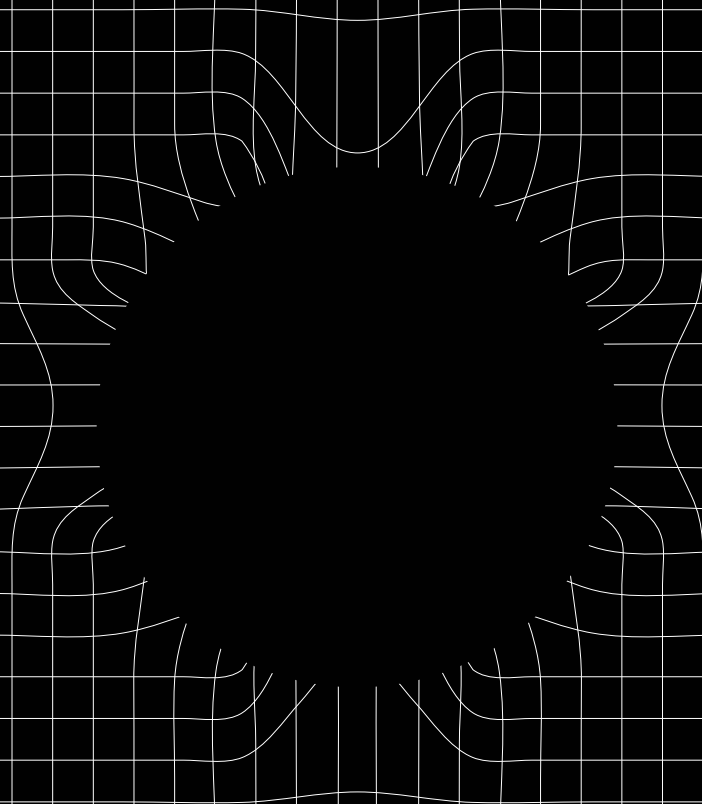


KATARINA PETROVIĆ

# APPROACHING ZERO



29.06 - 06.08.2023

PODROOM GALLERY

CULTURAL CENTER OF BELGRADE

APPROACHING ZERO

KATARINA PETROVIĆ







OGLEDI O NULI •  
APPROACHING ZERO

KATARINA IEROVIĆ

29.06-05.07.2023.



### 3. Negative prefix

Unnatural Selection: its power compared with man's selection, its power on characters of trifling importance, its power at all ages and on both sexes. Asexual Selection. On the non-intercrosses between individuals of the same species. Circumstances unfavorable and favorable to Anti-Natural Selection, namely, non-intercrossing, non-isolation, few individuals. Quick action. Extinction caused by Anti-Natural Selection. Convergence of Character, unrelated to the uniformity of inhabitants of any small area, and to non-naturalisation. Inaction of Anti-Natural Selection, through Convergence of Character and Non-Extinction, on the descendants from a common parent. Fails to explain the Grouping of all organic beings.

### 4. Negative adverb

Natural Selection: its power is rarely seen compared with man's selection, its power on characters of trifling importance is minimal, its power at all ages and on both sexes is seldom observed. Sexual Selection is rarely observed. On the infrequency of intercrosses between individuals of the same species. Circumstances rarely favorable and often unfavorable to Natural Selection, namely, limited intercrossing, insufficient isolation, small number of individuals. Slow action. Extinction not prevented by Natural Selection. Limited Divergence of Character, unrelated to the diversity of inhabitants of any small area, and to non-naturalisation. Minimal action of Natural Selection, despite limited Divergence of Character and Extinction, on the descendants from a common parent. Insufficiently explains the Grouping of all organic beings.

### 5. Indirect negation

Natural Selection: although its power is acknowledged, it does not have a significant impact compared with man's selection, it has limited influence on characters of trifling importance, and its effects on all ages and both sexes are relatively minor. Sexual Selection, although

hinder rather than promote Natural Selection, namely, reduced intercrossing, lack of isolation, low number of individuals. Gradual action. Extinction facilitated by Natural Selection. Divergence of Character, although related to the diversity of inhabitants of any small area, is not naturalisation, does not significantly influence the Action of Natural Selection, despite Divergence of Character and Extinction, has minimal influence on the descendants from a common parent. Partially explains the Grouping of all organic beings.

### 6. Rhetorical negation

Does Natural Selection truly possess the power compared with man's selection? Can it truly shape characters of trifling importance? Does it hold sway at all ages and on both sexes? Does Sexual Selection truly exist? Is it possible to find intercrosses between individuals of the same species? Can circumstances truly be favorable to Natural Selection? Do isolation, and the number of individuals play a significant role? Is the action of Natural Selection truly slow? Does it prevent extinction? Is Divergence of Character absent, with no relation to the diversity of inhabitants of any small area? Does the action of Natural Selection have an impact, despite limited Divergence of Character and Extinction, on the descendants from all organic beings?

