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Critical Theory, Media, and Education in the Era of Artificial Intelligence

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Editors' Note

Critical Theory, Media, and Education in the Era of Artificial Intelligence

The latest developments in the field of artificial intelligence (AI) have dramatically transformed and redefined today's landscape of communication, media, art, and education. Within this context, critical theory provides an apt methodological framework for analyzing and understanding such complexities and new societal and cultural challenges imposed by current technological innovations. Having in mind recent changes of the role of critical theory in comparison to its heyday during the 20th century, this issue of *AM Journal of Art and Media Studies* aims to explore novel interdisciplinary theoretical models in social sciences and humanities (new theories, concepts, and critical vocabularies) pertinent for the analysis of AI and its widespread influence.

A theoretical framework conceived in such a way allowed contributions from distinctive disciplines and fields such as communication studies, media and art theory, philosophy, critical theory, cultural studies, psychology, pedagogy, and political studies. Therefore, acknowledging various relevant topics – critical theory in the post-digital age, contemporary AI based art/media practices, impact of AI on pedagogy, education, and learning, etc. – this special issue seeks to offer new perspectives on fundamental questions that emerged with the advent of a transformative yet controversial phenomenon of AI.

Main Topic section opens with Hans-Georg Moeller's contribution to critical and emergent media theory in digitally grounded contemporaneity. Three of the following articles address relation between AI and contemporary artistic and media practices: Maryam M. Hassan, particularly focusing on GAN and AICAN deep learning models, investigates the impact of AI on photography today; Uroš Krčadinac and Jacques Laroche, choosing as their case study a participatory algorithmic art project based on the generation process of different flags, elucidate how algorithms construct as well as commodify our digital identities; Jelena Novaković, in her interdisciplinary rapport between the discourses of art theory and ecology, conceives of a possibility that plant life could be a creative part of AI art practice. Afterwards, two papers consider how AI redefines and changes the status of knowledge and institutional education, and introduces new ethical and moral dilemmas, respectively: Predrag Krstić explores the idea behind the artificial lifeform education and deconstructs its broader consequences on the traditional humanist paradigm; Bojan Blagojević, through concepts of personhood, embodiment, and sensitivity to pain/pleasure, suggests a new reading of a moral status of AI. Finally, the last two articles map out and critically

examine new digital and technological challenges within the current global and local media landscape: Nikola Mlađenović and Slobodan Penezić critically deepen the concept of media populism in the context of present-day neoliberal processes of mediatization, whereas Ilija Milosavljević analyzes both imposing limits and potentials of the employment of algorithms in small media markets.

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MAIN TOPIC

CRITICAL THEORY, MEDIA, AND EDUCATION IN THE ERA OF ARTIFICIAL INTELLIGENCE

ART+MEDIA

Moeller, H.G., Critical and Emergent Media Theory, *AM Journal*, No. 36, 2025, 1–10.

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Critical and Emergent Media Theory

Abstract: This essay contrasts two different approaches in media theory. One approach is traced back to Immanuel Kant's understanding of the Enlightenment as progress toward human autonomy. For Kant, the "public use of reason" in the mass media of his time (books and journals) was essential for bringing about enlightened individuals and an enlightened society. In the wake of Kant, "critical media theory" until today often normatively questions in how far the media empower or undermine agency and authenticity. A different theoretical approach, represented by Marshall McLuhan and Niklas Luhmann, conceives of the media as conditioning human experience and emerging in the context of historical and technological evolution rather than viewing them through an Enlightenment lens. A contemporary version of such an "emergent media theory" can describe the media as a virtual second-order observation reality enabling the curation of profiles.

Keywords: critical media theory; Immanuel Kant; Marshall McLuhan; Niklas Luhmann; profilicity.

Introduction

In this short paper, I broadly distinguish between two different media theory paradigms. One paradigm, I argue, regards mass (and social) media as a sphere for the shaping of what I call here, alluding to Immanuel Kant, the "enlightened human" (*der aufgeklärte Mensch*): the emancipated, autonomous, and authentic agent. This paradigm judges the media by measuring in how far they live up to the task of fostering "enlightened humans". It stems from the historical assumption that the media (particularly books and journals) can be a forum for autonomous individuals to authentically express themselves on political, scientific, aesthetic or other matters of general interest. In this way, the media could appear, in a Hegelian sense, as a giant *Bildungsprojekt,* a cultivation and education project of political, moral, and spiritual growth and emancipation, helping humanity to *build* itself personally and collectively. Consequently, the question was if the media could meet such expectations, or if they instead undermined the enlightenment promise. Given its focus on critiquing the media by Enlightenment standards, such a theoretical approach can be labelled "critical media theory".

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Different from "critical media theory," the other media paradigm I discuss here assumes that the media have never been geared towards the promotion of autonomy and authenticity. Consequently, they cannot be blamed for failing to do so. From such a non-normative perspective, the media are not a forum, or a showcase of what humans essentially are or ideally ought to become, but instead a condition of human experience embedded in a constantly evolving social and technological environment. This paradigm gives rise to a wider range of more descriptive media theories, including a media theory centered on "profilicity", which will be briefly introduced towards the end of this paper. Given their focus on historical processes not controlled or controllable by human agency, such theories may be labelled "emergent media theory".

Critical media theory

A programmatic definition of the "enlightened human" in terms of the core ingredients of autonomy and authenticity was provided by Immanuel Kant at the outset of his famous essay "An Answer to the Question: What is Enlightenment?" Here, Kant stipulates that an enlightened person is able to "use one's understanding without guidance from another".[1] The supposed ability to guide or control oneself purely by means of one's inner and original powers of reasoning constitutes the "maturity" of enlightened individuals and distinguishes them from their unenlightened, irrational, immature, and inauthentic predecessors in earlier times.

Kant's programmatic essay not only defines the "enlightened human" as the modern individual capable of autonomously guiding itself by means of reason but also stipulates how the transition from immaturity to maturity – or from inauthenticity to authenticity (in the sense of a person being the *origin* of their thoughts and actions rather than reproducing or imitating what others say or think) – is to be brought about, namely by "the public use of reason". Kant fears that "it is difficult for any individual man to work himself out of the immaturity that has all but become his nature."[2] The march toward enlightenment cannot be private. Although the reason is an inner and individual mental faculty for Kant, its *exercise* is intersubjective. In an enlightened, or self-enlightening society, reasonable individuals reason with one another: "That the public should enlighten itself is more likely",[3] Kant says, than a single person achieving enlightenment on their own. Becoming mature, autonomous, and authentic must be a joint effort of, ideally, all reasonable individuals. But how is this possible? Kant explains: "By the public use of one's own reason I understand the use that anyone as a *scholar* makes of reason before the entire *literate world*."[4] This is to say, enlightenment depends for Kant on the free publication and circulation of printed books and magazines spreading scholarly knowledge, informed opinion, and rational debate throughout society. An important

[1] Immanuel Kant, "An Answer to the Question: What is Enlightenment?", trans. Ted Humphrey (Hackett Publishing, 1992), https://www.nypl.org/sites/default/files/kant_whatisenlightenment.pdf.

[2] Kant, "An Answer to the Question," 1.

[3] Kant, "An Answer to the Question," 1.

[4] Kant, "An Answer to the Question," 2. Emphasis in the original text.

aspect of Kant's answer to the question What is Enlightenment? is that Enlightenment relies on mass media (print media in Kant's time) providing an open forum for intelligent communication by means of which the public enlightens itself. Even if Kant's essay is not primarily focused on what is now called media theory, it framed the basic paradigm of authenticity- and autonomy-oriented media theory: A prime purpose of the mass media is to promote enlightenment by enhancing and empowering free human agency and the spread of reason.

Arguably, mainstream media theory today still remains influenced by Kant's ideal of the media as the public sphere of reason and, thereby, as a forum for the cultivation of human autonomy and authenticity. I will merely point out a few examples to illustrate this claim.

In their *Dialectic of Enlightenment*, Theodor W. Adorno and Max Horkheimer critically investigate in how far the mid-20th century society fulfilled the promises of the Enlightenment formulated by Kant and other thinkers of his age. Their verdict is highly negative: they feel that "humanity, instead of entering a truly human state, is sinking into a new kind of barbarism."[5] A prime culprit of this reversal of the Enlightenment into its opposite is what Adorno and Horkheimer label the "culture industry", i.e. the mass media of their time. They accuse the media, in particular film and television, of spreading stupidity, uniformity, and consumerism instead of promoting reason, autonomy, and authenticity. Art and science, key elements of an enlightened society, have been perverted by popular media which disseminate only falsehood: "At all its levels, from Hemingway to Emil Ludwig, from Mrs. Miniver to the Lone Ranger, from Toscanini to Guy Lombardo, intellectual products drawn ready-made from art and science are infected with untruth."[6] The ideal of true personhood has been undermined by radio and cinema: "From the standardized improvisation in jazz to the original film personality who must have a lock of hair straying over her eyes so that she can be recognized as such, pseudo-individuality reigns."[7] "Untruth" and "pseudo-individuality" are markers of an all-pervasive inauthenticity brought about by the rise of the media which have betrayed the very Enlightenment that they sprang from.

