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MAY 7-8, 2015**

**ITU (ISTANBUL TECHNICAL UNIVERSITY)
TURKISH MUSIC STATE CONSERVATORY**

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MUSICULT '15 Conference aims to trace the tracks of the dialectic correlation between music and culture. Artistic crops of this correlation from the very ancient roots of the communication with sound to the contemporary state are among the field of interest of the conference. During the conference and within the context of culture and identity, well-known periods and moments of the history of music in the all possible meanings, forms and genres will be brought to the agenda and new areas of interest, that will be revealed by this perspective, will be explored on the basis of the main focus point as "Local versus Universal".

TECHNOLOGY AND MEDIATION IN MANFRED STAHNKE'S ORPHEUS KRISTALL (2001)

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Abstract

In his 2001 opera *Orpheus Kristall*, Manfred Stahnke presents an autistic Orpheus bewildered within the complexity of a multimedia environment. The hallucinating Orpheus, struggling with his thoughts, seeks his lost self-identity amidst his immediate world and its extension represented by the use of Internet. In this pioneering work, Stahnke extends the borders of live music on stage with the integration of a vast external world through Internet as a part of the performance medium. I argue that Internet, as a technological artifact, embodies the role of mediation in *Orpheus Kristall*, clarifying the allegorical relationship between Orpheus and his extended world.

On the basis of interviews I conducted with Manfred Stahnke in 2011, as well as his own articles, where he explains much about his compositional procedures, I explore the allegorical representation of key contemporary existential issues within *Orpheus Kristall*, made possible through Stahnke's innovative approaches to digital media and microtonality. Through analysis of its intricate musical structures and technological dimensions, I demonstrate that *Orpheus Kristall* is a compelling example of a multimedia art work that draws upon mythology in order to address complex questions related to cultural and personal identity, while shedding light on the subtle amalgamation of technology and microtonality.

Introduction

Placed in Manfred Stahnke's constructed world, an autistic Orpheus is lost in the complexity of a multimedia opera. Struggling with his own thoughts, Orpheus seeks his lost self-identity amid his immediate world on the stage and its virtual extension represented by the use of Internet. He reacts to the incoming sounds that emerge from Internet in an attempt to get to know and locate himself in this media-world. He is trapped within his thoughts until three imaginary Eurydice characters appear on stage, confronting him and his hallucinations of the most traumatic event in his life: the loss of his Eurydice. As he attempts to face his memories, express his thoughts, and cope with his loss, he constantly endeavors to remember what happened to his Eurydice, throughout the course of the opera.

Orpheus Kristall, Stahnke's German opera in two media for stage and remote musicians, resulted from a cooperative project initiated by the Munich Biennale for Contemporary Opera 2002 and the Siemens Art Program to explore the theme of *Oper als virtuelle Realität* (Opera as virtual reality [all translations hereafter are mine]). In this pioneering work, the Hamburg-based composer extends the boundaries of live music through integration of a vast external world via Internet as an integral part of the performance medium. He also uses a finely-tuned system of fifty-three tones to octave, his own concept of *Differenztonharmonik* (Difference-tone harmony),

and extensive micro-glissandi to characterize the Orpheus's inner-battle within his extended technological world. In fact, Stahnke's innovative approach to integrating digital media in the performance and his extensive microtonal construction is the foundation for the entire opera.

While Stahnke exposes his sophisticated microtonal conceptions in his articles, in this paper, I explain such procedures as they relate to the use of technological structures in this opera. Of the many possible analytical approaches, I concentrate on the opera's technological aspect, arguing that Internet, as a technological artifact, embodies the role of mediation in *Orpheus Kristall* to clarify the allegorical relationship between Orpheus and his extended world.

In his book *What things do* (2005) the technology-philosopher, Peter-Paul Verbeek emphasizes on the concept of "mediation" as follows:

"I articulate an approach to technological artifacts in human existence. The key concept of this approach is "mediation". [...] When technological artifacts are looked at in terms of mediation - how they mediate the relation between humans and their world, amongst human beings, and between humans and technology itself - technologies can no longer be pigeonholed simply as either neutral or determining." (Verbeek, 2005, p.11)

In other words, based on the concept of mediation, technology is able to shape the nature of the human-world relationship. Here, Verbeek looks at technology as a possible form of mediation for human beings to be confronted with reality.

The allegorical relation of Orpheus to his extended world as realized by the remote musicians symbolizes the reflections of Orpheus's memories of Eurydice and her catastrophic death. Integrating the "medium" of Internet to clarify the above-mentioned relationships and extending the borders of the live stage-music represents a notable technological issue in *Orpheus Kristall*, as I shall demonstrate.