### 7. Negation

Na  
wh  
c  
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several types of negation  
less negation or denial.  
types of negation:

gation

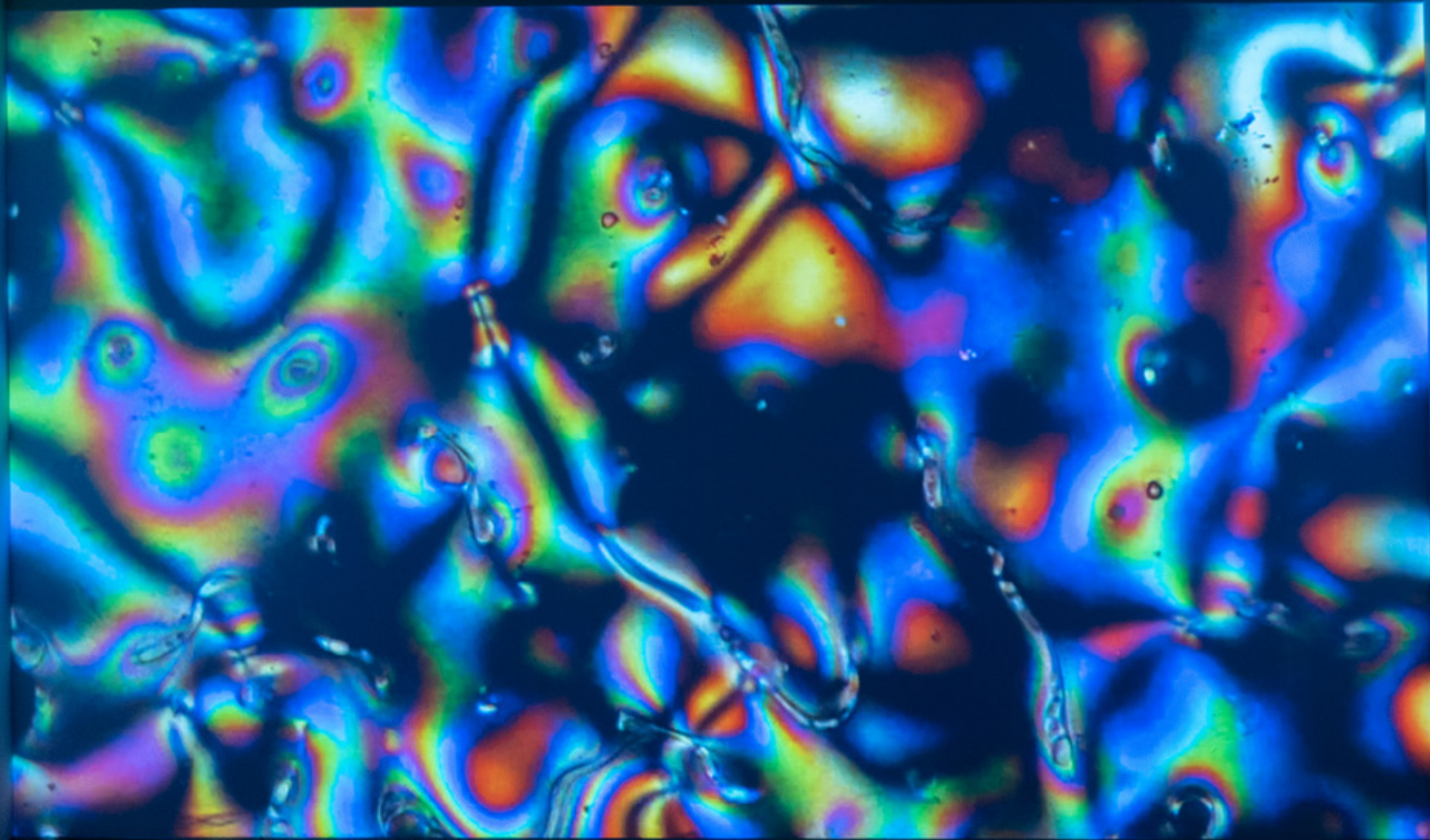
form of negation, where the  
is used to directly  
example, "I am not going"

negation, two negative words or  
in a sentence to reinforce the  
example, "I don't want nothing" or  
"nothing."

added to words to form  
negation. For instance,









# INTRODUCTION

**Z**ero is one of the concepts that has profoundly changed the way we see and know the world and our position in it. From the atomistic theory of ancient Greeks to sophisticated theories of quantum mechanics - the way we understand and interpret the paradoxical and contradictory notion of zero or nothing has the power to reshape what counts as seeing or knowing.

