuration had the result to create one performance, one music, that was simultaneously perceived differently depending on locale. There were five distinct audiences — Karlsruhe, Ogaki, and Montréal live, along with radio and Internet audience—each with a different sonic regard to this "single" piece of music. It was as if the piece had five simultaneous remixes. Some listeners were able to listen to both the live radio broadcast and the Internet streams, thus able to layer two "remixes," or create a mix of their own.

The hub of the piece was a concert hall in Karlsruhe. The performance was the physical point and temporal moment of contact between network medium and broadcast medium. As composer, I orchestrated the remote performance modules, artists from Ogaki and Montréal. Their interventions came via network media streaming and were mixed and shaped for broadcast.

The performance also gives structure to the amorphous online elements, and ties the bond between radio space and Internet space, between defined time and suspended time. At performance time, the creature cycled through its five behavioral phases, articulating sounds and images that had been uploaded by web visitors prior to the performance. These different layers—sound or image, sampled or synthesized, pre-structured or live, are sculpted following a compositional score.

RADIO The orchestration and participatory structure of the performance creates a situation where the network's character comes to life, to be evoked in the dramatic trajectory of a one

1
Neil Postman, Technopoly : THE SURRENDER OF CULTURE OF TECHNOLOGY, (New York: Vintage Books, 1993).

2
Atau Tanaka, "Netmusic—a Perspective." In catalog, FESTIVAL DU WEB, (Paris: Webart, 1999).

hour radio broadcast. The radio is the final perceptive window, a rich audio vessel that reconciles the diverse elements of machine performer, human performers, pre-stored database materials and live performative materials into a nonhierarchical yet differentiated musical form. The spatial reach of the web manifestation and the temporal breadth of the performance are channeled to the radio, a medium with its own space-time dynamic.

Each medium has its own time-space specificities. Concert performance is specific both in time and space—it is an event that takes place at a precise time, in a precise location. Information on the Internet, on the other hand is time-space generalized. Network data is ideally universally accessible. The temporal axis of the network is not event based, but demand based. Music on the Internet, then, is normally expected to be accessible anywhere anytime. Radio is very precise in the time axis but quite general in the space axis. Broadcast programming is pre-planned down to the second, while the reach of the signal can cover a wide geographical area. By presenting Prométhée Numérique over radio, the time/space specificities of networks are hybridized with the corresponding qualities of performance. Radio is the destination medium where the disparate elements fuse.

COMPOSITION Prométhée Numérique is a composition deployed over these infrastructures. It develops a core musical and dramatic theme, orchestrated over different media. The structure of the composition was represented in a notated score. The score did not make use of traditional musical notation. Instead, it was written in graphical form across a reference timeline. It served to coordinate the remote performers, and synchronize them globally with the progression of phases of the creature. Each performer had the full score and could see what the other performers were meant to be playing at any given time.

The score serves as the unifying element of the piece that reconciles the otherwise distributed geography and dispersed temporality of the performance. It traverses distance to create a cohesive sense of space. It gives a common time reference that resolves network latency. While it does not eliminate transmission delays, the score provides an anchor point from which the relative time offsets can be perceived.

The compositional structure takes the qualities of the various elements in the piece: participative nature, machine performer, time latencies, and makes them part of a musical form inspired by the conceptual and literary themes. The unpredictable nature of the network contributions and time delays can be seen as the Promethean fire we must tame. The life-like algorithm running on the web server is the monster we may or may not be able to control or co-exist with, thereby confronting the foundations of musical instinct.

The metaphors are the basis of a dramatic structure, a composition of broad strokes that could instigate tendencies within which unanticipated actions could be elicited from the participators and creature. This high level structure is defined as a series of five stages defining phases in the life of the creature. These phases exist on multiple time scales depending on the local destination medium. They are defined as:

1. Dormant
2. Awakening
3. Excited
4. Out of Control
5. Tamed

In the pre-performance web period, the creature lives phases 1-3 in the course of one month. Depending on the current phase of the creature, it can be more or less lively onscreen, more or less responsive to user action. The expanded time scale of the online period gives web visitors a chance to get to know the creature in a certain phase at the same time perceive an evolution.

At performance time, phases 1-3 are relived in accelerated time, and then extended into phases 4-5. Here the creature lives one entire cycle of its life in a 40 minute time frame. Rather than idling in the ambient sphere of the web, this time the creature is onstage alongside human performers. The behaviors take on new implication with respect to interaction with the public and participants.

After the performance, the creature returns to its web life, alternating between the intermediary phases. It is not a simple repetition of previous phases—here the creature is fully formed, with an ever growing media base, an entity that has lived life once and who lives on awaiting the next performance of activity.

