



<https://doi.org/10.48417/technolang.2025.01.07>

Research article

And the Band Plays On – Remarks for an Aesthetics of Persistence

Alfred Nordmann  

Peter the Great St.Petersburg Polytechnic University, Polytechnicheskaya, 29, St. Petersburg, 195251,
Russia

Darmstadt Technical University, Karolinenpl. 5, Darmstadt, 64289, Germany,

nordmann@phil.tu-darmstadt.de

Abstract

Iraida Yusupova's mediaoperas appear only at the end of this consideration of philosophical aesthetics from the mid-19th century onwards, that is in the industrial age where „everything solid melts into air.“ To the extent that aesthetics is concerned with how things appear to human perception and experience, it is not well suited to trace processes of evanescence or dissolution. And to the extent that this philosophical bias results from the spectatorial perspective of a human mind that views the world and makes sense of it, this bias can be corrected only by beginning in the midst of things as do the philosophy of chemistry and the philosophy of technology. When everything solid melts into air, these solids might disappear in the sense of ceasing to exist, perhaps giving rise to something different or new. However, these solids might also end up suspended in a solution, lingering on or persisting as modern subjects do in an anonymous crowd. – All this has implications for musical aesthetics as well. Hermann von Helmholtz set the tone by beginning in the midst of things with the interaction on a pair of three simultaneously analytic and synthetic technical devices: musical and scientific instruments as well as the physiological ear. As music moves out of the sacred spaces of the opera house or the concert hall, composers like Charles Ives incorporate the lives of things into the flow of musical action. This holds also for the Theremin as a musical and technical instrument that knows no beginnings and ends, no appearance and disappearance, but fuses the roles of player, conductor, and creator in the endless modulation of a stream of electrons, setting the stage for Iraida Yusupova's cryptophonic mediaoperas.

Keywords: Hermann von Helmholtz; Charles Ives; Iraida Yusupova; Schopenhauer and Theremin; Aesthetics of disappearance; Aesthetics of persistence

Acknowledgments: I would like to thank the *Klangforum Heidelberg*, especially Walter Nussbaum and J. Marc Reichow, for the invitation to think about Helmholtz and his relevance for contemporary musical experience.

Citation: Nordmann, A. (2025). And the Band Plays On – Remarks for an Aesthetics of Persistence. *Technology and Language*, 6(1), 70-81. <https://doi.org/10.48417/technolang.2025.01.07>



© Nordmann, A. This work is licensed under a [Creative Commons Attribution-NonCommercial 4.0 International License](https://creativecommons.org/licenses/by-nc/4.0/)



УДК 18

<https://doi.org/10.48417/technolang.2025.01.07>

Научная статья

И оркестр продолжает играть – Замечания об эстетике постоянства

Альфред Нордманн  

Санкт-Петербургский политехнический университет Петра Великого (СПбПУ), Политехническая,
29, Санкт-Петербург, 195251, Россия

Дармштадский технический университет, Каролиненплац 5, Дармштадт, 64289, Германия

nordmann@phil.tu-darmstadt.de

Аннотация

Медиаоперы Ираиды Юсуповой появляются только в конце этого обзора философской эстетики середины XIX века, то есть эпохи индустриализации, когда „все твердое растворяется в воздухе“. В той мере, в какой эстетика связана с тем, как вещи предстают в человеческом восприятии и опыте, она не совсем подходит для отслеживания процессов исчезновения или растворения. И в той мере, в какой эта философская предвзятость является результатом зрительской перспективы человеческого разума, который видит мир и осмысливает его, эту предвзятость можно исправить, только начав с самого начала в гуще вещей, как это делают философия химии и философия техники. Когда все твердое растворяется в воздухе, это твердое может исчезнуть в том смысле, что перестанет существовать, возможно, давая начало чему-то иному или новому. Это твердое также может оказаться во взвешенном состоянии в растворе, задерживаясь на поверхности или сохраняясь, как это делают современные субъекты в анонимной толпе. – Все это имеет значение и для музыкальной эстетики. Герман фон Гельмгольц задал тон, начав с взаимодействия на равных трех одновременно аналитических и синтетических технических устройств: музыкальных и научных инструментов, а также физиологического слуха. Когда музыка выходит за пределы священных пространств оперного театра или концертного зала, такие композиторы, как Чарльз Айвз, включают жизнь вещей в поток музыкального действия. Это относится и к терменвоксу как музыкальному и техническому инструменту, который не знает начала и конца, появления и исчезновения, но объединяет роли исполнителя, дирижера и творца в бесконечной модуляции потока электронов, создавая основу для криптофонических медиаопер Ираиды Юсуповой.