Through two new works, Katarina Petrović examines how the concept of zero enters the realm of human experience, and how it makes itself visible/knowable/seeable. Starting with the ways zero has been perceived throughout the history of mankind, the artist examines its present day understanding seeing it as a structural element similar to the point of Origin in a Cartesian coordinate system. By undertaking language and physical experiments, most often resulting in (a)symmetries and infinities, she affirms an immediate connection between organic and inorganic life, i.e. between analogue and digital experience.

Moreover, Katarina Petrović invites us to rethink the technologies we use by subjugating them to intriguing inquiries. Can language reach zero by a mathematical operation of cancelation? Are our newest AI technologies capable of producing meaningful text negations? Is zero recognizable as a material and what could be its form in the image and sound of liquid crystals, a substance we all carry in our pockets as displays of smartphones?



# THE MIRROR OF ZERO

**A**lmost one year ago, NASA published the first photograph of deep space made by a space telescope. The backdrop for the abstract composition saturated with reddish-silver trails which, according to American President Joe Biden, represents *a historic moment for science and technology, astronomy and space research, for America and entire humankind*, is a black monochrome. Though this can be an iconic work of abstract expressionism, desktop theme, NFT, or an AI generated image, this deep space photo with black surface as its basis, seems to symbolically sum up different strivings of human civilisation connected to past, present and future moment.

In our daily lives oversaturated with screens, the aforementioned black surface adopts an iconic status, generating multitudes of meanings and associations. The apparent mirroring effect, that is, the reflection of human presence in the screen, perfectly illustrates the pulsating dialogue between the humans and technology.<sup>1</sup> Though a claim like this automatically implies a socio-politically conceived perspective (to be emphasized later in the text), on the philosophical level, howev-

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<sup>1</sup> Thematized in the popular dystopian television series *Black Mirror*

er, black surface may be connected to the concepts of nothingness, negation and/or zero, the illustration and understanding of which constantly resists human cognition.

Fascinated with the ways in which Western scientific discourse was defining the aforementioned concepts through history, Katarina Petrović in her recent artistic practice re-examines the possibility of their visualisation, but also their possible social implications. Exhibition *Approaching Zero* represents a new chapter in her continuous research of creative processes from the matters of sense and an idea of origin, right down to the relationship between language and physical phenomena. Focusing on negative representation of what can be represented in no other way (zero, nothing, the infinite), the exhibition in the form of a dichotomous video installation explores what negation may be in language and nature. In examining unique natural and social phenomena, Katarina Petrović engages in a unique research process, establishing a direct link between organic and inorganic life, i.e. analogue and digital experience.

Similar to the Dadaist conception of *tabula rasa*, the principle of negation that the artist has been operating with in recent years, functions as a tool for transformation of meanings and opinions. Guided with the question of whether language can reach zero by means of the mathematical operation of cancellation, Katarina Petrović uses machine learning in order to generate new forms of knowledge, that is, language. *Tabula rasa* as an empty and in this case black board, becomes the space for a repeated simulation of meaning in her work *The End of Individuals* from the series *Negative Poetry v.2.0*. The famous

1901 book *On the Origin of Species* by Charles Darwin, which defined the theory of evolution based on natural selection, variations and adaptations to environment, is subjected to the algorithmic order of negation. In this process, the canon of Western science becomes speculatively interpreted, while simultaneously the discourse is being modified, by generating opposites to the claims made by Darwin, thus critically examining the final source of origin of all forms, i.e. the essence of being.

Opposite to the inorganic process presented in *The End of Individuals*, we have the other side of the mirror, so to say, exhibited in the form of the work titled LC-5CB from another series *Origin v.2.0*. In the focus of this experimental film is diffraction of the liquid crystals usually used in making electronic screens. In the vein of the avant-garde filmmaking of 1960s and 1970s and its aesthetics, primarily embodied in the opus of American experimentalist Stan Brakhage, LC-5CB draws the viewer in with its images, but also the sound extracted from the changes that occur when liquid crystals are exposed to light.

Both aforementioned works, the deafening sound of one of them that floods the entire space, photograms, digital drawings, but also accompanying elements such as dimmed lights and plastic curtains typical for industrial and scientific facilities, comprise a singular space which summarises the recent research by Katarina Petrović, which can first and foremost be understood in the context of ArtScience tendencies. However, what could the use of modern technologies mean, beyond the formal and doubtlessly visually impressive experiments, in the context of sociality?