The World of Stahnke's Orpheus

For this operatic collaboration, the composer, librettist, director, and the dramaturge agreed upon a different conception of the Orpheus myth, even though Orpheus has been the subject of several artistic projects throughout history. The question is: what would be Stahnke's contribution to the *Orpheus* myth? Stahnke's own answer is related to the plot: "This opera does not tell a story. The story is rather pushed far behind; only an *echo* of the story remains to be heard." (Trotzdem ist diese "Oper" kein Ding, das eine Geschichte erzählt. Die Geschichte ist eher so tief eingesickert, dass nur ihr *Echo* zu hören bleibt.) (Stahnke, 2002, p.196)

Stahnke considers, however, at least two distinct, *possible* storylines. First, the classic story of Orpheus: Orpheus descends to the underworld of Hades to retrieve his beloved Eurydice; he fails, and eventually collapses. Second, a transformation of the Orpheus myth: he escapes from the underworld, but Eurydice seduces him when she realizes that she would no longer be able to have contact with Orpheus. (Bargrzan, 2012, p.106-110)

In Stahnke's version of the myth, however, the notion of "nature" is even more important than in the original story. In my interviews with Stahnke, he addressed the following relationships of the original Orpheus myth, as well as his own rendered version, to the concept of nature:

"Orpheus is a magician who reaches out to stones, animals, and plants, through

his music. He has power over the cosmos, upon the humans. It is at once 'Animism,' considering nature as the spirit of everything and everyone, but also 'Shamanism' which is an ancient culture and still exists partially in Siberia, Korea, or Japan. In other words, Orpheus is a Greek version of the old Shamans." (Orpheus ist ein Zauberer, er ist mit den Steinen, mit den Pflanzen, mit den Tieren verbunden. Er hat Macht über das Universum, über die Menschen. Eigentlich ist das Animismus, die Natur als die Seele des Ganzen zu betrachten, oder Schamanismus, der immer noch in Sibirien, Korea oder Japan existiert, das ist eine uralte Kultur. Orpheus ist sozusagen eine griechische Version der alten Schamanen.) (Bargrizon, 2012, p.107-108)

In Stahnke's opera, Orpheus rules a world that he created—a world that extends beyond the borders of the stage. The composer adds some other islands across the world to Orpheus's territory, the hall, which are connected to the main stage through Internet; from New York and Berkeley, to Amsterdam. Within this new world, much as in the original myth, Orpheus falls in love with Eurydice, wins her, and eventually loses her. "He even may have murdered her", says Stahnke; leading to another possible component of the opera; "to make," "to build," but to "build in vain;" since we cannot "win," we "destroy what we have built." (Er hat sie vielleicht auch gemordet, das ist eine mögliche Komponente in unserer Oper. Das hat uns die Texterin nahe gebracht: Das Bauen, aber das Umsonstbauen, weil ich die Welt nicht gewinnen kann, deshalb zerstöre ich sie.) (Bargrizon, 2012, p.108)

As a matter of fact, all these possible plots coexist simultaneously, throughout the opera.

Crystals and Building Internet-Opera

In this opera, the *Kristall* is a metaphor for nature; for Orpheus's corrupted world. This term is borrowed from the Austrian physicist, Erwin Schrödinger's concept of "aperiodic crystal" from his influential book *What Is Life?* (Cambridge: Cambridge University Press, 1944). For Stahnke, the complicated, rigorous structure of a crystal is also a metaphor of his intricate, comprehensive microtonal system, comprising fifty-three tones to octave. He says:

"How are we able to deal with an Internet opera which includes building crystals (tone systems) and Internet? Tone systems are analogous to crystals. But in this omnivorous Europe, the crystal is already very old (our great-grandfather: the twelve-tone equal temperament.)" (Wie ist so ein Ding „Internetoper“ zwischen Kristallbauen und Internet-Laufenlassen zu planen? "Tonsysteme" gehören zu Kristallen, aber in diesem allesfressenden Europa sind die Kristalle gealtert (unser Urgroßvater "Zwölfton-Temperierung"). (Stahnke, 2001, p. 27)

Stahnke employs a specific just-intoned tone system, including the partials up to the twenty-first harmonic in the harmonic series. His system consists of fifty-three equal intervals, which linearly would build a scale of one-eighth tones. In other words, using intervals imbedded in the harmonic series, he creates an approximate elaboration of equal temperament, extending the realm of twelve tones to fifty-three tones to octave. About the relationship of this scale to the ancient musical cultures and its characteristics, Stahnke mentions:

"That is an old *Bonsaquet* and Baroque system. Even the ancient Chinese people knew that building up a scale of fifty-three natural fifths, practically results in the

octave. [...] Using fifty-three tones to octave opens the door to a lexicon of perverse and useful intervals. There, we are suspiciously close to world of 'noises.'" (Das ist ein altes System. Bonaquet, Barok. Sogar die alten Chinesen wussten, dass nach 53 reinen Quinten übereinander praktisch die Oktave erreicht ist. 53 temperierte Schritte pro Oktave ergeben linear zirka Achtteltönen. [...] Mit 53 Tönen öffnet sich ein Lexikon des Perversen und Nützlichen, wir sind dem rauschen verdächtig nah). (Stahnke, 2001, p. 27)

Here, we see how Stahnke's tonal concept has its roots in the ancient world, representing the world of Orpheus, as well as nature; questioning our equal tempered tonal world.