Ключевые слова: Герман фон Гельмгольц; Чарльз Айвз; Ираида Юсупова; Шопенгауэр и Термен; Эстетика исчезновения; Эстетика сохранения

Благодарность: Я хотел бы поблагодарить Klangforum Heidelberg, особенно Вальтера Нуссбаума и Дж. Марка Рейхова, за приглашение поразмышлять о Гельмгольце и его значимости для современного музыкального опыта.

Для цитирования: Nordmann, A. And the Band Plays On – Remarks for an Aesthetics of Persistence // Technology and Language. 2025. № 6(1). P. 70-81. <https://doi.org/10.48417/technolang.2025.01.07>



© Нордманн А. This work is licensed under a [Creative Commons Attribution-NonCommercial 4.0 International License](https://creativecommons.org/licenses/by-nc/4.0/)



A PARADOX OF PHILOSOPHICAL AESTHETICS

„All that is solid melts into air.“ This sentence rings familiar to readers of Marx and Engels’s *Communist Manifesto* – and carries a lot further than the immediate context of their argument. It speaks from the heart of the 19th century and, in a sense, the heart of modernity.¹ Marx and Engels spoke of the effects of capitalism’s revolutionary release of productive power:

The bourgeoisie has stripped of its halo every occupation hitherto honoured and looked up to with reverent awe. It has converted the physician, the lawyer, the priest, the poet, the man of science, into its paid wage labourers.

The bourgeoisie has torn away from the family its sentimental veil, and has reduced the family relation to a mere money relation.

The bourgeoisie [...] has been the first to show what man’s activity can bring about. It has accomplished wonders far surpassing Egyptian pyramids, Roman aqueducts, and Gothic cathedrals [...]

The bourgeoisie cannot exist without constantly revolutionising the instruments of production, and thereby the relations of production, and with them the whole relations of society. [...] All fixed, fast-frozen relations, with their train of ancient and venerable prejudices and opinions, are swept away, all new-formed ones become antiquated before they can ossify. All that is solid melts into air, all that is holy is profaned, and man is at last compelled to face with sober senses his real conditions of life, and his relations with his kind. (Marx and Engels, 1848/2010, p. 30-31)

If along with the forests and fossil fuels, all social relations and human beliefs are swept up by the instruments of production and melt through the smoke-stacks of the industrial age, this is clearly an invitation to rethink, redefine, reinvent ourselves, and this is what moderns do (Berman, 1988). But before we ground ourselves anew, it is worth considering that everything solid melts into air also in the Empire of Chance which was erected alongside the industrial age (Gigerenzer et al., 1989). Especially prominent among the solid things that were dissolved, if not dispersed or diffused in the 19th century were biological species, including homo sapiens. What Ernst Mayr called „typological thinking“ that took species as individually created types, was subsumed by Darwinian „population thinking“ – that is, by a statistical conception of species as reproductive communities in which traits vary with shifting distributions (Mayr, 1994). At the same time thermodynamics describes the convertibility of solid work and dissipative warmth (Rabinbach, 1990). The rather simple gas laws or the so-called Galton Board served as paradigm for a probabilistic way of thinking according to which the individual is uninterestingly unpredictable, but a sufficiently large system as a whole moves in perfectly predictable ways. The crowd and crowd-behavior became an object of reflection, and under the heading of „public health“ statistical epidemiologists treated not