Somewhat similar to Adorno and Horkheimer, Guy Debord regarded the media as the prime manifestation of the "spectacle" – a new social formation in which all of life has become inauthentic. The media-centered society of the spectacle has turned all of human life into a show business: an economic and political framework based on staging and displaying. Debord defines the spectacle as "a social relationship between people that is mediated by images,"[8] and its "most stultifying, superficial manifestation"[9] are the mass media. In this society, authenticity has been subverted: "What has been passed off as authentic life turns out to be merely a life more

[5] Max Horkheimer and Theodor W. Adorno, *Dialectic of Enlightenment. Philosophical Fragments* (Stanford: Stanford University Press, 2002), xvii.

[6] Horkheimer and Adorno, *Dialectic of Enlightenment*, 114.

[7] Horkheimer and Adorno, *Dialectic of Enlightenment*, 124–25.

[8] Guy Debord, *The Society of the Spectacle* (Zone Books, 1995), 12.

[9] Debord, *The Society of the Spectacle*, 19.

authentically spectacular."[10] In other words: "The spectacle erases the dividing line between true and false, repressing all directly lived truth beneath the real presence of the falsehood maintained by the organization of appearances."[11] Truth, originality, and sovereign individuality have no place in the media-driven consumerist spectacle of the simulated, image-driven reality we inhabit. Echoing the sentiments of Adorno's and Horkheimer's *Dialectic of Enlightenment*, Guy Debord too regards the media as a great anti-authenticity force in a dystopian post-Enlightenment world where "all that once was directly lived has become mere representation."[12]

The bleak assessments by Adorno, Horkheimer, and Debord date back many decades, but newer versions of them abound in current criticisms of social media blaming them for fake news and ushering in an age of post-truth along with spreading inauthentic and irrational "narcissism"[13] that turns the human race into a phony "phono sapiens".[14]

And yet, other 20th and 21st century media theorists still cling on to the old Kantian narrative that views the media as *the* social sphere that promises the rise of reason, liberty, and sovereignty as well as of creativity and originality. A programmatic short treatise "Constituents of a Theory of the Media" [Baukasten zu einer Theorie der Medien], first published in 1970 by the German writer Hans Magnus Enzesberger, encapsulates the view that media can and ought to function as a liberational sphere of humankind.[15] Framed in a Marxist vocabulary, Enzensberger's essay presents a vision of a future free mass media taken out of the hands of corporate ownership and control by political regimes. This vision radicalizes Jürgen Habermas' neo-Kantian notion of "domination-free discourse" (*herrschaftsfreier Diskurs*). Once the media are owned and produced by the people rather than by capitalists or party organizations, they will become truly democratic, Enzensberger assumes. He imagines "a mass newspaper, written and distributed by its readers, a video network of politically active groups;[16] he also depicts potential future electronic interactive mass media which are strongly reminiscent of today's internet: a "linked series of communications"[17] or "a huge linked system – that is to say, it would be such if it were capable not only of transmitting but of receiving, of allowing the listener not only to hear but to speak, and would not isolate him but bring him into contact."[18] Such media, it is hoped, would erase all

[10] Debord, *The Society of the Spectacle*, 112.

[11] Debord, *The Society of the Spectacle*, 153.

[12] Debord, *The Society of the Spectacle*, 12.

[13] See, for instance, Sonia Sodha, "Social Media Fuels Narcissists' Worst Desires, Making Reasoned Debate Near Impossible," in *The Guardian*, November 7, 2021, https://www.theguardian.com/commentisfree/2021/nov/07/social-media-fuels-narcissists-worst-desires-making-reasoned-debate-near-impossible.

[14] Byung Chul-Han, *The Crisis of Narration* (Polity Press, 2024).

[15] Hans Magnus Enzensberger, "Constituents of a Theory of the Media," trans. Stuart Hood, in *The Consciousness Industry: On Literature, Politics, and the Media* (Continuum, 1974), 95–128.

[16] Enzensberger, "Constituents of a Theory of the Media," 110.

[17] Enzensberger, "Constituents of a Theory of the Media," 98.

[18] Enzensberger, "Constituents of a Theory of the Media," 98.

cultural privileges and hierarchies, and, as a giant public sphere, would make people, as Enzensberger poetically states, "as free as dancers, as aware as football players, as surprising as guerillas."[19] Crucially, such participatory media are meant to enhance people's individual agency and creativity, and to mobilize them to the point that they finally become, as Enzensberger says, "the authors of history".[20]

Variations of Enzensberger's vision of a domination-free, participatory, and de-centralized media network of and by the people have reoccurred frequently in more recent decades. Noam Chomsky, for instance, similarly critiqued the capitalist control of the media and argued in favor of an anarchic-libertarian media structure to empower democratic agency and to eliminate manipulation by the ruling elites.[21] When the Internet emerged in the 1990s and 2000s it was greeted by (cautiously) optimistic media theorists varying the same theme. Some examples are Howard Rheingold's *The Virtual Community: Homesteading on the Electronic Frontier* (MIT Press, 1993), Tim Berners-Lee's *Weaving the Web: The Original Design and Ultimate Destiny of the World Wide Web* (Harper, 1999), and Rebecca MacKinnon's *Consent of the Networked: The Worldwide Struggle for Internet Freedom* (Basic Books, 2012). From different perspectives, these authors revived and modified the Kantian hope that the (new) media may become a large public forum promoting the self-enlightenment of humankind.

Emergent Media Theory

Not all media theorists, however, share the premise of a critical media theory centered on the question if or how the media can live up to the normative ideal of supporting the self-creation of autonomous and/or authentic "enlightened humans".

Perhaps the most influential "non-humanist" media theorist was Marshall McLuhan. A key quote from McLuhan's book *Understanding Media: The Extensions of Man* is: "Many people would be disposed to say that it was not the machine, but what one did with the machine, that was its meaning or message. In terms of the ways in which the machine altered our relations to one another and to ourselves, it mattered not in the least whether it turned out cornflakes or Cadillacs."[22] The contemporary "machines" McLuhan was most interested in were "media machines": television, film, etc. These machines turned out neither cornflakes nor Cadillacs, but news, movies, and commercials. And yet, as was the case with traditional machines, McLuhan famously argued that it wasn't such output or "messages" that mattered, but how the media changed the human way of life. Accordingly, the media were not understood as a forum or showcase by which individuals could convey important messages and increase their autonomy or authenticity. To the contrary, as Father John Culkin summed

[19] Enzensberger, "Constituents of a Theory of the Media," 97.

[20] Enzensberger, "Constituents of a Theory of the Media," 128.

[21] Edward S. Herman and Noam Chomsky, *Manufacturing Consent: The Political Economy of the Mass Media* (Pantheon Books, 1988).

[22] Marshall McLuhan, *Understanding Media: The Extensions of Man* (Mc Graw-Hill, 1964), 19.

up McLuhan's point: "We shape our tools and thereafter they shape us."[23] Rather than empowering human agency or self-expression, media constitute a social and technological environment that conditions humans by conditioning their existence. According to McLuhan, traditional print media had shaped the "Gutenberg Galaxy" or "Typographic Man": a privacy-oriented form of identity.[24] But the entirely different "machines" of electronic media, including TV and film, had gradually replaced "Typographic Man" and established the "Global Village", a modern version of a tribal world based on the simultaneity of events and intense mutual involvement.

Somewhat comparable to McLuhan, the German theorist Niklas Luhmann also described the mass media from a non-humanist perspective as a historically emerging social formation not subject to individual or collective intentional control or design.[25] As an autopoietic (self-generating) social (or communication) system in the context of many others, the mass media system is characterized by its specific "code". According to Luhmann, the code of the mass media is the distinction between what he calls "information" and "non-information". Whatever is selected as "news," for instance, or what is advertised in commercials, is information and what is not is not-information. A peculiar aspect of this code is that once information is communicated it becomes non-information (or old information) and must be replaced by new information: news must always be replaced by newer news; a TV series must be continued by another episode or replaced by a new series, etc. Luhmann writes: "Just as the economy […] generates the never-ending need to replace money spent, so the mass media generate the need to replace redundant information with new information: fresh money and new information are two central motives of modern social dynamics."[26]

All modern social systems, Luhmann argues, fulfill specific functions in society. A prime function of the media system is to provide a common "background reality"[27] of that which is "known to be known"[28] to the world society (faintly resembling Mc Luhan's "global village"). This background reality is constantly updated and modified, and, importantly, not based on agreement – everyone has different perspectives on it. Luhmann states: "Perhaps the most important outcome of these considerations is that the mass media may generate [background, H.G.M.] reality, but a reality not subject to consensus." The non-consensual, dynamic background reality of the mass media constantly "irritates",[29] as Luhmann says, all other social systems and can force them into "structural couplings"[30] with the media. This is to say, for instance, that

[23] John M. Culkin, "A Schoolman's Guide to Marshall McLuhan," *The Saturday Review* (March 1967): 70, https://www.unz.com/print/SaturdayRev-1967mar18-00051.