MEDIA PERSPECTIVE The work extends the notion of idiomatic writing—that a music written for a certain instrument should respect, abide by, and extend, the qualities of that instrument. Here these principles are applied to media that form the building blocks of the piece. Networks, a participative dynamic, and interaction are considered as materials of the piece. The view of idiomatic composition serves to exploit the inherent musical qualities of these materials.

By tracing the history of assimilation of technology in music, we gain insight into music's relationship with media. The advent of recording technology brought fundamental changes in our techniques for creating music. Recording once served as a way to capture and represent a live musical performance. It was a displacement of the moment of action. The development of multitrack recording, studio production techniques became more sophisticated and diverged from the practice of live performance. By directly manipulating tape and other elements in the studio, electro-acoustic music, a music unrelated to instrumental performance was born.

The continuing development of various recording formats drove the development of academic and popular compositional form. 45rpm vinyl records limited recording time to several minutes, giving rise to the pop single of the 1950s—a song that makes its impact in three or four minutes. With the arrival of 33rpm records in the 1960s, recording time increased to twenty minutes per side. This led to works of electronic music composed specifically for the vinyl medium. Meanwhile in popular music, the 33rpm format combined with multitrack recording technology brought about the "concept album."

By the 1980s the sophistication of the recorded medium completed the inversion between performance and recording. The recorded medium was often thought of as a poor copy of a live human performance. The listener yearned to have the chance to see the musician in the flesh performing live. As studio sophistication increased, musicians found themselves onstage unable to recreate the rich and complex layers and textures composed in the studio. An audience would attend a concert expecting to hear the artists perform exactly as they had on record. The recording usurped the position of the original performance as the absolute reference. In less than one hundred years the recorded medium went from being an emulation of the human to becoming something larger than life that humans struggled to recreate.[3]

IN CLOSING By creating an open musical form, I wanted to explore the propose of the Internet as a shared environment and participatory space. Public opinion generates broad statements about technology, both enthusiastic and critical. The integration of networks into daily life leads

3
Jacques Attali, NOISE: THE POLITICAL ECONOMY OF MUSIC, trans. Brian Massumi, (Minneapolis, MN: University of Minnesota Press, 1999).

us to consider these intangible data infrastructures as social spaces. We often hear claims that the Internet is:

an information space
a communications space
a democratic space
a "virtual" space
an Anglo-centric space
a non-temporal space
a self-perpetuating space

I take a musical stance to consider these statements, putting to task my role of composer. In doing so, I am interested in questioning the title of composer and how the resulting work takes on a form to reflect that process.[4]

Throughout the compositional process, I was treating network and visual media, never forgetting the fact that the project was ultimately a radio project. The use of text paid due respect to the medium of *hoerspiel*. At the same time, the multilingual and abstract settings build upon traditions of experimental radio art. Text readings were transformed through the process of network collaboration to create the soundscapes guiding the radio listener through the dramatic trajectory. Linguistic abstraction creates dramatic tension and release of meaning dependent on the local language of the listener.

This is not the first musical piece inspired by the myth of Prometheus. Composers through time have called upon the legend in symphonic, operatic, and popular works. The story carries a power that seems to speak to musicians. For me it was particularly appropriate in offering a foundational viewpoint from which to address issues of media technology and network societies. It provided the basis to consider the fascination with the possibility of life in the machine.

The pertinence of historical writings as commentary on technological society served as point of departure. The instrumental perspective became the process and means to explore the possibility of exploiting space/time continua as compositional material. The ultimate challenge was to see how these concepts would be apparent through the looking glass of radio.

If music has evolved to utilize qualities of new instruments, then it would seem that composers have a natural tendency to find an idiomatic language for each new medium.[5] At the time of this writing, musicians and listeners are still coming to terms with the possibilities afforded by network-based dissemination of music. I stopped short of putting in question the act of composition itself, instead seeking out its place in these infrastructures. The composition I describe here is an attempt to explicitly apply the notion of idiomatic composition to networks, to find a musical language that reflects inherent qualities of the medium.

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4
Atau Tanaka, "Musical Implications of Network Infrastructures: Perturbations of Traditional Artistic Roles", in ACTES DE PROCEEDINGS H2PTM'01: HYPERTEXTES HYPER-MEDIAS, MOUVELLES ECRITURES, NOUVEAUX LANGAGES, eds. Balpe, Leleu-Merveil, (Paris: Hermes Science Publications, 2001).

5
Scot Gresham-Lancaster, "The Aesthetics and History of the Hub: The Effects of Changing Technology on Network Computer Music", in LEONARDO MUSIC JOURNAL, Vol. 8 pp. 39-44, 1998.