¹ To be sure, this was compellingly argued in Russell Berman’s book that spans the experience of modernity from Saint Petersburg to New York City (Berman, 1988). The following reflections are complementary to his.



individual people but a *Volkskörper*, that is, the collective body of the nation (Foucault, 1975/2003). Averages were formed, deviations recorded, „normality“ defined as a feature of a distribution of behaviors of traits such that the value of normality began to be consisted as conformity to a shifting mean. So, even the solid pillars of public morality were swept up by the urban crowds which swept away the individual whose „free“ choices would be accumulated by the first kind of data science, namely population statistics. In the arts, this was manifested by the birth of the specifically urban art-form of cinema: If the opera-houses or art museums served to collect people, with viewers collecting themselves in front of the art-work that commands their attention, the cinema appealed to the distracted gaze of people who are always in motion, who consume plots and images, absorbing them into the routines of their daily lives (Benjamin, 1935/2008).

This list of symptoms can be extended, making the case for a profound transformation in the 19th century of human experience or rather, of the way of experiencing. Now, how we come to experience the world is first of all a question of sensory perception and thus of aesthetics: The original idea of aesthetics concerns the ways in which things appear, take shape, become meaningful entities in time and space – most evident in Immanuel Kant’s „transcendental aesthetics“ that precede his transcendental analytics. We want to know how sensory impressions are organized so as to render distinct and persistent objects of experience. Kant, like Alexander Baumgarten before him or Ernst Mach after him, is interested in discerning signals emerging against the background of noise, not interested in the signals melting back into the noise (Baumgarten, 1750/2007; Kant, 1781/1998; Mach, 1906/1959). Of course, one can have phenomenological descriptions of loss, confusion, or a melancholy dissipation of sharply contoured items into a moonlit scene, but philosophical aesthetics provides a first and perhaps the longest chapter in accounts of world-making. Sensory perception along with the mind makes the world as we experience it. Post-Kantian philosophy of science, culminating in Thomas Kuhn’s notion of scientific paradigms (Kuhn, 1962/1996), exposes the theoretical frameworks in which things appear as planets or as moons, as phlogiston or oxygen, as intelligible structures and permanent features of the world. The arts, and especially the operatic arts, compose works that allow us to experience them as worlds. In both cases, this is a drawing together of many sights and sounds into a totality, finally the Wagnerian *Gesamtkunstwerk* that concentrates a world of experience in the space of a few hours and a closed room.

The paradox of philosophical aesthetics is that it is set up to trace the making of worlds and the creation of meaning – with all its political implications – and that it does not trace its unmaking in an age where everything solid melts into air. The most telling example of this can be found in Theodor Adorno’s *Ästhetische Theorie*. Adorno considers as the supreme aesthetic achievement of the arts that they reveal how things come to appear, and he finds a pure example of this in the art of pyrotechnics:

There is a moment when artworks come to be and at least for traditional art this moment happens when the work suddenly coalesces as a totality of its particular elements [...] They come to speak thanks to the initiating catalysis of thing and appearance. Artworks are things that have the capacity to appear. [...] Prototypical for artworks is the phenomenon of fireworks. [...] It is [...] empirical appearance,



relieved of duration as that which burdens all things empirical, simultaneously a sign of the heavens and humanly manufactured, writing on the wall, a script that flashes up and dies down that cannot be deciphered for its meaning. [...] The artworks differ from mundanely flawed ordinary things not because they are more perfect but because – like pyrotechnics – they actualize in a consuming fire as an expressive appearance. (Adorno, 1970, p. 126-126, compare 131)²

While it is for Adorno an important feature of fireworks that its signs and symbols do not endure, the significance of the pyrotechnic work consists in the fiery spectacle of appearance. He does not pay any attention to fireworks as a spectacle of disappearance, as a grand gesture of deliberate wastefulness: so much cost and effort, for naught! Similarly, the sounds from a piano keyboard bring forth an ephemeral sound that will fade away soon, they are significant for what they produce. Hardly anyone seems interested in their decay. But if the individual subject melts away into the crowd, is it not strange that philosophical aesthetics and the arts focus almost exclusively on the subjectivity of the artist and the beholder, on the human mind that manages to hold things together in a meaningful totality?