[24] See Marshall McLuhan, *The Gutenberg Galaxy: The Making of Typographic Man* (University of Toronto Press, 1962).

[25] Niklas Luhmann, *The Reality of the Mass Media* (Stanford: Stanford University Press, 2000).

[26] Luhmann, *The Reality of the Mass Media*, 20–21.

[27] Luhmann, *The Reality of the Mass Media*, 65.

[28] Luhmann, *The Reality of the Mass Media*, 13.

[29] Luhmann, *The Reality of the Mass Media*, 22.

[30] Luhmann, *The Reality of the Mass Media*, 63–70.

politics and mass media constantly and speedily react to one another – what happens in politics is influenced by media coverage and vice versa. Moreover, politics and media align their structures to one another: elections, for instance, are both political and media events. In a similar way, most other social systems, such as the economy, sports, or the art system, to name just a few, are coupled with the media system.

Another function of the mass media is the provision of "clues" for "work on one's own identity",[31] Luhmann writes in reference to what he calls the "program strand" (*Programmbereich*) of entertainment. In entertainment, such as novels in traditional print media or in film and television in electronic media, readers or viewers observe a wide range of fictional characters interacting with one another. Observing these interactions, Luhmann suggests, invites the audience "to relate what they have seen or heard to themselves."[32] They can build a sense of who they are, or of who they want to be, by comparing the virtual realties of the protagonists, i.e. the displayed behaviors, emotions, beliefs, attitudes, etc., and by trying them out in an imaginary way on themselves.[33]

By stimulating and enabling personal identity work, the mass media system contributes to solving a crucial problem posed by the demise of pre-modern society – the problem of having to find out who one is. According to Luhmann's social systems theory, pre-modern society was characterized by "stratified differentiation", i.e. the division of society into various "strata" roughly equivalent to what in Marxist language are the "classes" of feudal society. In such a stratified society, people were born into the social roles of their respective strata and thereby a certain identity was assigned to them more or less for life. Under such conditions, it was neither possible nor necessary for most people to question their identity; they acquired it by descent. In modernity, however, Luhmann proposes, stratified differentiation was replaced by "functional differentiation," i.e. the division of society into numerous function systems (such as the economy, the legal system, the political system, the education system, the mass media system, etc.). A society constituted by such modern function systems presupposes "individuals who no longer draw their identity from their background but who instead have to shape it themselves."[34] This is to say that "no sooner he is born, every individual finds himself to be someone who has yet to determine his individuality […]."[35] The virtual realities of the media unfold a scope of the currently available options of identity-determination for individuals in modern society.

Next to functional differentiation, another defining feature of modern society is, for Luhmann, "second-order observation."[36] In modernity, Luhmann argues, the observation of observers has become central to the functioning of all social systems.

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[31] Luhmann, *The Reality of the Mass Media*, 62.

[32] Luhmann, *The Reality of the Mass Media*, 60.

[33] Luhmann, *The Reality of the Mass Media*, 60.

[34] Luhmann, *The Reality of the Mass Media*, 59.

[35] Luhmann, *The Reality of the Mass Media*, 59.

[36] Luhmann, *The Reality of the Mass Media*, 83–84.

Markets in the economic system are a prime example of this: when assessing the price of a house, one has to assess not the house by observing it directly but rather understand how the house is observed on the housing market. The whole modern economy – think of the financial markets – operates with such second-order observation mechanisms. For Luhmann, the mass media system, too, operates in the mode of second-order observation. He states programmatically: "The reality of the mass media is the reality of second-order observation."[37] Obviously, whenever reading a book, watching a film, or surfing the Internet, we observe the observations of others.

Luhmann's media theory embeds the media in the historical and systemic context of modern society. The media are what they are and function the way they function not for the sake of or as a means to suppress human agency or authenticity, but instead because they emerged in the context of the rise of functional differentiation and second-order observation.

In my own work on media theory and identity, I build on Luhmann's concepts of functional differentiation, and, in particular, second-order observation. Luhmann defines the reality of the mass media as the reality of second-order observation – and for me, the reality of second-order observation is the reality of "profilicity", i.e. the construction of identity or a sense of self through the curation of profiles.[38] I will use a concrete example to briefly illustrate this claim.

In 2001, the talent show *Pop Idol* premiered on the British TV channel ITV. Its US version *American Idol* followed in 2002. According to Wikipedia, *Idol* "has since become the world's most widely watched television franchise, as well as one of the most successful entertainment formats, adapted in over 56 regions around the world, with its various versions broadcast to 150 countries […]"[39] "Idol" is another word for "star" or "celebrity" – and "celebrity" is the new type of "personality" that, as Walter Benjamin noted in his essay on "The Work of Art in the Age of Mechanical Reproduction", was created in the new media.[40] Eventually this new personality was no longer just an exception, but became the norm. Once anyone can learn how to build a sense of self in the mode of idols, this personality can be given a different name: the *profile*. The triumph of *Idol* as "the world's most widely watched television franchise" manifests the proliferation of profilicity in and through the media. When watching, and participating in an *Idol* show, we see how a personality is built: At the outset, all competitors are unknown, average people. They have a very low profile. At the end, at least the winners have become high-profile idols. The essence of the show is not simply to depict, but more intensely, as true *reality TV*, to actually *be* the life path by which a person becomes who they are.

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[37] Luhmann, *The Reality of the Mass Media*, 85.

[38] Hans-Georg Moeller and Paul D'Ambrosio, *You and Your Profile: Identity after Authenticity* (Columbia University Press, 2021).

[39] "The Idol (TV series)", Wikipedia, accessed April 6, 2025, https://en.wikipedia.org/wiki/The_Idol_(TV_series).

[40] Walter Benjamin, "The Work of Art in the Age of Mechanical Reproduction," trans. Harry Zohn, in *Illuminations*, ed. Hannah Arendt (Schocken Books, 1969), 1–26, https://web.mit.edu/allanmc/www/benjamin.pdf.

Arguably, the success of social media today is tied to their use as profile-building platforms. Rather than promoting the rise of the autonomous and authentic agent, the history of the modern media may in hindsight be described in conjunction with the rise of the identity technology of profilicity. The evolution of social media out of the mass media seems to demonstrate an intricate connection between media history and the need, or desire, for profile curation.

A brief conclusion

In light of the broad distinction between critical and emergent media theory suggested in this essay, the question may be posed if the transition from mass to social media and, more recently to the widespread use of AI, supports either of the two approaches. Do social media and AI promote the public use of reason or bring us closer to the emancipatory and participatory media world Enzensberger envisioned? Do they finally allow people to authentically and creatively express themselves free of domination? Or do they represent just another, even darker version of the dialectical turn of the Enlightenment into a "society of the spectacle"?

Or, alternatively, does the reality of algorithm-guided social media from YouTube to Tik Tok, from eBay to Tinder, from "woke" to "alt-right" filter bubbles, suggest that the humanist Enlightenment narrative that searches for autonomy and authenticity in the media was misplaced from the start? Contemporary media and the use of AI may instead reflect contemporary social and existential conditions, such as functional differentiation and second-order observation, within which the media emerged and continue to evolve.

Building on theorists like Marshall McLuhan and Niklas Luhmann, I tend to prefer the second theoretical option which pursues a more descriptive and less normative path. The purpose of such a descriptive approach, however, is not to be uncritical. Instead, the idea is to avoid unrealistic expectations when coping with the very clear and obvious problems posed by the new media and AI, ranging from significant psychological harm[41] to political crises.[42] It may be possible to devise better strategies to deal with such problems when accepting that the media, for better or worse, are, in reality, a space of profilicity rather than of authenticity.

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The Impact of AI on Transforming Concepts in Contemporary Photography

Abstract: The integration of AI, particularly deep learning, has significantly altered the landscape of photography, offering tools that redefine workflows and expand creative horizons. AI enables photographers to create new images and manipulate existing ones, thereby pushing the boundaries of artistic expression. However, this capability also raises concerns about the blurring of lines between authorship and originality. This research investigates AI's impact on traditional photography, with a focus on creativity and authorship, particularly through technologies like GANs and AICAN. The study examines how AI-generated images challenge the distinction between reality and fiction, influencing the art and reshaping concepts of creativity in AI-produced works. As the distinction between truth and falsehood becomes increasingly blurred in a world of misinformation, the research explores AI's role in deepening this crisis. The research problem centers on the need to re-evaluate the role of photographers as AI takes over many photographic tasks, raising questions about how this technology redefines artistic creativity, authenticity, and authorship. The study questions whether artistic vision and the human touch will remain crucial or if the focus will shift toward collaborative creativity between humans and AI. The significance of this research lies in its ability to provide insights into AI's impact on photography, helping navigate the future of this art form. This research aims to analyze the artistic and expressive qualities of concrete examples of artificial intelligence applications in photography, as well as to deconstruct the concepts of art, creativity, authorship, and authenticity in photographic artworks considering modern technology.

Keywords: photography; GAN; authenticity; artificial intelligence; AICAN.