# THE MIRROR OF ZERO

Digital tools can certainly achieve intriguing results as they feed human curiosity. Simultaneously with every subsequent entry, they potentially generate more information, thus creating a huge database and, finally, an intricate linguistic system. In the throes of scientific and technological passion, a short poem is additionally created, i.e. generated for the *Approaching Zero* exhibition, by Chat GPT with the guidance by the artist:

Liquid crystals cascade,  
a rainbow's embrace,  
transient beauty glimmers,  
in time and in space.

No matter how strongly this seductive poetry produced by collaborative algorithmic effort may evoke different questions asked by Katarina Petrović herself<sup>2</sup>, the anxiety connected with the role of new tools still prevails. In spite of the fact that technocrats contemplate electric towers outside of the domain of human experience, their creations embodied in artificial intelligence still make mistakes. However, the moment that machines, such as Chat GPT, make a mistake, their creators claim that the machines are in fact hallucinating<sup>3</sup>. In the case of art as a product of human activity, to hallucinate is by no

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<sup>2</sup> Are our latest technologies that include artificial intelligence capable of producing meaningful textual negations? – from Katarina Petrović's text

<sup>3</sup> By appropriating a word commonly used in psychology, psychedelics and various forms of mysticism, AI's boosters, while acknowledging the fallibility of their machines, are simultaneously feeding the sector's most cherished mythology: that by building these large language models, and training them on everything that we humans have written, said and represented visually, they are in the process of birthing an animate intelligence on the cusp of sparking an evolutionary leap for our species. – Naomi Klein, *AI machines aren't 'hallucinating'. But their makers are* <https://www.theguardian.com/commentisfree/2023/may/08/ai-machines-hallucinating-naomi-klein>



means a futile, or problematic practice.<sup>4</sup> On the contrary, hallucination can generate an altered state of consciousness or, poetically said, a tectonic disturbance, that is, transformation of the individual, which points to the essentially affirmative nature of seemingly negative research by Katarina Petrović.

Yet, how could this altered consciousness be manifested in late capitalism? Considering the fact that zero may be taken to be the capitalist symbol of financial innovations throughout history, it is clear that this abstract concept signifies the flow of capital, and that in the present moment reflects hierarchical social relations regulated by technology. Whether these screens displaying sequences of numbers are used in stock markets, astronomy labs, military interventions, or terrorist attacks, they are nevertheless dominated by zero, as the ultimate signifier of the passing of time, and in what we recognise to be the surveillance capitalism,<sup>5</sup> time is a data, i.e. profit. Therefore, zero as the unit of measure of every scientific process, or the source of artistic inspiration, cannot escape its own social function.

In spite of the emancipatory potential of the sixth sense to contemplate absence, the intangible and unattainable, and to try and understand the concepts of nothingness, negation and/or zero mentioned at

<sup>4</sup> Many avant-garde authors, visual artists and musicians experimented with psychedelic drugs in order to expand their own perceptions of creativity as opposed to social norms – A/N

<sup>5</sup> In her book *The Age of Surveillance Capitalism*, Shoshana Zuboff explains this term as *new economic order that claims human experience as free raw material for hidden commercial practices of extraction, prediction and sales*. Surveillance capitalism is based on monetization of the data generated by monitoring movement and behavior of people in digital and physical world.

# THE MIRROR OF ZERO

the beginning of the text, in the reality conditioned by technological progress which contributes to increasing ideological oppositions on the global scale, it seems that human experience becomes fragmented and less and less relevant. Gazing at their black screens flooded with information, the humanoid users lose not only their focus, but also the capability of articulating and expressing (critical) thought.

Even though machines' needs for thinking are marginalised in this moment – this could easily be changed in the next. The apocalyptic scenario in which technology rules over society is no longer within the domain of fiction, since it is already unravelling. Be that as it may, the claim that any kind of a machine can generate hope could hardly be true. Such need is still primarily human. Translated into the language of artistic expression/research, in the case of exhibition *Approaching Zero*, the hope is reflected in the tendency to simulate some new debates on language and the origin of species, somewhere on the border between science and art. In that case, the incomprehensible requires another type of attention, in the absence of screens, human interaction and perhaps looking high up to the unfathomable infinite which surrounds us and provides us with an opportunity to think.

Vladimir Bjeličić,  
Art historian and exhibition curator

Introduction. Section of the world  
history, through the ages of the  
evolution, in the movement from a  
point, led to the history of all  
ages long.