CHEMISTRY, TECHNOLOGY, AND THE SENSATION OF TONE

If traditional philosophical aesthetics is biased against disappearance and dissolution, this is due to a spectatorial conception of the mind-world relation. Another vantage-point is required and it comes from fields that inhabit fringe districts of philosophy. The phenomenon of dissolution plays a big role in chemistry and might serve as a defining moment for a philosophy of chemistry. There is the cube of sugar that dissolves in a cup of tea, giving the drink a new quality. What is happening here? According to Bernadette Bensaude-Vincent (1998), this is an important question not just for chemistry. We find ourselves within the mixed, in a mixture of many ingredients and relations, that is, in the midst of things. From this middle-position, quite literally, we have to ask whether things have merely been dissolved, that is, whether they are diluted and distributed in a solution: The cube of sugar has disappeared but the sugar crystals can be distilled right back out again. But perhaps, we have entered new bonds and something irreversibly new has resulted: The sugar is gone but a new chemical compound has formed. For a superficial example, most societies have been confronting for centuries the issue of immigration that is now as pressing as ever. A certain naive thinking wants to believe that migrants mingle among the natives, that they can be extracted and expelled at any time to restore the original purity of the nation – when in fact, we have entered into

² „Der Augenblick, der die Kunstwerke sind, schoß zumindest in den traditionellen dort zusammen, wo sie zur Totalität wurden aus ihren partikularen Momenten. [...] Beredt werden sie kraft der Zündung von Ding und Erscheinung. Sie sind Dinge, in denen es liegt zu erscheinen. [...] Prototypisch für die Kunstwerke ist das Phänomen des Feuerwerks [...] Es ist [...] empirisch Erscheinendes, befreit von der Last der Empirie als einer der Dauer, Himmelzeichen und hergestellt in eins, Menetekel, aufblitzende und vergehende Schrift, die doch nicht ihrer Bedeutung nach sich lesen lässt. [...] Nicht durch höhere Vollkommenheit scheidet sich die Kunstwerke vom fehlbaren Seienden, sondern gleich dem Feuerwerk dadurch, dass sie aufstrahlend zur ausdrückenden Erscheinung sich aktualisieren.“ English translation by A.N.



countless inextricable bonds with one another, forming a national compound, a new way of life.

The vantage point from the midst of thing is that of entangling and disentangling ourselves, of composing and decomposing, of making and building, of becoming attuned to the multi-materiality of the world – it is the vantage point of artful technology and technological art:

We have to imagine a perfectly similar spectacle proceeding in the interior of a ball-room, for instance. Hear we have a number of musical instruments in action, speaking men and women, rustling garments, gliding feet, clinking glasses, and so on. All these causes give rise to systems of waves, which dart through the mass of air in the room, are reflected from its walls, return, strike the opposite wall, are again reflected, and so on till they die out. We have to imagine that from the mouths of men and from the deeper musical instruments there proceed waves of from 8 to 12 feet in length [c to F], from the lips of the women waves of 2 to 4 feet in length [c" to c'], from the rustling of the dresses a fine small crumple of wave, and so on; in short, a tumbled entanglement of the most different kinds of motion, complicated beyond conception. (Helmholtz, 1895, p. 26)

And so we find ourselves in „a tumbled entanglement of the most different kinds of motion, complicated beyond conception.“ From this basic condition of hearing commences Hermann von Helmholtz’s *Lehre von den Tonempfindungen als physiologische Grundlage für die Theorie der Musik* [On the sensations of tone as a physiological basis for the theory of music], originally published in 1865. It asks the question of classical aesthetics – how does a tone come to appear – and answers it in a way that goes beyond the question.

