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AUGMENTED SONIC REALITY: *Underneath* for hyperorgan by Jasna Veličković**

Abstract: *Underneath*, a piece for hyperorgan by Jasna Veličković was commisioned by Orgelpart in Amsterdam, for a project dedicated to the modern organ, which essentially incorporates new scientific and technological achievements. In this work, Veličković found a way to continue her "open project" based on conducting experiments in acoustic technology and amplifying electromagnetic fields. She introduced the technological into the tradition of organ music by using coils to test the construction of the instrument, by teasing out the invisible possibilities of the organ's sound space, and by amplifying electromagnetic waves. The composer establishes an augmented reality and points to the expansion of sound and its presence where it remains outside of what our hearing can encompass.

Keywords: Jasna Veličković, hyperorgan, Orgelpark, experiment, electromagnetic fields

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Underneath,[1] a piece for hyperorgan by Jasna Veličković,[2] originated under the auspices of the project titled *Nieuwe estafette compositie*, a project dedicated to the modern organ, which essentially incorporates new scientific and technological achievements. In 2020, in the midst of the COVID-19 pandemic, ten composers were gathered for an artistic residence programme at Amsterdam's Orgelpark to explore the possibilities of the Utopa Baroque Organ, providing a broad view of the link between organ practice as a locus of historical experience and contemporary music, which strives to push the boundaries toward a potentially infinite horizon of sound. *Underneath,* as the initial, opening "link" in a *chain composition* (Dutch: *kettingcompositie*), was premièred by the composer herself at a concert presentation of the project on 1 September 2021.[3] In Autumn 2022 Veličković was awarded for this piece the prestigious Stevan Mokranjac prize,[4] which remains Serbia's most important and only award in the field of contemporary music creativity.

This dialectical *consonance* between the tradition of organ music, spanning many centuries, and fascinating technological achievements, which enabled the "audio has become the world […] in which the limitations of the physical laws do not exist",[5] gave birth to a new synthesis – the hyperorgan.[6] The prefix *hyper* serves to highlight the close connection between modern technology and the largest and most complex of musical instruments, whose beginnings date back all the way to antiquity,[7] as well as to the improvement, upgrading, and expansion of the organ's capabilities and potentials of expression, enriching the creative and performing experience of contemporary art-

[1] Recording is available at https://www.youtube.com/watch?v=ZyD8W43xQjU

[2] Jasna Veličković (Belgrade, 1974) studied composition at the Faculty of Music in Belgrade with Srđan Hofman, graduating in 1999, and then continued her postgraduate studies (2001–2004) at the Royal Conservatory in The Hague, studying with Louis Andriessen, Gilius van Bergeijk, Clarence Barlow, and Martijn Padding. She has lived and worked in the Netherlands since 2001.

[3] Het Orgelpark is an important hub for new organ music, whose main purpose is to integrate the organ into Holland's musical life. Along with Jasna Veličković, the project also included the following composers: Claudio F. Baroni, Boris Bezemer, Aspasia Nasopoulou, Eric de Clercq, Sander Germanus, Anthony Dunstan, Samuel Vriezen, Sylvia Borzelli, and Thanasis Deligiannis.

[4] The Stevan Mokranjac prize, established in 1994, is awarded by the Composers' Association of Serbia for works of serious/artistic music premièred in the previous year.

[5] Miomir Mijić, *Audio Industry in Serbia*, Belgrade, Musem of Science and Technology, 2021, 39.

[6] The term was coined by Randall Harlow.

[7] Cf. Mirta Škopljanac-Mačina, "Orgulje u bogosluženju", *Sveta Cecilija*, 1–2, 2002, 4.

ists and performers' beyond the limits of traditional organ practice. In other words, the hyperorgan offers a new type of paradigm, associated with changes in the way we create, perform, and listen to music.

Combining the efforts of four companies – *Elbertse Orgelmakers* from Soest, the Netherlands; *Hermann Eule Orgelbau* from Bautzen, Germany; *Sinua* from Düsseldorf, Germany; and *Munetaka Yokota* from Tokyo, Japan[8] – het Orgelpark became the construction site of an analogue-digital organ that actually combines two distinct identities, mutually opposed like the two faces of Janus. Modelled after a 18th-century Hilderbrandt organ, this instrument, under the name of Utopa Baroque Organ, combines within its manipulative section operated by the performer a "classical" console (keyboards/manuals, pedals, registers/stops) with a digital one, which enables it to expand into the digital world. It is an instrument equipped with the most up-to-date software, processors, and construction solutions.[9] This instrument, endowed with "extended capabilities that seamlessly blend the electronic and acoustic worlds", serves a twofold function:[10] on the one hand, it enables historically informed performances of baroque music and, on the other, inspires contemporary authors to create new music for it.[11]