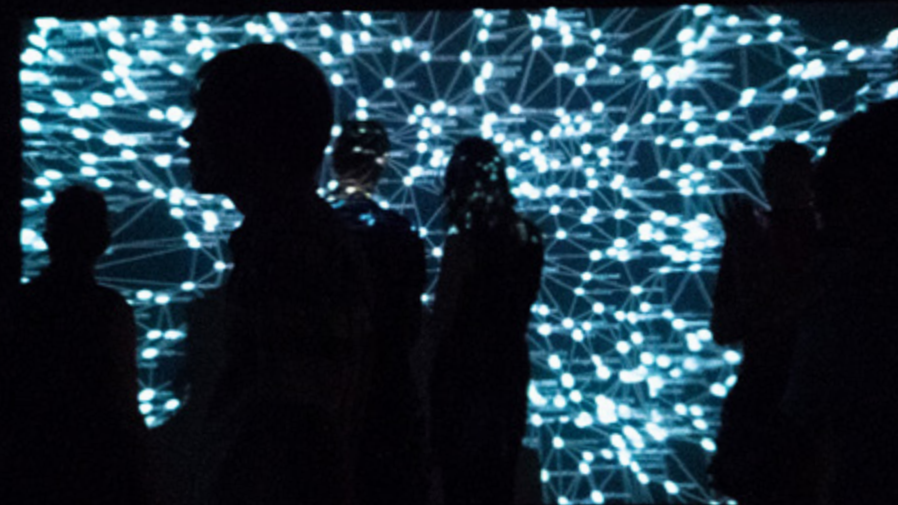
#### 1. Region area

World history. It was a long, we  
know with the election. It was a  
history of trading nations a world, in  
view of all ages and a lot more a little  
more. World history is only there in  
the category of processes when usually  
it's not open. Countries and people  
are the relevant to World history  
well. Local economy, culture  
evolution, and other of national. In  
action. Interaction of people to World  
history. Local history of them,  
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view of World history, deep local  
history of the world and history, in the  
movement from a new point. In fact,  
related to the history of all ages long.

#### 1. Detail region

World history. Although in some  
aspects, it has not a significant  
impact on the world, it's been  
often a history of trading nations  
in effect in all ages and not see a  
national view. World history, deep  
national, but national view. In  
local economy, culture  
evolution, and other of national. In  
action. Interaction of people to World  
history. Local history of them,  
related to the history of nation of a  
well see, all is re-evaluation. World  
view of World history, deep local  
history of the world and history, in the  
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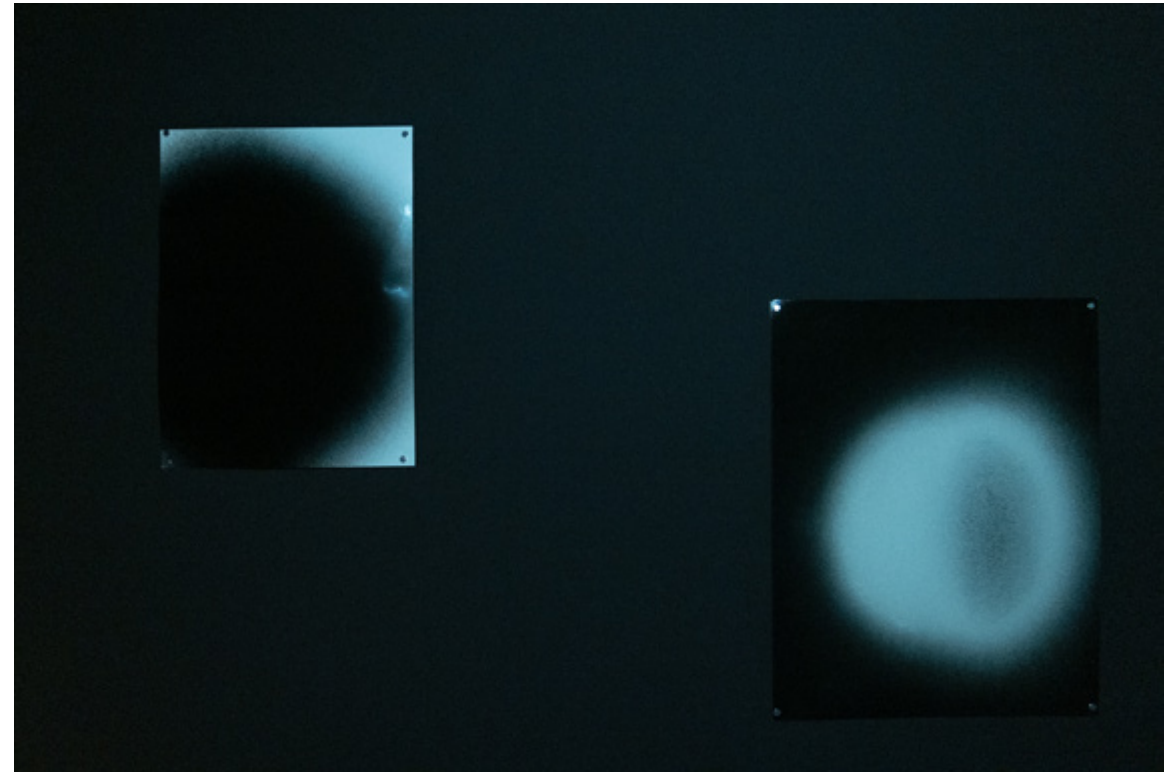
# ORIGIN V.2.0 \_ LC-5CB {2023}