Introduction

Historically, photographs held an authoritative status; altering them was often equated with altering memory and, by extension, history. Humans rely heavily on sight to distinguish between reality and fiction, and therefore images were granted a high degree of credibility in defining truth. As researchers İsmail Erim and Mehmet Emin note, "images still hold significant credibility regarding the issue of truth."[1]

[1] İsmail Erim Gülaçtı and Mehmet Emin Kahraman, "The Impact of Artificial Intelligence on Photography and Painting in the Post–Truth Era and the Issues of Creativity and Authorship," *Medeniyet Sanat – İMÜ Sanat Tasarım ve Mimarlık Fakültesi Dergisi* 7, no. 2 (2021): 244, https://doi.org/10.46641/medeniyetsanat.994950.

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However, with its advanced capabilities in image generation and processing, AI has revolutionized areas such as image recognition, analysis, and smart editing. For instance, social media platforms like Facebook employ AI algorithms to recognize faces and suggest hashtags, enhancing user experience.

This technological shift has redefined creative thinking, traditional concepts about images credibility. Photographers are no longer limited to documenting reality; they can now explore imaginative realms through generative algorithms. These tools allow artists to express their ideas and emotions with unprecedented freedom, fostering the development and reinterpretation of artistic concepts.[2] However, these advancements come with challenges, particularly regarding privacy violations and ethical concerns.

Through George Gerbner's Cultivation Theory, which suggests that constant exposure to media reshapes our perceptions of reality, with the proliferation of artificially altered and AI-powered images, the lines between 'truth' and 'representation' are shifting. For example, malicious AI applications capable of removing clothing from individuals in images have eroded traditional aesthetic standards and blurred the line between reality and fiction.[3] This raises concerns about image credibility and the potential to mislead audiences, who may struggle to discern the authenticity of what they see. A striking example is a photograph by Boris Eldagsen, (Figure 1) created using AI, which controversially won the first prize in a global photography competition.[4]

Some artists fear that the widespread adoption of AI-generated imagery, due to its cost-effectiveness and efficiency, may lead to a fundamental shift in societal values regarding art and artists. According to Kant's aesthetic theory, beauty is associated with a contemplative experience that transcends utility. However, AI-powered images raise questions about whether an artwork can be considered 'beautiful' if it was created without actual human intervention. On the other hand, the sale of a GAN-generated painting of Edmond de Belamy at Christie's for $432,500 (Figure 2) reflects a debate about redefining artistic authenticity. This debate connects to Walter Benjamin's theory of the "aura" of an artwork, which highlights the importance of the historical and cultural context of an artwork in conferring its unique value.[5]

Aesthetic reception theory emphasizes that the audience gives an artwork its meaning through their perceptual and interpretive experience. With the advent of AI-generated images, the viewer is challenged to distinguish between human creativity and algorithmic fabrication. Yet, the question of how long images will retain their credibility remains unresolved in an era where truth – defined by physical, historical,

[2] Zeyu Tang, "The Transformation of Photography by Artificial Intelligence Generative AI Technology," *Journal of Artificial Intelligence Practice* 6 (2023): 57, https://doi.org/10.23977/jaip.2023.060809.

[3] CBS News, "AI 'Nudify': The Impact, Law Changes, and the Fight," last modified December 24, 2023. accessed January 3, 2025, https://www.cbsnews.com/news/ai-nudify-impacts-law-change-fight-60-minutes/.

[4] Paul Glynn, https://www.bbc.com/news/entertainment-arts-65296763.

[5] Yongcai Chen, "Artificial Intelligence Technology in Photography and Future Challenges and Reflections," *The Frontiers of Society, Science and Technology* 6, no. 6 (2024): 24, https://doi.org/10.25236/FSST.2024.060605.

epistemological, and sociological criteria – is increasingly challenged by more subjective and diverse perspectives.[6]

Just as digital photography and Photoshop sparked debates over authenticity, authorship, and manipulation, AI–generated imagery raises similar concerns about the erosion of traditional artistic boundaries. Fred Ritchin argues that the shift from analog to digital photography fundamentally altered the perception of truth in images, as manipulation became seamless and widespread.[7]

Martin Lister highlights how digital technologies reshaped photography, making the image more malleable and distancing it from its traditional indexical relationship with reality. Similarly, AI–generated art raises questions about human agency, creativity, and the role of artist in an era where machines can autonomously produce compelling visuals.[8]

Finally, addressing issues of regulation and copyright is essential to ensure the responsible and sustainable integration of generative AI in creative practices.[9]

As AI continues to advance in image generation, a pivotal question emerges: Can a machine truly replicate human creativity and capture that 'decisive moment'? While AI can produce visually stunning and realistic images, it lacks the core human element: emotion. Artistic creativity transcends technique; it reflects the human soul and lived experience. The absence of human sentiment in AI–generated images challenge the nature of art and beauty. Can art be meaningful if it lacks traces of human emotion? Can an image evoke our feelings if it merely simulates a reality devoid of experience? Many fear that AI's dominance in creative processes may diminish the intrinsic value of art. If anyone can generate artistic images at the push of a button, what will distinguish genuine artistic work? What value will future generations seek in art?[10]

The concept of artificial intelligence (AI)

Since Alan M. Turing posed the pivotal question "Can machines think?" in his groundbreaking 1950 paper "Computing Machinery and Intelligence", the field of artificial intelligence (AI) has made steady progress toward developing machines capable of 'thinking'. Over the past six decades, AI research has centered on machine learning, enabling machines to identify patterns in data and draw conclusions with a minimum of human intervention.[11]

AI, a branch of computer science, seeks to replicate human cognitive abilities. Early AI research in the 1970s adopted a classical approach, relying on analytical

[6] Gülaçtı and Kahraman, "The Impact of Artificial Intelligence on Photography," 244.

[7] Fred Ritchin, *After Photography* (W. W. Norton & Company, 2008), 24–27.

[8] Martin Lister, "Photography in the Age of the Electronic Image," in *Photography: A Critical Introduction*, ed. Liz Wells (John Libbey and Co Ltd., 2006, 313–400.

[9] Tang, "The Transformation of Photography by Artificial Intelligence," 57.

[10] Govind Bhattacharjee, "Art and Photography in the Age of Artificial Intelligence," in 12th International Photographic Conference of PAD (Kolkata, 2023), 4,

[11] Gülaçtı and Kahraman, "The Impact of Artificial Intelligence on Photography," 246–47.

methods that considered all available data to solve problems. This evolved into 'expert systems', where accumulated expert knowledge addressed complex issues through 'if – then' rules rather than procedural codes. Expert systems simulate human decision–making, laying the groundwork for modern AI powered by machine learning and artificial neural networks (ANNs), which mimic the human brain's learning processes. Machine learning involves algorithms that discover patterns and generate insights, progressing through steps like data analysis, rule discovery, reasoning, self–correction, and prediction.[12] Today, machine learning is central to AI, fueled by advanced algorithms, superfast computers, and vast datasets known as Big Data Quantum computing, surpassing the limits of Moore's Law, and further amplifying AI's potential. Applications include self–driving cars, language translation, facial recognition, and image–altering tools, all benefiting from the integration of massive datasets and affordable storage.

Among various tools for machine learning, supervised learning stands out as one of the most significant. This method involves training systems on labeled datasets, enabling them to map inputs to correct outputs.[13] Although supervised learning has existed for years, its effectiveness has grown due to improvements in AI system performance and the availability of large datasets.[14]

A major challenge in advancing machine learning lies in our limited understanding of how the human brain learns – a remarkably efficient system. Furthermore, there is no universally accepted definition of intelligence. However, it is widely agreed that intelligence encompasses perception, understanding, learning, reasoning, decision–making, interaction, and the application of knowledge to achieve goals. Using advanced algorithms and models, AI systems analyze vast data, identify patterns, and make decisions based on these insights.[15]

The more data a machine processes, the better its patterns and predictions become. Unlike traditional programming, machine learning enables systems to program themselves. However, despite these advancements, machines remain unable to generalize abstractions – a distinctive feature of human consciousness that current AI systems have yet to replicate.[16]

In this research, GANs and AICAN were chosen as key models to examine the impact of artificial intelligence on photography. GANs play a crucial role in image generation and transformation through deep learning and advanced editing techniques. Meanwhile, AICAN is an AI model focused on independent artistic creativity, offering insights into AI's role in visual arts. GANs are widely used for enhancing image quality, restoring old photos, and style transformation, whereas AICAN produces

[12] Chen, "Artificial Intelligence Technology in Photography and Future Challenges," 25.

[13] Bhattacharjee, "Art and Photography," 5–6.

[14] Chen, "Artificial Intelligence Technology in Photography and Future Challenges" 25.

[15] Omar Ballester, "An Artificial Intelligence Definition and Classification Framework for Public Sector Applications," in DG. O2021: The 22nd Annual International Conference on Digital Government Research (Association for Computing Machinery, 2021), 67–69, https://doi.org/10.1145/3463677.3463709.

[16] Chen, "Artificial Intelligence Technology in Photography and Future Challenges," 25.