The scale consisting of fifty-three tones to octave and micro-glissandi are therefore the most essential elements in the tonal construction of this opera. Alongside juxtaposition of the stage- and Internet-music, these tonal elements create contrast between formlessness and form. Orpheus desperately desires to reach his now-dead, formless Eurydice. Hence, he travels to the underworld, where the distinction between form and formlessness is not as clear. He nearly regains his Eurydice, but he loses her again, and therefore loses himself as well. This dichotomy between form and formlessness is conceived throughout the work by means of a contrast between the realm of half and whole tones and the domain of microtones, all of which is amplified by the world of Internet-sounds, in contrast to the stage-produced sounds. To realize the dichotomy of form and formlessness in the music, Stahnke expands the fixed half and whole tones to a world of endless tones, where the tone is an unfixed phenomenon. By allegorical adoption of an intricate, multi-layered microtonal structure, he breaks the barrier of the equal temperament that had characterized our somewhat limited world of the tempered fixed tones.

As another allegory to Schrödinger's concept of "aperiodic Crystals," Stahnke's concept of "Difference-tone harmony" (*Differenztonharmonik*), which is the fundamental of opera's harmonic structure, is equally significant:

"If this enormous apparatus, the Internet, with its uncontrollable character has to be integrated on the stage, as a counterbalance, a precisely-built 'crystal' should also be present on the stage. My difference-tone harmony could become a comprehensive meloharmonic concept for the entire opera." (Wenn schon dieser riesige Apparat des Internet mit seinem unsteuerbaren Spielcharakter in die Oper einbrechen soll, müsste als starke Gegengewicht ein sehr präzise gebautes "Kristall" auf die reale Opernbühne gestellt werden. Meine Differenztonharmonik könnte zu einem umfassenden meloharmonischen Konzept für die Oper werden). (Stahnke, 2001, p. 27)

Meloharmony is a term coined by Stahnke. In his article "Hybrid Thinking in Meloharmony," published on his official website (<http://www.manfred-stahnke.de/stahnke-english.html>), Stahnke explains this notion as follows: "meloharmony is a word that I came up with to denote the interrelationship of vertical and horizontal pitch organization within an open microtonal field. By definition, this field is open to every aspect of pitch organization; interval relationships may exist within this field regardless of whether or not they are also related to older forms of melodic-harmonic relationships. The only restriction lies in the avoidance of addressing 'anonymous' fields, where neither horizontal nor vertical pitch relationships play a distinct role."

In *Orpheus Kristall*, Stahnke's meloharmonic construction is rested upon his concept of Difference-tone harmony. This concept refers to what happens naturally in our ears when we hear any interval. As soon as we hear an interval, its summation tones (*Summationstöne*) emerge as overtones, and its quadratic as well as its cubic difference tones (*Differenztöne*) emerge as undertones. Extending the scope of his microtonal system, throughout *Orpheus Kristall*, the composer builds just-tuned chords based on both sorts of the difference-tones, constructing the harmonic structure of the opera.

A duality rises from the conflict of the indefinite, improvisatory world of Internet sounds, and the definite, intricately-built microtonal system of this opera. In fact, duality is a constant present notion throughout the opera: duality of the ancient myth and the modern, technological world; duality of our solid universe (or multiverse) and the underworld (Hades); duality of the world of fixed-tones and the realm of non-fixed, fine-tuned tones.

Stahnke projects in *Orpheus Kristall*, however, a holistic world of sound and image which belong together. In order to accomplish that, a few months before the performance, the collaborators developed a platform for visual interaction in Internet. Images were shaped through the Internet platform and used later in the stage visual effects. Parallel to the tone system as shaped by the composer, these images were crystalizing. Here, we can see another connection between *kristall* and the technological element of Internet in this opera. At the beginning of the first scene, Orpheus is playing with his computer keyboard; he is trying to contact the remote musicians. While Orpheus recalls his fatal memories of Eurydice, the improvisatory, incoming Internet-sounds, in contrast to- and in combination with the strict notated difference-tone harmonies, get projected upon Orpheus on the stage; the dualities begin to emerge.