It is important to note that the tracker action of this organ, that is the system connecting the keys and digital console (software) with the pipes at the far end of the instrument, where sound is generated, is digital, that is, electro-magnetic. It was precisely at this point where the organ's digital and analogue parts come together that Jasna Veličković sought to play around with the instrument's entire sonic capacity, expanding the technical reality of her work in her own peculiar way. Plunging into an inaudible world, she enlisted the hyperorgan within a different process and brought to life an augmented inaudible and no less mysterious sonic (hyper)reality, opening new dimensions and exceeding the categories mentioned above.

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[8] For more detailed information about the instrument, see the Utopa Baroque Organ webpage at https://www.orgelpark.nl/en/Informatie/Instrumenten/Het-Utopa-Barokorgel.

[9] The organ was built on the initiative of the Utopa Foundation and has been located at het Orgelpark since 2018.

[10] Randall Harlow, "Recent Organ Design Innovations and the 21st-century *Hyperorgan*", https://www.huygens-fokker.org/. Cited in: Hans Fidom, "The Utopa Baroque Organ at het Orgelpark", in: Hans Fidom (ed.), *Orgelpark Research Reports*, Vol. 5, part 2, Amsterdam, VU University Press, 2020, 21.

[11] Cf. ibid., 15.

Experimentation – involving a unique combination of action, imagination, and knowledge – is a constitutive term in the creative practice of Jasna Veličković. For her, experimentation is a domain of the experiential, the sensory, the *experience of a procedure* that potentially leads toward various accidental discoveries. Her personal engagement plays a key part in her understanding of art. The composer explores sound in depth, finding new sources of sound and forms of expression that meet the demands of her artistic, *protean* temperament. A sort of "line of flight", which Veličković has pursued since 2008 in her retreat from the order of Western European music, initiated a great proliferation of experimental works in her oeuvre and exploration of technical devices as "artistic tools". Experimentation in the field of live electronics has led her to explore augmented sound in the domain of traditional instruments and experiment with induction coils. Exploring the link between music and magnetic fields has led her to conduct interesting projects on a sort of "no man's land", beyond the expected formats for presenting a composer's work and finally, in 2013, to the construction of a new instrument, the velicon,[12] where the source of sound is a magnet.

Underneath by Jasna Veličković is based on her perception of sound and familiarity with natural phenomena and processes, wherein she identifies unexplored creative worlds. In this work, Veličković found a way to continue her "open project" based on conducting experiments in acoustic technology and amplifying electromagnetic fields, simultaneously playing the roles of a composer, instrument builder, performer, and improviser. Uninterested in the hyperorgan's perfection, she wants to explore what lies under the range of audibility and in the very architecture of the instrument. Like the Velicon, the hyperorgan becomes a sort of playground for working with sound, predicated on using coils to amplify otherwise inaudible acoustic contents in the organ's magnetic field. This methodology has enabled her to *enter* the instrument's structure and build *from the inside* a variable sound space where perspective apparently does not exist.

[12] The instrument's name was derived from the composer's last name. "The velicon consists of a large number of magnets arranged on a metal plate that is wired for sound. The performer holds a coil in each hand; moving them closer and further away from the magnets she plays, *captures* otherwise inaudible acoustic events in the magnetic field. In its infinite permutations, incompleteness, and mobility, the velicon is a work in progress." Ivana Miladinović Prica, "The Velicon and Music of Experience", William Brooks (Ed.), Experience Music Experiment – Pragmatism and Artistic Research, Lueven, Orpheus Institute, Lueven University Press, 2021, 161.

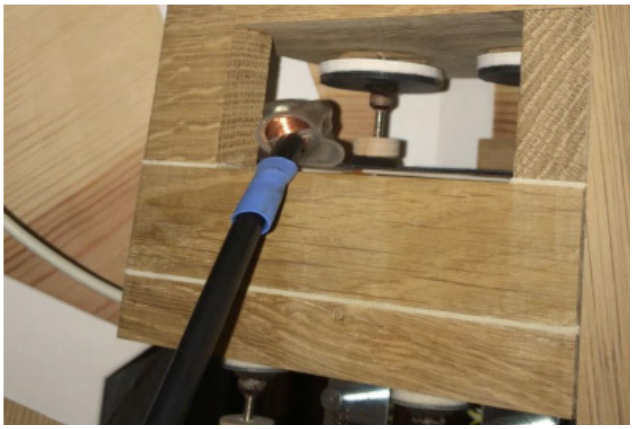
As the constructor of the velicon, Veličković this time faced the "queen of instruments", endowed with different depths and levels of hidden sound. She introduced the technological into the continuity of the organ sound by using coils to test the construction, by teasing out the invisible possibilities of the organ's sound space, and by amplifying electromagnetic waves. The composer establishes an augmented reality[13] and points to the expansion of sound and its presence where it remains outside of what our hearing can encompass. This testing game produces a unique amalgam that bridges over binary divisions: analogue vs. digital, organic vs. technological… and immerses the listener into a dynamic and imaginative sonic universe, creating a continuum wherein time is condensed, stretched, and relaxed again, "destroying" the instrument with its action and, paradoxically, rebuilding it and dismantling its aura.