AI–generated artworks sold as independent pieces. Given their influence on artists and photographers, studying these models is essential to understanding AI's transformative impact on contemporary photography.

Generative Adversarial Networks (GANs)

Introduced by Ian Goodfellow and colleagues in 2014, GANs are a key component of artificial intelligence (AI) and deep learning. GANs involve two neural networks – a generator and a discriminator – that compete in a process where one 'wins' by generating artificial data indistinguishable from authentic data. GANs are widely used for creating images, videos, and audio [17] (Figure 3).

The generator creates new data by modifying characteristics of random samples from a training set, aiming to deceive the discriminator into accepting it as real. Meanwhile, the discriminator distinguishes between real images from the training set and fake ones generated by the generator, striving to identify legitimate inputs. Both networks continually improve, enhancing their respective abilities to create and evaluate data. Goodfellow compares the generator to counterfeiters and the discriminator to law enforcement, highlighting their evolving proficiency. By training GANs, AI captures insight into our world's structure and operations.[18]

Artificial intelligence using in photography

The integration of Generative AI technology into photography has brought transformative changes to both its technical and creative dimensions. Up to a point creating photographs required a series of intricate steps, including shooting, editing, and post–processing, which demanded advanced skills and expertise. However, Generative AI has significantly simplified these processes, reducing the technical barriers for photographers.[19] Today, digital cameras equipped with AI technologies offer numerous automated functions, such as object recognition, preset selection, and precise focus determination. AI optimizes camera settings for various scenes and even adjusts the positioning of the lens to align with the optical characteristics and desired composition.

Additionally, AI–powered editing tools enable highly advanced photo manipulation, allowing for the seamless creation of images that can alter reality with remarkable precision.[20] This raises concerns about the growing difficulty of distinguishing between genuine and manipulated imagery. This technological revolution has also transformed creative thinking in photography. Traditional approaches emphasizing realism and objectivity, particularly in documentary and news photography, have given way to new possibilities. Photographers are no longer limited to capturing reality

[17] Chris V. Nicholson, "A Beginner's Guide to Generative Adversarial Networks (GANs)," Pathmind, 2020, https://wiki.pathmind.com/generative–adversarial–network–gan.

[18] Gülaçtı and Kahraman, "The Impact of Artificial Intelligence on Photography," 245.

[19] Tang, "The Transformation of Photography," 58.

[20] Bhattacharjee, "Art and Photography," 5.

as it exists. Instead, they can use generative algorithms to craft artistic works that reflect personal and imaginative visions. Such a radical shift in the art world is clearly evident in the project of the American artist Trevor Paglen entitled "From Apple to Anomaly" (Figure 4), showcased at the Curve gallery in Barbican.

The project includes about 30,000 color images collected from one of the primary datasets used to train AI machine learning systems, the ImageNet dataset, which contains over 14 million images divided into more than 21,000 categories, serving as a vital resource for AI training. Paglen's work demonstrates how AI technology can redefine artistic expression by expanding the boundaries of creativity. His project highlights the potential of AI as a tool for innovation in the visual arts, inviting reflection on its role in shaping the future of artistic practices.[21]

Artificial intelligence's role in advancing photography technology

Cameras

Modern cameras have revolutionized photography by leveraging artificial intelligence (AI) and neural networks to enhance image quality. These systems analyze each frame, adjusting tones based on the unique environment of the shot. By referencing vast image databases, the AI identifies necessary edits in real–time, much like receiving guidance from someone with extraordinary memory. This process, powered by deep learning, ensures optimal adjustments tailored to each photograph.[22]

Facial recognition technology plays a pivotal role in identifying human faces in photos and videos by scanning scenes in real time. It prioritizes facial focus, eliminating the need for direct auto–focusing on individuals' faces, thereby streamlining the capture of portrait images. [23]

AI's ability to recognize the environment allows cameras to analyze scenes and identify elements such as the sky, people, and objects. This capability enables the camera to focus on the foreground subject while simulating a shallow depth of field, keeping the subject sharp and beautifully blurring the background for visually stunning portraits. AI–powered cameras can also recognize objects in a frame, assisting autofocus in prioritizing these elements. Modern DSLR cameras integrate advanced lens technology with AI to continuously improve performance. These systems analyze extensive image databases, providing recommendations for capturing the best photo based on scene analysis. Moreover, they learn user preferences from shot history, retrieving specific settings for objects and faces, like how online platforms suggest products based on browsing history.

As lenses have improved and sensors have become more efficient, camera hardware now includes central processing units (CPUs), image signal processors (ISPs), and neural processing units (NPUs). These components work together to deliver

[21] Tang, "The Transformation of Photography," 58.

[22] Gülaçtı and Kahraman. "The Impact of Artificial Intelligence on Photography," 245.

[23] Emre Ozen, Fikret Alim, Sefa Burak Okcu, Enes Kavakli, and Cevahir Cigla, "Real–Time Face Recognition System at the Edge," in *Signal Processing, Sensor/Information Fusion, and Target Recognition XXXIII*, ed. Ivan Kadar, Erik P. Blasch, Lynne L. Grewe, Proc. of SPIE Vol. 13057, 2024, https://doi.org/10.1117/12.3013671.

intelligent, real–time image enhancements, elevating the art of photography to unprecedented creative heights.[24]

Automatic image classification and labeling

Social media platforms like Instagram and Facebook utilize machine learning algorithms and deep learning models to automatically recognize objects, scenes, and features in images, enhancing image management and search efficiency.[25] A breakthrough in this area was the launch of Google Photos in 2015. While machine learning had been used for image classification in Google+, the transformation of unclassified user–uploaded photos into searchable databases marked a significant shift. Using supervised learning, the self–learning algorithm is trained on millions of images to identify, label, and enhance image categories. Apple has since adopted similar methods, but Google remains a leader in this field.

Artificial intelligence's role in enhancing creativity in photography

Inspiration and creating image

Techniques such as (GAN) allow the creation of new images or composite multiple images and the merging of images (image fusion) into one image, which expands the scope of photographic creativity. The AI application (Midjourney) can create artistic photographs that match a description based on keywords provided by the user, and we can set prompt to convert the image to Pixar style as in Figure 5.[26]

Transforming photographs into paintings

The ability to create paintings from abstract ideas or concrete descriptions has long been considered uniquely human, unmatched by animals or machines. Artistic expertise in the fine arts remained exclusive to humans until the emergence of GANs. Previously, no clear method existed for generating paintings through algorithms based on specific inputs. However, as Yi et al.[27] demonstrate, advances in deep learning have transformed image design, allowing neural networks to reimagine photographs as remarkable artworks.

Figure 6 showcases this capability, where a single photograph is rendered in the styles of iconic works such as *The Shipwreck of the Minotaur* (1805) by J.M.W. Turner, *The Starry Night* (1889) by Vincent van Gogh, *The Scream* (1893) by Edvard Munch, *Femme nue assise* (1910) by Pablo Picasso, and *Composition VII* (1913) by Wassily

[24] Reese Grimsley, "Edge AI: Real-Time Face Detection and Recognition," Texas Instruments, 2023, accessed April 6, 2025, https://www.ti.com/lit/wp/sprad74/sprad74.pdf.

[25] "Programming Image Classification with Machine Learning: Why and How?" Kili, accessed on April 6, 2025, https://kili-technology.com/data-labeling/computer-vision/image-annotation/programming-image-classification-with-machine-learning.

[26] Chen, "Artificial Intelligence Technology in Photography and Future Challenges"26

[27] Ran Yi, Yong-Jin Liu, Yu-Kun Lai, and Paul L. Rosin, "Generating Artistic Portrait Drawings from Face Photos with Hierarchical GANs," in *Proceedings of IEEE Conference on Computer Vision and Pattern Recognition (CVPR '19)* (Long Beach, CA, USA, 2019), 10735–10744.

Kandinsky. Furthermore, GANs enable the conversion of paintings by masters like Monet into highly realistic photographs, as illustrated in Figure 7.

The evolution of algorithms has given rise to remarkable tools like the "Deep Dream" algorithm, developed by engineer Alexander Mordvintsev. Considered one of the most unconventional artificial intelligence algorithms, Deep Dream emerged from efforts to visualize the internal workings of neural networks. It soon gained recognition as an artistic tool, notably featured in the project "Inceptions: Going Deeper into Neural Networks" where it was applied to a variety of images, including photographs.

The Deep Dream generates surreal, dream–like visuals by amplifying patterns within an image, producing results often likened to the effects of hallucinogenic substances like LSD. The algorithm operates on convolutional neural networks (CNNs), which learn through layered processes. Early layers identify basic features such as edges and colors, while later layers recognize complex patterns like shapes and faces. Figure 8 illustrates how the Deep Dream transforms images into fantastical and supernatural creations.