HERMANN VON HELMHOLTZ AND CHARLES IVES

The American composer Charles Ives was one of many readers of Hermann von Helmholtz – but in the hustle and bustle, the parades and Circus performances of Danbury, Massachusetts, he drew his own conclusions (Rathert, 2011).

Many readers of Helmholtz, to this day, see his physiological analysis of the hearing of tones as a modern way to ground very classical notions of harmony and dissonance: what is „naturally“ pleasing or painful to the ear? Along the way, Helmholtz would disclose how the ear works, how in seemingly pure and simple tones there is a comingling of tones and overtones, how the ear can distinguish not only the A of a violin from the A of the flute but how it also distinguishes human speaking voices and noises that do not appear to have tonality at all.

For a reader like Charles Ives, Helmholtz opened the door to a world of sound where the pure tone is no longer privileged, where musical sounds are intervoven with the sounds of the street. Helmholtz does this by distinguishing the physical ear from the mental ear, the latter with its culturally conditioned musical judgement, the former much more interestingly an instrument, quite literally on a par with a musical instrument and a



scientific instrument – all of them devices for producing as well as for analyzing sound.³ As Julia Kursell worked out, the art of music became a laboratory for the physicist-philosopher-physiologist Helmholtz (Kursell, 2018). Inversely, for modern composers like Schönberg or Ives, the conditions of hearing became a premise for their musical practices – they do not just produce a work that offers itself up to listening, but they modulate how and what we hear, utilizing and intervening in a process of hearing which is so much more than listening.

It is a conceit of Western classical music, celebrated to this day, that the musical performance arises out of nothing, that it is surrounded by at least a moment of silence which sets the musical work apart from the random noise of the everyday. The listeners tend to the work, construing it as a totality that suffuses the entirety of their aural space. But when the musical work melts into air, it blends with all noise, and our hearing knows no silences but is at all times in a world of sound.⁴

Some of Ives's most famous pieces were inspired by his father who not only gave him the book by Helmholtz, but in Danbury, had two marching bands each play their own tune as they kept marching passed each other, back and forth, producing ever new sounds. On the sinking *Titanic*, famously, the band played on, maintaining its posture against inescapable adversity. Stoically, the Danbury bands played on in monological togetherness (compare Ives, 1935). In both cases, there is no longer a question of the appearance and disappearance of tones but of floating suspended in a solution of sounds which have no beginning or end but just go on as life goes on, following the unbroken course of things.

THEREMIN, SYNTHESIZER, AND MEDIAOPERA

If there were a patron saint for an aesthetics of disappearance, this would have to be Arthur Schopenhauer (1818/2014, 1818/2018). In *The World as Will and Representation*, when the world is represented in experience, language, science, or art, it appears to us in the form of discrete, individualized things. But the world as will is unbounded, has no beginning and end but, like music, persists as a kind of energy or generalized feeling, spreading continuously and lingering on. It does not appear or disappear but is the ground or substrate that conditions all appearance and disappearance.

³ The piano features a great number of strings which are used for producing musical sounds. But the piano does not just play music, it can also hear tones: If one stands next to the piano producing a tone that matches perfectly the pitch of one of the piano's strings, that string will start to vibrate. At this moment the piano does just as the ear does.

⁴ Inevitably, John Cage's (1952) eloquent composition 4'33" needs to be cited here. Why four minutes and 33 seconds of silence and not, say, three minutes and 54 seconds? Cage was working with the Chinese *I Ching* or *Book of Changes*, that is, he recruited chance as his compositional ally. Charles Ives was, by profession, in the insurance business and as such a successful entrepreneur in the Empire of Chance. An intermediary between the physiologist and semiotician Helmholtz and the insurance salesman Ives may have been the New Englander Charles Sanders Peirce whose „tychistic“ philosophy sought to account for an unbroken continuity of feeling in a world of chance (Peirce, 1892). To be sure, the thought of Helmholtz and of Peirce, and their relation, as well as Peirce's cultural proximity to Ives need to be investigated and elaborated in a considerably more detailed manner.