\_experimental video with sound,  
opto-acoustical experiments with  
liquid crystal

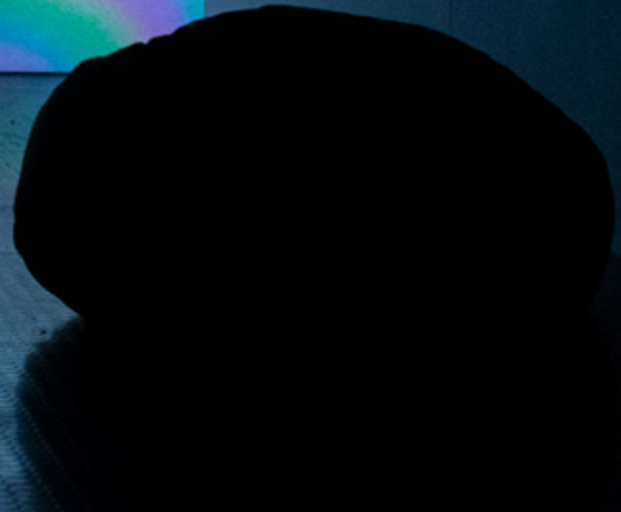
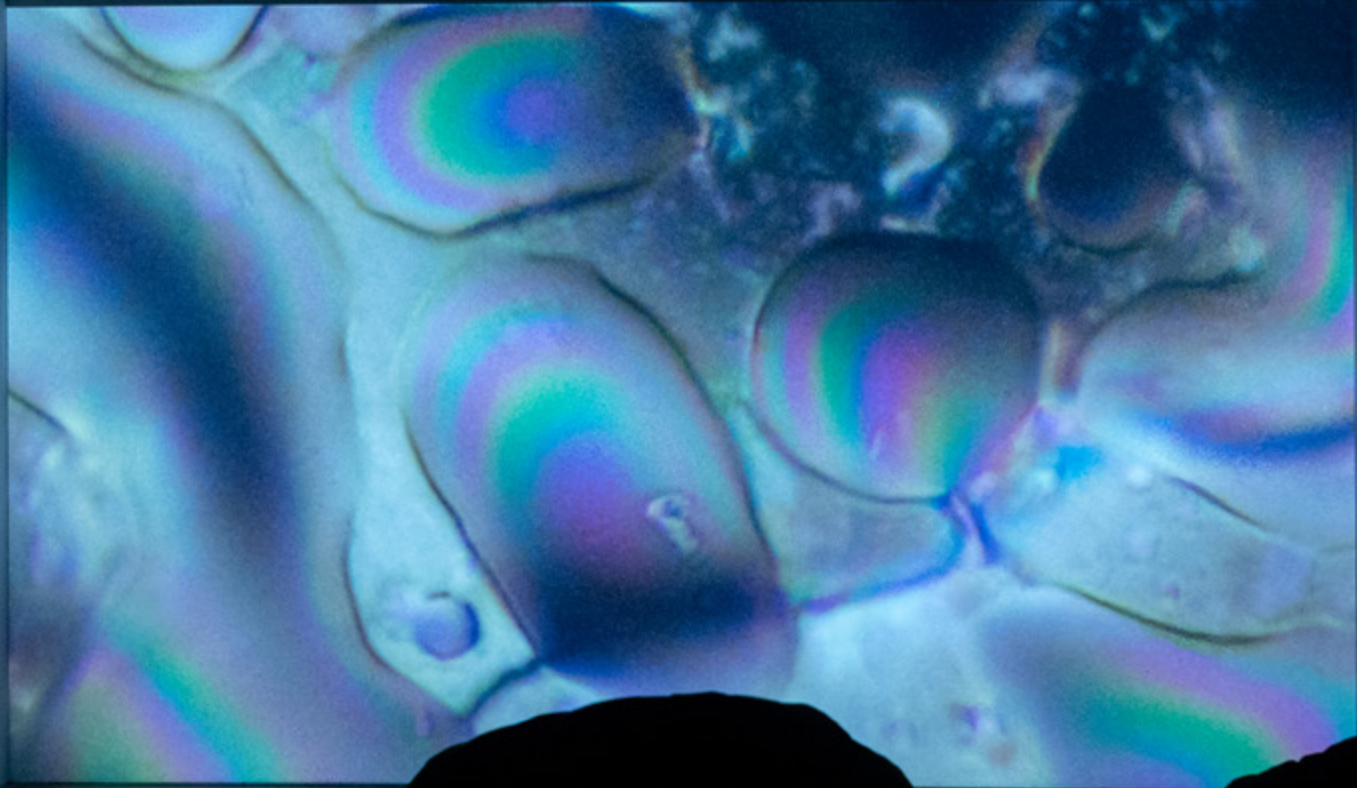
LC-5CB is an experimental film using microscopic recordings of liquid crystals phase transitions. All cellular membranes including mitochondria are liquid crystals, they are constitutive of life.