(GANs) showcase remarkable artistic capabilities when trained on extensive datasets. Tasks once deemed challenging, even for skilled artists – such as replicating Monet's or Cézanne's styles – can now be effortlessly achieved with speed and precision. While AI–generated creations have yet to be recognized as masterpieces or traditional photographs, GANs are advancing rapidly in artistic concepts and creativity once considered uniquely human. This evolution highlights the growing intersection between art and technology, shaping a new dimension within our visual culture and redefining the boundaries of artistic expression in an era increasingly influenced by artificial intelligence.[28]

Custom adjustments

AI drawing programs, like the GAN Paint Studio by MIT and IBM, enable users to adjust parameters for optimizing images to suit creative needs. These tools allow photographers to control details, add or remove objects, and craft imaginary scenes, aligning visuals with their artistic vision (Figure 9). Hays and Efros introduced an innovative approach to image completion that moves beyond traditional techniques, which typically rely on reconstructing missing areas using data from the original image. Instead, their method leverages a vast collection of unlabelled images, significantly improving results where previous techniques – and even skilled editors – often fall short. Their study highlights the critical role of big data in enhancing image completion, demonstrating that expanding the dataset from 10,000 to 2 million images led to a notable increase in accuracy and realism. They propose a web–based application where users can upload incomplete images, which are then matched with suitable content from large online databases like Flickr and Picasa, making advanced image restoration more accessible and user–friendly.[29]

[28] Gülaçtı and Kahraman, "The Impact of Artificial Intelligence on Photography," 251–52.

[29] James Hays and Alexei Efros, "Scene Completion Using Millions of Photographs," *Computer Graphics Proceedings*, Annual Conference Series, 2007, 1–9.

Image editing and post–processing

AI leverages deep learning models and image processing algorithms to adjust exposure, contrast, and color balance, automatically enhancing and restoring images while fixing defects and noise to improve quality.[30] Zenfolio's *State of the Photography Industry 2023* report (Figure 10) shows nearly 50% of photographers have adopted AI in their workflow, with only 11% viewing it as harmful. The survey found 41% aim to reduce editing time, and 34% streamline tasks using AI, emphasizing its increasing role in optimizing photography processes.

Reanimated photographs

The concept of reanimating people through computer–generated images has been around since the 1980s, long before the introduction of GANs in the early 21st century. However, recent advancements in AI are set to revolutionize the art of photography. This technology enables the recreation of lifelike representations of individuals, a development that elicits mixed reactions (Figures 11, 12). For some, the idea of bringing loved ones back to life through AI is unsettling and raises ethical concerns. For others, it represents an exciting breakthrough in photographic innovation, akin to the awe experienced when the first photograph was unveiled at the French Academy of Sciences in 1839.[31]

Image quality enhancement

Upscaling is the process of increasing the resolution of a digital image by increasing the number of pixels to obtain a clearer image. It is now possible to 'enhance' low-quality images to produce a better image. For instance, an image with a resolution of 0.8 megapixels can be upscaled to a resolution of 3 megapixels. All a photographer needs to do is capture a few images, even using a mobile phone, and then synthesize them using GANs.

Image colorization

Artistic applications of GANs have revolutionized the colorization of old black–and–white photographs, as shown in Figures 13 and 14.

Unlike traditional tools like Adobe Photoshop, which often produce dull and distorted results with color perception loss, GANs effectively learn and restore colors, addressing the colorization challenge. Through this process, GANs replace lost or damaged details, enabling realistic artistic restoration.[32]

[30] Kai Zhang, Wangmeng Zuo, Yunjin Chen, Deyu Meng, and Lei Zhang, "Beyond a Gaussian Denoiser: Residual Learning of Deep CNN for Image Denoising," IEEE Transactions on Image Processing 26, no. 7 (2017): 3142–55, DOI: 10.1109/CVPR.2019.01100

[31] Gülaçtı and Kahraman, "The Impact of Artificial Intelligence on Photography," 248–49.

[32] Gülaçtı and Kahraman, "The Impact of Artificial Intelligence on Photography," 252.

Challenges and critical perspectives on AI in photography

In a YouTube interview, Pye discusses with professional re–toucher Pratik Naik the threat that AI poses to creators and how this new technology is redefining the industry as we know it,[33] and how it could cause a loss of personal style. Here are some of the issues raised about AI and its application in photography:

Distortion of reality

The use of AI in image processing raises debates about image manipulation, distortion, and the ethical concerns surrounding the overuse of filters. AI can generate images that closely resemble reality, blurring the line between real and fictional photography. This hyper–realism can deceive viewers, challenging the credibility of images, especially in fields like photojournalism and forensic evidence. AI can alter facial expressions, lighting, colors, and other elements, making fake images appear more natural and realistic.

Consequently, photographers must be aware of the ethical implications. However, some argue that machines merely simulate human creativity, with further experimentation required to match human artistic processes. On the contrary, some suggest that artists often draw inspiration from other works or blend elements from various art styles to create something new and innovative. In this context, machines are merely simulating human actions, and achieving a level of consistency and comparison with the human creative process requires further experimentation.

Job loss

The widespread use of AI in photography may lead to photographers becoming overly dependent on technology, potentially losing basic skills. Furthermore, automation of tasks like editing and post–processing could result in job displacement, eliminating roles such as photo editors.

Privacy and data security

AI technologies require vast amounts of data for image recognition and processing, raising concerns about privacy and security. Since GANs rely on image data from photographers and users to train AI models, the question is whether individuals will accept or reject using their personal photos, shared on social media, to create realistic images. It is pivotal to ensure proper protection of this data's privacy and security.

Copyright issues

Intellectual property rights are a major concern as AI develops rapidly, opening discussions about the risks of copyright violations and artist style distinction.[34] For

[33] Adorama, "The Impact of AI–Generated Art on Photography & Creative Pursuits | Master Your Craft," 2022, YouTube, https://www.youtube.com/watch?v=h0yKcyWHf1I&t=17s.

[34] Yongcai Chen, "Artificial Intelligence Technology in Photography and Future Challenges and Reflections," *The Frontiers of Society, Science and Technology* 6, no. 6 (2024): 27–28, https://doi.org/10.25236/FSST.2024.060605.

example, determining the intellectual property rights becomes complicated if brand products are used to generate new designs through GANs. Thus, considering the rapid growth of the AI–driven art market, addressing copyright issues has become more urgent, and the expansion of this market requires the creation of clear legal and ethical frameworks to protect the rights of all parties involved.[35]

Deconstructing core concepts

The essence of photography

The industrial revolution created a confusing relationship between machines and humans significantly influencing artistic production and distribution methods. Today, AI echoes a similarly intricate dynamic between technology and art, prompting a reevaluation of photography's essence.

Photography, a powerful means of expressing emotions and documenting moments, as photographer Henri Cartier said, "Photography is not like painting; when you take a picture, your eye must see a composition or an expression that life itself offers you, and you must know intuitively when to trigger the camera". This 'decisive moment' as he called it,[36] embodies the essence of photographic creativity – a fleeting moment that a machine cannot replicate.

The photographer is thus an active agent who has absolute control over the artwork, through compositional choices, exposure, and camera angles.[37] In addition, one of the indispensable aspects of photography is the need to establish contact with the subject.[38]

But the essence of AI is that it relies on collecting thousands of images and data and analyzing them within known artistic patterns to produce images, and it is unable to invent a completely new artistic style. So, although AI opens new horizons for photographers, it also restricts the subjectivity of the artist, leading to homogeneous works and a lack of diversity.[39]

The originality and creativity

The longstanding debate over the definition and source of creativity raises a central question: can a machine be truly creative? This issue becomes particularly relevant in the context of AI–generated artwork. Generative adversarial networks (GANs) are fed artwork images, then identify common features, and generate entirely new images.[40]

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[35] Gülaçtı and Kahraman, "The Impact of Artificial Intelligence on Photography," 254.

[36] Michael Zhang, "Henri Cartier-Bresson on 'The Decisive Moment'," Peta Pixel, March 12, 2020, https://petapixel.com/2012/03/20/henri-cartier-bresson-on-the-decisive-moment/.

[37] Tang, "The Transformation of Photography," 60.

[38] Chen, "Artificial Intelligence Technology," 28.

[39] Tang, "The Transformation of Photography," 60.

[40] Chen, "Artificial Intelligence Technology," 27.

The process depends heavily on the artist's selection of input images, which the GANs use to synthesize new outputs. The artist then reviews these generated images and selects the final one, which represents the artwork. This highlights that GANs still rely on human guidance and supervision, with the machine itself far from achieving creative independence, although the machine often loses its ability to simulate the inputs, resulting in unexpected or distorted images, which may indicate that machine learning is more independent and complex than it is.

Despite this, many art critics remain hesitant to evaluate AI–generated images, often focusing on the final product without fully considering the creative process that leads to these images. This skepticism is understandable, as AI–generated images can seem to merely imitate existing styles with minor modifications. However, when we examine the entire creative process, AI–generated art can be classified as conceptual art. The artist plays a central role in guiding this process.[41] As Ismail Erim notes, "this type of art can be defined as conceptual art because what is artistic is not only the result but also the process and concept that leads to this result."[42] This includes the artist's input data, the specific parameters of the generative network, and the decision–making process in selecting or discarding images.