Jasna's creative process goes through different stages, which may be observed in her scores, where a fixed sonic result is often missing, replaced by instructions describing the process of obtaining it. She began working on the piece by experimenting, listening carefully to the organ's sound, the sound of the hall, as well as that of an electromagnetic field. She prepared the instrument by using three induction coils, three signal boosters, a three-channel mixer, and full-range speakers. By chance, intuitively, she placed those three coils in specific positions inside the instrument: inside the tremolo wooden box, at the beginning of the second row of pipes on the left wings, on top of the solenoid, and at the beginning of the second row of pipes on the right wings, on top of the solenoid, in the middle register (Example 1).[14] The specificity of those positions is that they are right next to the electromagnetic valves. Unlike the velicon, which she "plays" by moving the coils closer or further away from the magnet, that is by capturing acoustic content in its magnetic field, here the coils are fixed and capture the electromagnetic field depending on their distance from the electromagnetic valves, which are activated by pressing the keys on the keyboard. The result is a sort of *event,* an inalienable part of an artificial experimental setup, present only in this kind of performance.

[13] The concept of augmented reality (AR) was established around 1990. "Augmented reality is the blending of interactive digital elements – like dazzling visual overlays, buzzy haptic feedback, or other sensory projections – into our real-world environments." Kevin Bonsor, "How Augmented Reality Will Work", https://computer.howstuffworks.com/augmented-reality.htm

[14] Jasna Veličković, *Underneath* for hyperorgan, score, commisioned by Orgelpark, Amsterdam, self-published by the composer, 2020, 1.

Example 1: J. Veličković, *Underneath*, position of the coils



After several hours of "playing around", she discovered a sound that fascinated her and began constructing her piece as a composer/performer/listener.[15] A coil, therefore, forms an "extension" of her sense of hearing (her extended ears) as well as the instrument's sonic power, enhancing its sonic existence. Jasna's prepared hyperorgan expands the perceptive dimension of our experience. We hear the sound of an organ from different planes and angles of perception. The sonic realities shift, exposing the relativity of human experience, while the listener is pulled into a trans-human whirl right from the start, wherein the boundaries between the two sonic worlds are not entirely clear. The respective sounds of the organ and electromagnetic field engage in dynamic interaction, which Jasna leads toward a dramaturgically well thought-out and clear culmination. The essence of her instrument is that two different flows, the organ and electromagnetic flows, placed one next to the other, are actually "forced to reflect each other. Due to the instrument's "anatomy", an organ performer cannot apply additional skill or her own sensibility, or directly affect the sound, so that both flows are unburdened by the performer's subjective experience.

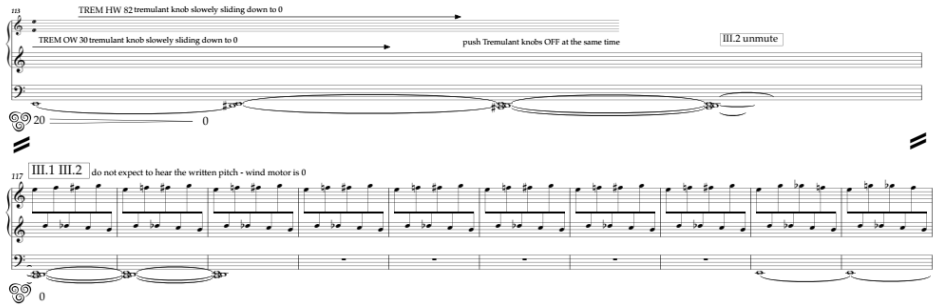
The very beginning of the piece features pure vibrations coming from the pipes. While the left hand is sustaining an F-major pedal, varying the amount of air released through the pipes (20–30) opens up their harmonics, building an elusive "shadow melody", as specified in the score.[16] In the ensuing segment the airflow is cut off and we can only hear electromagnetism, an ephemeral sound devoid of exteriority and a point of reference, which represents the augmented reality of the organ sound. Turning on the tremulant activates an electromagnetic signal, in the form of a constant pulsating line. The piece opens like a prelude, acquiring the character of a rhythmically animated toccata from the middle segment onward. The two coils placed in the left- and right-wing pipes between e^2 and f^2 transform the organ's sound in its middle register. In that section of the piece (in C), which uses middle register prepared by coils, there is a sort of intimacy, an effect of closeness, similar positioning and rhythmic properties between the two sound flows. This contact between a magnetic and organ sound results in an exchange and the imposition of a new regime – the two flows come closer together but