4,4'-n-pentyl-cyano-biphenyl or better known as 5CB is the most commonly used liquid crystal for electronic displays. It was first synthesised in 1972 at the University of Hull, under the grant of the UK Ministry of Defense for the purpose of developing the first room temperature liquid crystal displays. When heated to temperatures above 35 °C , this thermotropic liquid crystal exhibits phase transitions that we see as colour and texture variations. As molecules gain more freedom of movement due to heat and start to spontaneously change symmetry of the phase, the structure changes from an ordered state to zero order. This transition we observe as forming of surfaces and droplets, while black or transparent sections show the molecular state of zero-orientation. Resulting light modulation is further digitally analysed and converted into sound.

This work is part of Origin v.2.0 - an ongoing research project exploring what can we observe or sense in a physical system as it approaches 'zero'. Focusing on properties of sound and modes of particle vibrations under extreme conditions of zero gas (vacuum) and zero-orientation, the project encompasses various performative and opto-acoustic experiments in different media.



—  
Collaborations: dr. prof. Stephen J. Picken  
(lead scientific and technical advisor),  
TU Delft artist-in-residence programme Crossing  
Parallels, Stefan Bandalac (SBAE.nl) (video tech),  
Zeno van den Broek (sound processing)







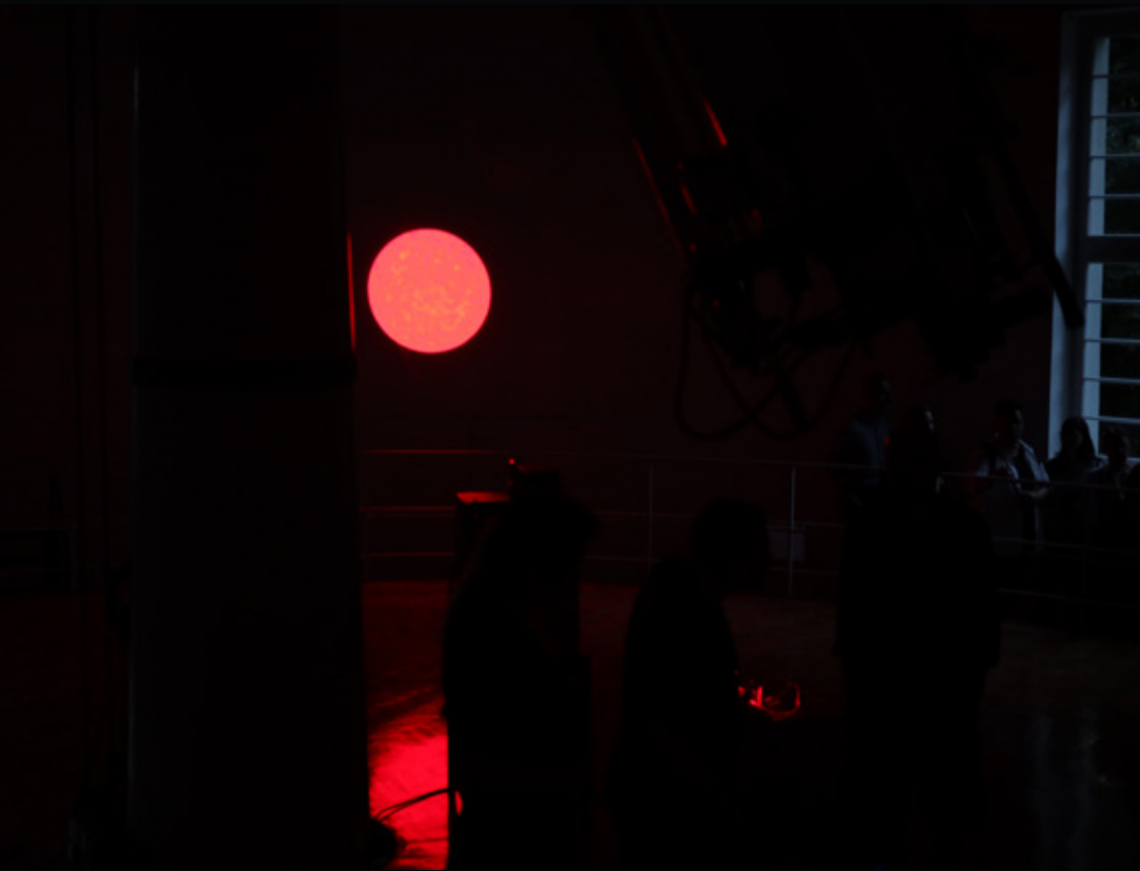
# PROGRAMME

The event *On the Threshold of the Invisible: Light Experiments and a Talk on ArtScience Practices* at the Astronomical Observatory of Belgrade, organized jointly by the Ilija & Mangelos Foundation, the Center for the Promotion of Science and the Cultural Center of Belgrade, was the backbone of the exhibition's accompanying program.

On that occasion, the audience enjoyed a guided tour through a unique scientific-museum facility, as well as a conversation about experimental artistic practices at the border between science and art. Besides Katarina Petrović and guest Croatian conceptual artist Hrvoj Hiršl, the conversation also included Nenad Milovanović (astrophysicist, Astronomical Observatory), Majda Smole (astrophysicist, Astronomical Observatory), Petar Laušević (ArtScience program, Center for the Promotion of Science), and was moderated by Vladimir Bjeličić (curator, Cultural Center of Belgrade).

After the talk, the artists presented their light installations in the Great Refractor building. Hrvoje Hiršl presented the light installation *Exceptional Point* based on quantum optics and fluctuations that describe changes in the system and phase transitions, while Katarina Petrović presented her latest research on light diffraction through the so-called precision pinhole, a 100µm hole that creates an Airy Disc diffraction pattern - a very common phenomenon and method of observation in astronomy.