Stahnke deliberately uses unlimited meloharmonic possibilities throughout the opera. He relates the microtonal world of difference tones to the Orpheus story, using a triple Eurydice character which could be interpreted as both Eurydice and the tree-headed dog, Cerberus, as follows:

“A triple Eurydice is generated as the composed difference-tone shadows of Orpheus' voice. The woman, from the world of shadows, pulls the man (escaping love) underneath. Orpheus appears as a double of the triple Eurydice; as her projection. The sung tones are actually the projection of a modified sound space: each sung tone is instrumentally projected in a difference-tone space, which unfolds in a strict and obsessive tone system.” (Eine dreifache Eurydice erzeugt sich als komponierten Differenztonschatten der Orpheusstimme. Die Frau, hier durchaus kein Wesen aus der Schattenwelt, zieht den (vor der Liebe Fliehenden) Mann herab. Orpheus erscheint wie ein Doppel der Dreifach-Eurydice, wie Ihre Projektion. Überhaupt sind die gesungenen Töne Projektionen eines vorgeformten Klangraums: Jeder gesungene Ton wird instrumental in ein differenztongeschehen eingebettet, ergibt sich so aus einer strengen Ordnung, aus einer Obsession.) (Stahnke, 2001, p. 30)

In *Orpheus Kristall*, the musical instruments realize the difference-tones of the voices to build complex chords.

Internet and Mediation in *Orpheus Kristall*

With this opera, Stahnke comments on the foundation of our existence in an enormous, complicated exterior. In the present time, using the various possibilities of digital media, our existence is strictly tied to the outer world. In *Orpheus Kristall*, Orpheus's existence is represented not merely by the small stage where the performance takes place, but also by an external world made available through the Internet musicians' sounds. The incoming sounds, reflected in the hall, leave Orpheus to deal with his memories, as they leave us to question our existence through the opera's content. The opera seeks to break the barrier between interior and exterior realm—to overcome the old *Kristall* of equal temperament, and the immediate stage.

Breaking the barrier between the exterior is the Internet's role in this production, an allegorical mediation between technology, the opera, and its message. From one standpoint, *Orpheus Kristall* could be interpreted as the aesthetic product of the artists involved in the project and the technological possibilities which the use of Internet granted the project. In other words, a specific mythological and microtonal structure conceptualized by the composer, librettist, director, and the dramaturge on one side, and the technological structure of the Internet on the other. Here, the internet mediates the projection of the autistic Orpheus's thoughts (voice), attempting to come to terms with his memories. The remote musicians react to his thoughts and improvise. Their reflections flow back to the stage through the media of Internet, and Orpheus, now confronted with them, keeps trying; and that is how this interaction begins to exist.

The musical score for *Poème Internet* (Act I, measures 6-10) is presented in five staves: Mok., Met., Pk., Bar., and Ve. I. Kb. The tempo is marked $\text{♩} = 100$. The score is divided into sections: *Stille* (ca. 5" measures 6-7), *poème internet* (ca. 3" measures 8-9), and *ca. 15"* (measure 10). The Mok. part has instructions: "Mok., Met. wie vorher" and "plötzliches Ende. Perc. wird ab jetzt stetig kleine 'Impros' der vorigen Art einstreuen, mit dem Internet 'spielend'". The Met. part has instructions: "dazu: Pk. zunächst selten und irregulär pulsierend, nie dämpfen". The Pk. part has dynamics: *ppp*, *p*, and *f*. The Bar. part has instructions: "Bariton schlendert auf Bohne, um ein 'Computerspiel quintet.net' zu spielen", "Projektion 'quintet.net' erscheint", "Bariton tippt wie wild auf verstärkter Computertastatur *", and "verstärkte Computertastatur simile". The Bar. part also has dynamics: *ff* and *ff*. The Ve. I. and Kb. parts have dynamics: *ppp* and *ppp*. The score is marked with measure numbers 6, 7, 8, 9, and 10.

Image 1 Incoming Internet-Sounds, In *Poème Internet* of the Act I, measure 6-10

In other words, he proposes the medium of technology as a means to question the essence of art, and at the same time, art as a means to question the essence of the technology. The aim of my research was to investigate the essence of technology in the context of this contemporary opera, and at the same time, to ponder the essence of this art work by means of analyzing its technological aspects. According to Stahnke's multi-dimensional approach to the art, in *Orpheus Kristall*, he creates a new concept of opera by integrating the following elements: exotic intervallic and harmonic concepts; improvisation; exotic, African percussion instruments; and the Internet; all the while basing this construction on an elaborated version of the Orpheus' myth, which contains psychological as well as existential connotations. Accordingly, he appoints an essential role for technology in the context of his opera. This conventionally mythological, but modernly microtonal and technological opera is a relevant example of a multi-dimensional twenty-first-century art work.

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