As it enters into and traverses the spatial and temporal framework of the world of representation, the will becomes formative and individuates things, but it is sure to leave this limiting and distorting framework behind. Among the arts, music is the furthest removed from representation and appears as pure expression or unfolding of the will. The disappearance of a representative and representational life is told most poignantly in Thomas Mann's Schopenhauerian novel *Buddenbrooks* which presents the „decline“ of a family as it fades away and completely dissolves into the world of music (Mann, 1993).

So much for the metaphysics of art. In the midst of things, looking for its technical analogue one encounters it in the Theremin. Its mysterious inventor Lew Sergejewitsch Termen, also known as Leon Theremin was the subject of one of Iraida's Yusupova first mediaoperas (Glinsky, 2005; Yusupova & Dolgin, 2003), and his instrument is a firm fixture in her compositional practice (for example, Yusupova, 2005). To be sure, Theremin was not the first physicist to invent musical instruments. In Helmholtz's lab one would see sirens that modulate a powerful stream of air, and Helmholtz himself developed a keyboard-controlled synthesizer which allowed him to combine tuning forks and Helmholtz-Resonators to generate from pure tones different sounds with different timbres. Instead of a stream of air, the Theremin modulates a stream of electrons, it is an electronic instrument and yet perfectly analogue. It is the persistent presence of an ethereal body, an unending standing sinus wave of a pure tone that serves as a physical equivalent of the basic energy, unformed ground or substrate, of Schopenhauer's all-pervasive will.

The invisible, intangible, yet physically present body of the instrument is manipulated by the performer's hands, the left hand controlling the horizontal plane, the right hand structuring vertically. Horizontally, the hand can alter pitch and thus holds and maintains a melodic line. Vertically, the hand controls how we hear the melodic line in terms of volume or intensity. This separation of horizontal and vertical planes of action is deeply significant: The left hand cares and curates what flows from left to right also in each line of staff in a musical score, the right hand governs and judges, it is the hand of the creator, also the hand that keeps us in time, with crescendos and decrescendos rising and falling through the score, coming together or moving apart in this bar or that.

The Theremin is thus built around the fusion of player, conductor, and creator. The very posture of the player expresses this, and it is also the posture of the conjurer or magician who presents a levitating body (Figure 1). Here, what levitates is the ghost of a body that does not inhabit the spatio-temporal world as representation. The conjurer's hands elicit a voice from the dead or not-yet-alive; the ethereal substrate is a persistent presence, standing by even when the hands withdraw – without beginning or end it is not produced but lingers always, latently.



Figure 1. Player, conductor, creator, eerily modulating the ethereal body of the immortal will: Clara Rockmore at her Theremin

The standing waves can be drawn out in the form of analogue continuous melodic lines, insinuating themselves into the individual movements of classically formatted chamber music pieces, also insinuating themselves into digital media.⁵ One hears them echo everywhere in Iraida Yusupova's works. When she seeks to characterize the difference between mediaopera and other forms of media art, she points out that the melodic lines of mediaopera are aural as well as visual. Mediaopera does not project a musical plot into the format and genre-conventions of video-art, it does not seek the synergy from two distinct cultural spheres, but develops a visual score musically (Bernyukevich, 2025).