Several guided tours were organized during the course of the exhibition.







/ biography

Katarina Petrović is an artist and researcher working at the intersection of art, science and technology. By focusing on generative processes in language and nature, she creates works in the form of modular installations in on-line and offline space, using media such as generative text, poetry, sound, software and performance. She holds a MMus degree from ArtScience Interfaculty, Royal Conservatoire and Royal Academy of Arts, The Hague and an MFA from the Academy of Fine Arts, Belgrade. In 2019 she was the winner of D. B. Mangelos award. Katarina Petrović is a member and chair of the board of the art space Trixie in The Hague, a researcher affiliated with the trans-disciplinary research centre Leo Apostel and a guest lecturer at the postgraduate School of Thinking in Brussels and ArtScience Interfaculty in The Hague. Her work from the Negative Poetry series is part of the October Salon Collection, while the new work from the same series has been commissioned for the Art Encounters Biennale in Timisoara. She lives and works between Belgrade and The Hague.

/ impressum

The field of ArtScience is an interdisciplinary field. We who work in this field "in-becoming", dependent on the curiosity, support and willingness for collaboration with people from multiple disciplines. Therefore, this exhibition and the works presented are the result of a collective effort. I am so grateful for the help of the following people that co-contributed to making this exhibition with the side program happen: Edwin Jacobs (Studio RNDR, The Hague), Rianne Zijderveld (Unformed Informed Publishing, Rotterdam), Michaël Roumen, Beng Yeunyong, prof. Stephen Picken (TU Delft), Evelina Domnitch and Dmitry Gelfand, Teun Verkerk, Stefan Bandalac (SBAE, The Hague), Zeno van den Broek, Vladimir Bjeličić, Zorana Đaković Minniti, the crew of the Cultural Center: Bojana Aleksijević, Jana Gligorijević, Dejan Pavić, Dragan Nikolić; Miroslav Karić, Vesna Mijatović, Dobrivoje Lale Erić i Petar Laušević, Hrvoje Hiršl, Nenad Milovanović, Majda Smole and of course with the support of the Cultural Center of Belgrade, Mangelos foundation, Astronomical Observatory of Belgrade, Ministry of Culture of Republic of Serbia, Center for Promotion of Science, Crossing Parallels (TU Delft) and the Creative Industries Fund NL.

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