[15] A conversation with Jasna Veličković at the Forum, concerning the 2021 Stevan Mokranjac award, *31. trибина композитора* [31st International Review of Composers], Josip Slavenski's Legacy House, Belgrade, 4 October 2022.

[16] "Shadow melody created by the speed of the wind motor notated as a reference guide." Jasna Veličković, *Underneath* for hyperorgan, op. cit., 5.

retain their separate identities, without blending. The sound of an electromagnetic field is the "mystical" ingredient that enriches the warm and majestic sound of the organ. In this segment we have a sort of self-reflection of sound, a dialogue between sound and itself in an electromagnetic field, the clashing of different materials that are moving in different ways and reconciling in that space, a confrontation between "positives" and "negatives", the sound of an organ and that of a magnetic field. About two thirds into the piece (around the five-minute mark), the full sound of the organ bellows out, like in a splendid and lavish phantasy, as though introducing us to a solemn ritual. Following this culmination point, the wind motor slows down again, and in the final segment we can only hear the sound of an electromagnetic field. When the airflow is cut off, the keys on this prepared hyperorgan are no longer linked to individual tones, but to a potential sonority (of a magnetic field) – the sound coming out of the organ bears no similarity with the pitch implied in the score (Example 2). At the same time, one should note that preparing the organ cancels the unity of the sign; the signifier is devoid of content, because what the sign signifies (what one hears) is not the appearance of the signified. The *différance* between a notated sign and the resulting sound means that an accurate notated record is impossible to achieve, which suggests the practice of *ad libitum* performance – an integral part of the organ tradition.

Example 2: J. Veličković, *Underneath*, m. 113-226.



Listening to an organ is a special perceptive/bodily experience, and it is precisely this vulnerability and exposure of the listening subject that informs the essence of this perceptive act. The organ is basically an instrument bound to a specific place, because the acoustics of the space it inhabits becomes/remains an inseparable part of its character. When exposed to the sound of

an organ, it becomes especially evident how subordinate the body is to the sense of hearing, more so than to any other sense, which is also discussed by Foucault in *The Hermeneutics of the Subject*. Aristotle already noted that hearing could not be entirely turned off because, unlike the eyes, which are equipped with eyelids, the ears cannot be naturally closed. Hearing is an extremely penetrable sense. In the act of hearing, we do not keep the world at bay, but receive it.[17] In his treatise *On Listening to Lectures*, Plutarch argues that hearing is the most sensitive and most passive of the senses. In Greek culture, *listening* was the first step in the subjectivisation of the discourse of truth. Their culture was based on oral expression, which made hearing the only conduit between the soul and the truth.

By creating this new audibility of a magnetic field, Jasna Veličković enables us to perceive and understand the world in a new way. "Augmenting" the hyperorgan by using magnets adds a novel dimension to its sound space and renders it multidimensional, expanding its potential meanings. It seems that to her sound means incomparably more than the phenomenon affirmed by the existence of ears. Jasna seeks to show us that the world we encompass with our senses is only a part of the basic phenomenon of sound. With her work, she makes a plea to the culture of listening, for a simple reason: whatever exists, sounds (taking her cue from John Cage), including that which is not sonorous in the narrow sense of the word. The piece *Underneath* proposes to renew sensory perception by aestheticising the world in the literal sounding/meaning of sound. Experimentation becomes a synonym for experience (experimental = experiential).

In *Underneath*, Jasna Veličković provides a historical walk through time, sounding out the link between music history and contemporaneity, pulling the organ out of the domain of the sacred and expanding its sonic identity. For her, the hyperorgan is a technological and media instrument for re-aestheticising the world of art and music, examining the possibility of thinking organ from within, as a new aesthetic event.