Equally important for Iraida Yusupova's aesthetics is the separation and juxtaposition of the horizontal and the vertical, the meandering melodic lines and their coordination in time. This, to be sure, is as in Charles Ives's marching bands: each line is well-defined, stoically following its own step and pace, but what one hears depends on the criss-crossing and coordination of the individual lines. Since none of them is bound by a specific temporal regime, the willful „vertical“ moments of coordination finally determine how the intermingling individual threads join together. While each line for

⁵ Building on and expanding the Theremin, the Moog synthesizer and subsequent developments can modulate several such curves simultaneously, each tied back in with the keys of a classical keyboard.



itself is written by the composer, the vertical moments only occur during the performance of the piece, in the composer's head and during the production at the computer of the ultimately scoreless mediaopera – it is here where the creative act takes place, a powerfully intuitive decision which results in the weave, more significant than the writing of the lines. This first struck Yusupova in the early 1990s at a performance of Stockhausens's opera *Licht* [Light]:

I witnessed there the strong verticals of a „creator/performer.“ These were provided in the conception of the performance and not by the composer's or writer's hand which is never so strong as the hand that creates the performance. This mystical vertical connection became for me the main guide in my subsequent development. (Yusupova, 2025, p. 17)

It is not the appearance or the vanishing but the persistent presence of the modulated horizontal line which is the paradigm for Yusupova's *Gesamtkunstwerk* [Total work of art] (Lianskaya-Lininger, 2025). It is not contained in the shoe-box of an opera-stage, it eludes the temporal logic of the house falling silent, the music commencing, and finally returning to the keynote, for the applause to set in. Instead, we find ourselves in the midst of a cryptophonic parallelism or interweaving of visual and aural lines, carried on by a laconic narrative that does not rise to the level of high drama, even in the case of the *Pink Mouse* and her troubled protagonist (Yusupova, 2021; von Xylander, 2025). The *Titanic* sinks, parents drown, but the band plays on, at the Bottom of the sea or on land, with the narrative arc drawing in bits and pieces of the world rather than presenting it as a totality (Nordmann, 1996). The meandering lines of Yusupova's *Gesamtkunstwerk* take up, draw in, encrypt the whole world; and the encryption key is a musical key. And if it ends at all, this kind of mediaopera joins in with Gavin Bryars' *The Sinking of the Titanic* (Bryars, 1975). Or, as in Yusupova's mediaopera *The Alphabet* it opens up into a cosmic landscape of space explorers who, like the Buddenbrooks, lose their entrepreneurial will and footing in the world of representation (Yusupova, 2024). Lost souls everywhere, hapless space cadets, but carried forward in the flow, blessed and perhaps saved by the intermingling lines of beauty and grace.

REFERENCES

- Adorno, T. W. (1970). *Ästhetische Theorie* [Aesthetic Theory]. Suhrkamp.
- Baumgarten, A. G. (2007). *Ästhetik. Lateinisch-deutsch* [Aesthetics]. Meiner.
- Benjamin, W. (2008). *The Artwork in the Age of its Technical Reproducibility*. Harvard University Press. (Original work published 1935)
- Bernyukevich, T. (2025). Mediaopera and Digital Opera: Musical Conceptualism and Modern Technologies. *Technology and Language*, 6(1), 42-53. <https://doi.org/10.48417/technolang.2025.01.05>
- Bensaude-Vincent, I. (1998). *Eloge du mixte. Matériaux nouveaux et philosophie ancienne* [In Praise of Mixing: New Materials and Ancient Philosophy]. Hachette Littératures.
- Berman, R. (1988) *All that is Solid Melts into Air: The Experience of Modernity*, Penguin.