Thus, if we focus only on the form of the generated images and disregard the underlying concepts, it could be argued that generative networks are just algorithms producing aesthetic forms. However, understanding the entire process reveals that the role of the human artist makes the result conceptual, rather than merely a product of machines. "This makes all the components art, not just the image generated by GANs, which means that the whole process is a partnership between humans and machines."[43] In time, artists may refine these techniques to create more complex and sophisticated forms of conceptual art.[44]

However, the notion of AI–generated art as conceptual art raises important questions about creativity and authorship, causing challenges for both artists and the art market. For instance, if the dataset used to train the AI or the underlying algorithm is borrowed from another source, can the resulting art be considered entirely original, or just an extension of previous works? These questions complicate how artists present themselves as creators of AI–generated art. Some artists, like Mario Klingemann, have integrated AI's capabilities into their work, making it central to the creative process.[45]

In conclusion, although AI can produce visually captivating art, it struggles to meet the essential purpose of art: conveying a human vision. The lack of human emotions and motivations in machine learning processes hinders its ability to create art with profound personal or emotional depth.

[41] Marian Mazzone and Ahmed Elgammal, "Art, Creativity, and the Potential of Artificial Intelligence," *Arts* 8, no. 26 (2019): 1, https://doi.org/10.3390/arts8010026.

[42] Gülaçtı and Kahraman, "The Impact of Artificial Intelligence on Photography," 261.

[43] Gülaçtı and Kahraman, "The Impact of Artificial Intelligence on Photography," 261.

[44] Mazzone and Elgammal, "Art, Creativity, and the Potential," 2.

[45] Gülaçtı and Kahraman, "The Impact of Artificial Intelligence on Photography," 261.

A new wave of creative art, not generative

In the previous approach, artificial intelligence is used as an artistic tool, while the creative process remains under the control of the artist through pre– and post–curation of images, as well as through the modification of the algorithm itself. This approach has produced many remarkable art works. Harold Cohen's program AARON (www.aaronshome.com) serves as an early prominent example of this type of art.

At the Art & AI Lab at Rutgers University, researchers conducted one of the most significant experiments to study the creative process and how art evolves from a perceptual and cognitive point of view. The researchers developed a system called "AICAN" a semi–autonomous artist. The model is based on a psychological theory proposed by Colin Martindale in 1990, which explores how artists assimilate prior art works to eventually reach a point where they break established styles and create new ones.[46]

According to researcher Ahmed Elgammal, the "Creative Adversarial Network" (CAN), a type of Generative Adversarial Network, uses "stylistic ambiguity" to create new and innovative art.[47] The CAN works by balancing two opposing forces: one encourages the machine to follow existing artistic styles, while the other discourages it from copying those styles, promoting uniqueness instead. This process ensures that the art produced is both original and visually acceptable. This approach follows the 'least effort principle' from Martindale's theory, which suggests that art should not be too novel, or it risks being rejected by viewers.

Unlike the generative art processes discussed earlier, this method is intrinsically creative. There is no curation of a specific dataset; instead, the algorithm is exposed to a vast collection of 80,000 images spanning five centuries of Western art history. This process mimics the way an artist absorbs art history, without being confined to genres or styles. The generative process employed by CAN aims at innovation consistently surprising us with the diversity of art produced by AICAN. Figure 5 illustrates a variety of this artwork, while Figure 16 presents a reproduction of an iconic photograph.

Conclusions

This study examines the impact of artificial intelligence (AI) on modern photography, shedding light on its ability to redefine creativity, authorship, and originality. Through technologies like Generative Adversarial Networks (GANs) and AICAN, AI has opened vast creative possibilities, allowing photographers to craft visuals that push the boundaries of realism and imagination. These advancements underline AI's role in making photography more accessible, lowering technical hurdles, and enabling innovative artistic expression.

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[46] Mazzone and Elgammal, "Art, Creativity, and the Potential," 2–4.

[47] Ahmed Elgammal, Bingchen Liu, Mohamed Elhoseiny, and Marian Mazzone, "CAN: Creative Adversarial Networks, Generating 'Art' by Learning About Styles and Deviating from Style Norms," in *Proceedings of ICCC* (Atlanta, 2017), 4, https://doi.org/10.48550/arXiv.1706.07068.

The findings highlight a significant shift in the photographer's role, evolving from a solitary creator to a collaborator working alongside technology. This evolution not only reimagines the creative process but also raises critical ethical questions around authorship, intellectual property, and the credibility of AI–generated visuals. Furthermore, the rise of AI–driven art has disrupted traditional art markets, where machine–generated works are gaining acceptance and substantial commercial value.

Despite its contributions, the study has limitations. It predominantly addresses the technical and artistic aspects of AI's integration into photography, leaving broader cultural and societal implications insufficiently explored. Additionally, it lacks a thorough investigation into how audiences across diverse cultural contexts perceive and engage with AI–generated art, an essential factor in understanding its broader impact.

Future research should prioritize these gaps, focusing on the societal and cultural dimensions of AI in photography and examining regional nuances in its adoption and reception. There is also a pressing need to establish ethical frameworks and delve deeper into audience perceptions to guide the responsible and sustainable use of AI in creative practices.

By redefining norms and fostering innovation, AI has undeniably reshaped the photographic landscape. This study emphasizes the necessity of a thoughtful and critical approach to leveraging AI's potential, ensuring photography remains a dynamic and meaningful art form in the era of artificial intelligence.

Figure 1: Boris Eldagsen's AI-generated photograph that won the Sony World Photography Award. Paul Glynn, "Sony World Photography Award 2023: Winner Refuses Award After Revealing AI Creation," BBC News, April 18, 2023, https://www.bbc.com/news/entertainment-arts-65296763.

Figure 2: Portrait of Edmond de Bellamy, created using AI, https://news.artnet.com/market/first-ever-artificial-intelligence-portrait-painting-sells-at-christies-1379902.

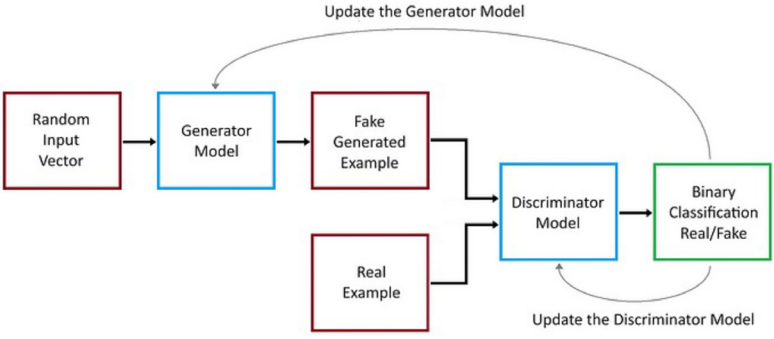

Figure 3: The working principle of GAN networks. The figure shows the tasks of the Generator network, https://www.dio.me/articles/gans-redes-adversarias-generativas.

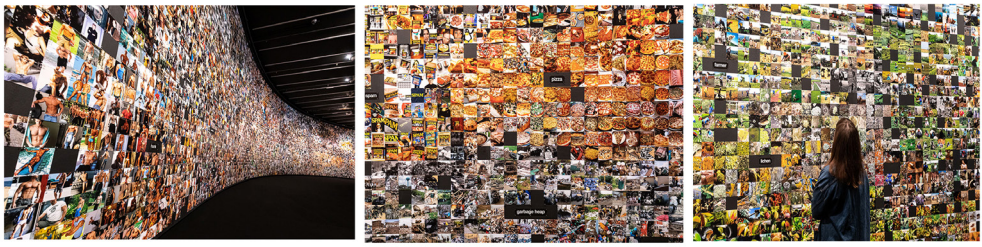

Figure 4: A selection of images that form part of the project "From 'Apple' to 'Anomaly'," illustrating how the data on which AI systems were trained was used to generate innovative artistic expressions. Trevor Paglen, "On 'From Apple to Anomaly'" https://www.barbican.org.uk/s/trevorpaglen/.