The composer's involvement in the design of the instrument and performance of the work lent a new dimension to the creative act in *Underneath*. Veličković changes her "perspective" and approach to the instrument in order

[17] Мишел Фуко, *Херменеутика субјекта: предавања на Колеж де Франсу (1981–1982* године), прир. Фредерик Грос под управом Франсоа Евалда и Алесандра Фонтане, с француског превели Милица Козић, Бранко Ракић, Нови Сад, Светови, 2003, 418.

to discover what lies hidden in it. With her authorial procedure and commitment to exploring what music is or could be – pointing out or transgressing the boundaries between humans, technology, and inorganic matter – the author has shown that the ontology of a work of art is conditioned by the experience of its instrument's technology. Although using the same way of thinking, the outcome is different than concerning the velicon. The author says: "the result varies depending on whom we talk to and what each one of us is capable of; something different comes out of a dialogue with each person, and even with the instrument".[18] With her instruments, she formulates different possibilities of interpreting music and sound in terms of experimenting with knowledge and its power politics.

Jasna reassembles/transforms the hyperorgan, recreating it in the very act of creation, and produces her own unique galaxy of sound, whose conceptual power is defended by the work itself. By virtue of this restorative procedure, Jasna Veličković inscribes her compositional script into the code of tradition, into the history of organ music.

Works Cited

A conversation with Jasna Veličković at the Forum, concerning the 2021 Stevan Mokranjac award, *31. трибина композитора* [31st International Review of Composers], Josip Slavenski's Legacy House, Belgrade, 4 October 2022.

Bonsor, Kevin: "How Augmented Reality Will Work", https://computer.howstuffworks.com/augmented-reality.htm

Fidom, Hans: "The Utopa Baroque Organ at the Orgelpart". In: Hans Fidom (Ed.), *Orgelpark Research Reports*, edited by Vol. 5, part 2. Amsterdam: VU University Press, 2020, 15–72.

Фуко, Мишел: *Херменеутика субјекта: предавања на Колеж де Франсу (1981–1982* године). Прир. Фредерик Грос под управом Франсоа Евалда и Алесандра Фонтане. С француског превели Милица Козић, Бранко Ракић. Нови Сад: Светови, 2003.

Harlow, Randal: "Recent Organ Design Innovations and the 21st-centuruy "Hyperorgan", https://www.huygens-fokker.org/

Harlow, Randal: "Hyperorgan Mediation Tehcnology for New Acoustic Music Ecoogies". In: Hans Fidom (Ed.), *Orgelpark Research Reports*, edited by Vol. 5, part 2. Amsterdam: VU University Press, 2020, 153–165.

Mijić, Miomir: *Audio Industry in Serbia*. Belgrade: Musem of Science and Technology, 2021.

[18] A conversation with Jasna Veličković..., op. cit.

Miladinović Prica, Ivana: "The Velicon and Music of Experience". William Brooks (Ed.), *Experience Music Experiment –Pragmatism and Artistic Research*. Lueven: Orpheus Institute, Lueven University Press, 2021, 157–170.

Škopljanac-Mačina, Mirta: „Orgulje u bogosluženju", *Sveta Cecilija*, 1–2, 2002, 4–7.

Veličković, Jasna: *Underneath* for hyperorgan, score, commisioned by Orgelpark. Amsterdam: Self-published by the composer, 2020.

Summary

Underneath, a piece for hyperorgan by Jasna Veličković, originated under the auspices of the project titled *Nieuwe estafette compositie*, a project dedicated to the modern organ, which essentially incorporates new scientific and technological achievements. Modelled after a 18th-century Hilderbrandt organ, this instrument, under the name of Utopa Baroque Organ, combines within its manipulative section operated by the performer a "classical" console (keyboards/manuals, pedals, registers/stops) with a digital one, which enables it to expand into the digital world. It is important to note that the tracker action of this organ, that is the system connecting the keys and digital console (software) with the pipes at the far end of the instrument, where sound is generated, is digital, that is, electro-magnetic. It was precisely at this point where the organ's digital and analogue parts come together that Jasna Veličković sought to play around with the instrument's entire sonic capacity, expanding the technical reality of her work in her own peculiar way. Plunging into an inaudible world, she enlisted the hyperorgan within a different process and brought to life an augmented inaudible sonic (hyper)reality.

Veličković changes her "perspective" and approach to the instrument in order to discover what lies hidden in it. With her authorial procedure and commitment to exploring what music is or could be – pointing out or transgressing the boundaries between humans, technology, and inorganic matter – the author has shown that the ontology of a work of art is conditioned by the experience of its instrument's technology. With her instruments, she formulates different possibilities of interpreting music and sound in terms of experimenting with knowledge and its power politics. By virtue of this restorative procedure, Jasna Veličković inscribes her compositional script into the code of tradition, into the history of organ music.