- Bryars, G. (1975). *The Sinking of the Titanic* [Album]. Obscure Records.
- Cage, J. (1952). 4 '33" [Scores]. Edition Peters.
- Foucault, M. (2003). *Society Must Be Defended: Lectures at the Collège de France, 1975-76*. Picador. (Original work published 1975)
- Gigerenzer, G., Swijtink, Z., Porter, T., Daston, L., Beatty, J., and Kruger, L. (1989) *The Empire of Chance: How Probability Changed Science and Everyday Life*, Cambridge University Press.
- Glinsky, A. (2005). *Theremin – Ether Music and Espionage*, University of Illinois Press.
- Helmholtz, H. V. (1895). *On the Sensations of Tone as a Physiological Basis for the Theory of Music*, Longmans, Green, and Co.
- Ives, C. (1935). *Three places in New England. An Orchestral Set* [Score]. Theodore Presser Company.
- Kant, I. (1998). *Critique of Pure Reason*. Cambridge University Press. (Original work published 1781)
- Kuhn, T. (1996). *The Structure of Scientific Revolutions* (3rd ed.). University of Chicago Press. (Original work published 1962)
- Kursell, J. (2018). *Epistemologie des Hörens – Helmholtz' physiologische Grundlegung der Musiktheorie* [Epistemology of Hearing – Helmholtz's physiological Foundation of the Theory of Music]. Wilhelm Fink.
- Lianskaya-Lininger, E. (2025). From Eisenstein to Einstein: The Ultimate Guide to Mediaopera. *Technology and Language*, 6(1), 28-41. <https://doi.org/10.48417/tech nolang.2025.01.04>
- Mach, E. (1959). *Analysis of Sensations*. Dover Publications
- Mann, Th. (1993) *Buddenbrooks: The Decline of a Family*. Alfred A. Knopf.
- Marx, K. and Engels, F. (2010) *Manifesto of the Communist Party – and its Genesis*. (Original work published 1848) <https://www.marxists.org/admin/books/manifesto/Manifesto.pdf>
- Mayr, E. (1994). Typological versus Population Thinking. In E. Sober (Ed.), *Conceptual Issues in Evolutionary Biology* (pp. 157–160). The Mit Press.
- Nordmann, A. (1996). Blotting and the Line of Beauty: On Performances by Botho Strauss and Peter Handke. *Modern Drama*, 39(4), 680-697.
- Peirce, C. S. (1892). The Law of Mind. *The Monist*, 2(4), 533-559. <https://doi.org/10.5840/monist18922434>
- Rabinbach, A. (1990). *The Human Motor*. Basic Books
- Rathert, W. (2011). *Charles Ives*. wbg Academic in Herder.
- Schopenhauer, A. (2014). *The World as Will and Representation*, volume 1, Cambridge University Press. (Original work published 1818)
- Schopenhauer, A. (2018). *The World as Will and Representation*, volume 2, Cambridge University Press. (Original work published 1818)
- von Xylander, C. (2025). Recombinant Agency. *Divine Comedy Meets Upcycled Comics Art in Pink Mouse, a Meta-Mediaopera*. *Technology and Language*, 6(1), 82-128. <https://doi.org/10.48417/technolang.2025.01.08>



- Yusupova, I. and Dolgin, A. (2003). *Theremin's Last Secret. Mediaopera*. [Video]. YouTube. https://www.youtube.com/watch?v=X5XK_wk5OLA (in Eng) <https://www.youtube.com/watch?v=Hxvc1JhNQEc> (in Rus)
- Yusupova, I. (2005). *Kitezha – 19 for Theremin and Tape, Touch! don't Touch! Music for Theremin* [Album]. Wergo.
- Yusupova, I. (2021). *Pink Mouse. Mediaopera*. [Video]. YouTube. https://www.youtube.com/watch?v=DwnTUqvkv_Q
- Yusupova, I. (2024). *The Alphabet*. [Video]. YouTube. <https://www.youtube.com/watch?v=JUiSkTi117A>
- Yusupova, I. (2025) Everything You Wanted and Didn't Want to Know about Mediaopera: A Cryptophonic Memoir. *Technology and Language*, 6(1), 14-27. <https://doi.org/10.48417/technolang.2025.01.03>

СВЕДЕНИЯ ОБ АВТОРЕ / THE AUTHOR

Альфред Нордманн, nordmann@phil.tu-darmstadt.de
ORCID 0000-0002-2173-4084

Alfred Nordmann, nordmann@phil.tu-darmstadt.de
ORCID 0000-0002-2173-4084

Статья поступила 12 января 2025
одобрена после рецензирования 15 марта 2025
принята к публикации 19 марта 2025

Received: 12 January 2025
Revised: 15 March 2025
Accepted: 19 March 2025