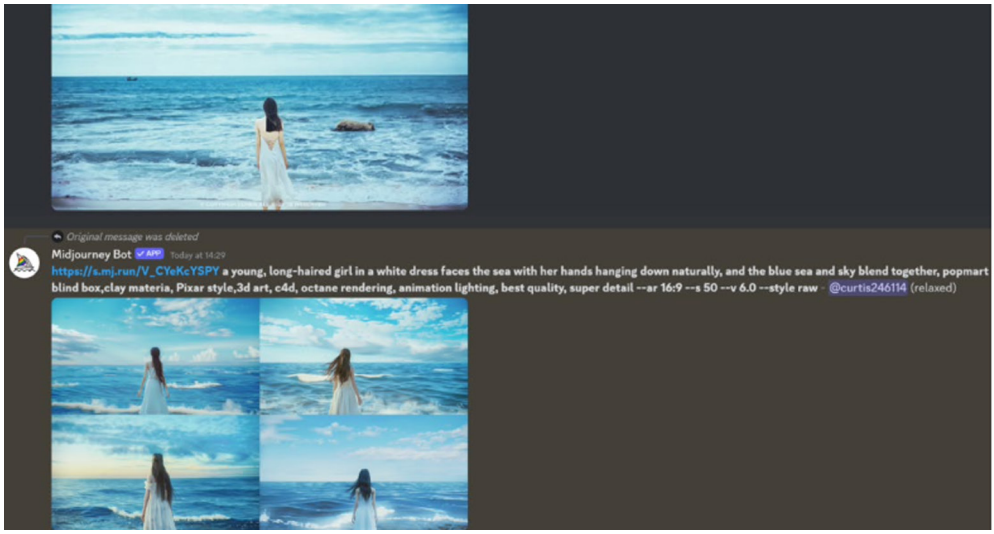

Figure 5: "Pixar style" by Jim Monge, Yongcai Chen, "Artificial Intelligence Technology in Photography and Future Challenges and Reflections," *The Frontiers of Society, Science and Technology* 6, no. 6 (2024): 26, https://doi.org/10.25236/FSST.2024.060605.

Figure 6: Converting photographs into styles of famous painters using GANs. Leon A. Gatys, Alexander S. Ecker, Matthias Bethge, "A Neural Algorithm of Artistic Style," *Journal of Vision*, 16, no. 12 (2016): 1–16, https://doi.org/10.48550/arXiv.1508.06576.

Figure 7: Converting paintings of famous painters into photographs. Jun-Yan Zhu, Taesung Park, Phillip Isola, and Alexei A. Efros, "Unpaired Image-to-Image Translation Using Cycle-Consistent Adversarial Networks. [Paper presentation]," *Proceedings of 2017 IEEE International Conference on Computer Vision (ICCV)*, Venice, Italy, 2017, 2242–51, https://doi.org/10.1109/ICCV.2017.244.

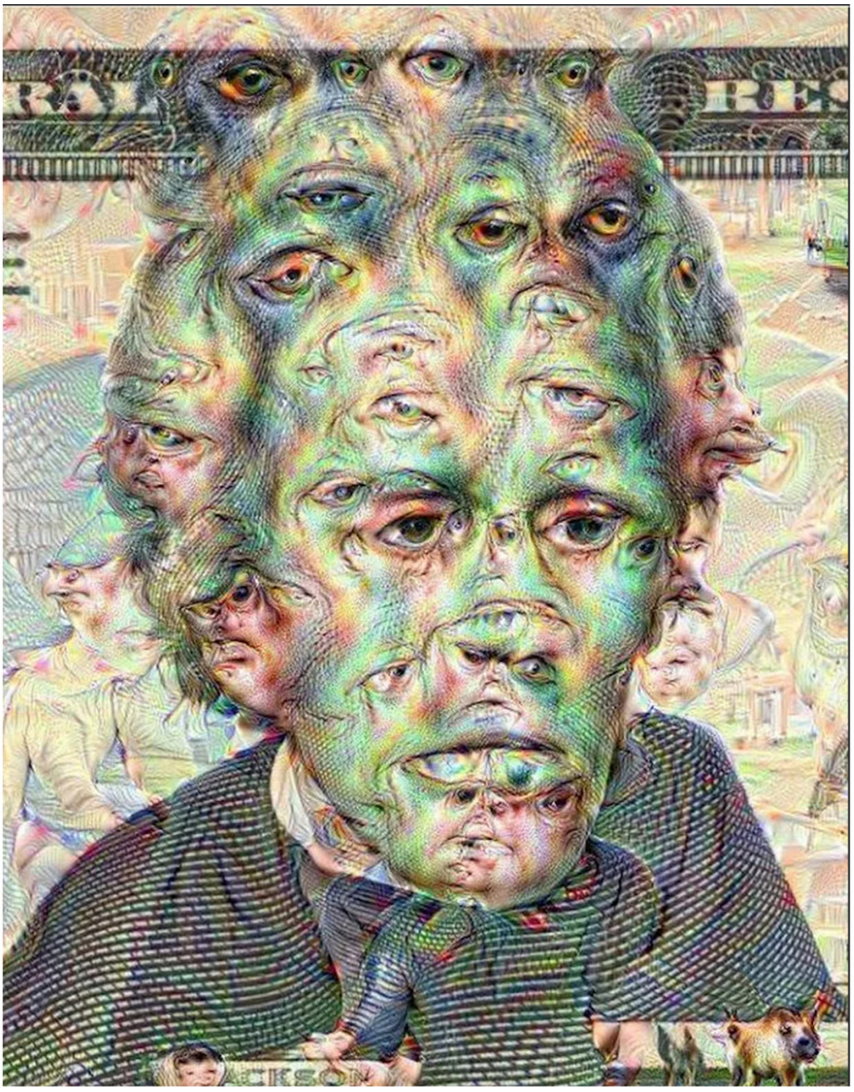

Figure 8: An example of what the Deep Dream algorithm produces, photo by Brad Saggs, in Mary-Ann Russon, "Google Deep Dream Robot: 10 Weirdest Images Produced by AI 'Inceptionism' and Users Online," International Business Times, July 6, 2015, https://www.ibtimes.co.uk/google-deepdream-robot-10-weirdest-images-produced-by-ai-inceptionism-users-online-1509518.

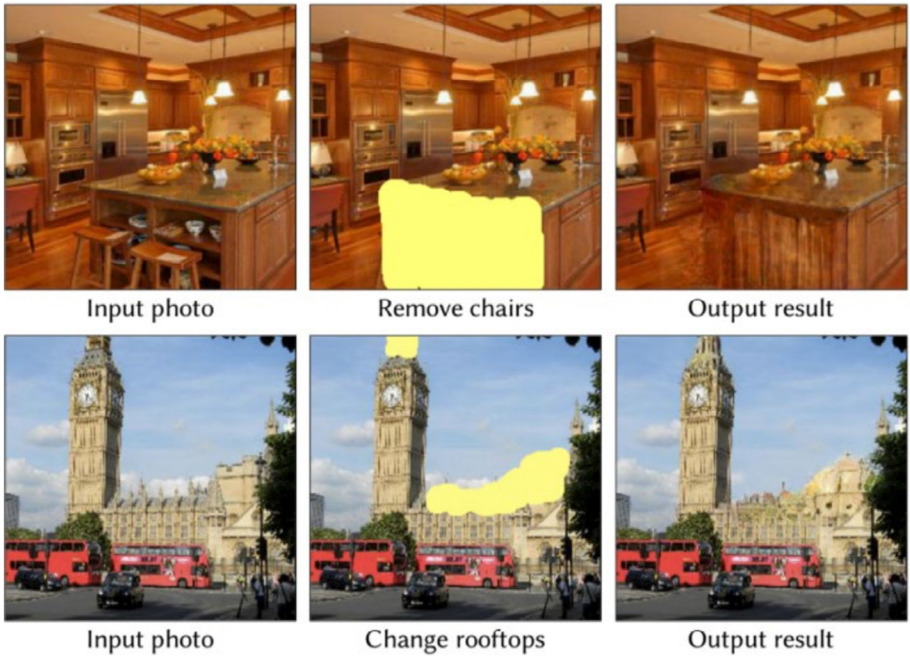

Figure 9: Manipulating semantic images using a generative primary image Yongcai Chen, "Artificial Intelligence Technology in Photography and Future Challenges and Reflections," *The Frontiers of Society, Science and Technology* 6, no. 6 (2024): 26. https://doi.org/10.25236/FSST.2024.060605.

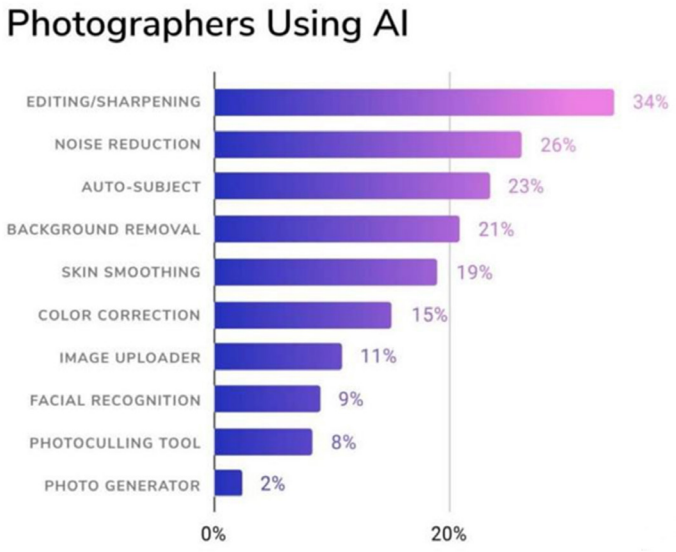

Figure 10: Zenfolio 2023 State of the Photography Industry Report. Jaron Schneider, "State of Photography: Business Isn't Great and Use of AI Is Going Up," April 20, 2023, PetaPixel, https://petapixel.com/2023/04/20/2023-state-of-photography-business-isnt-great-and-use-of-ai-is-going-up/.

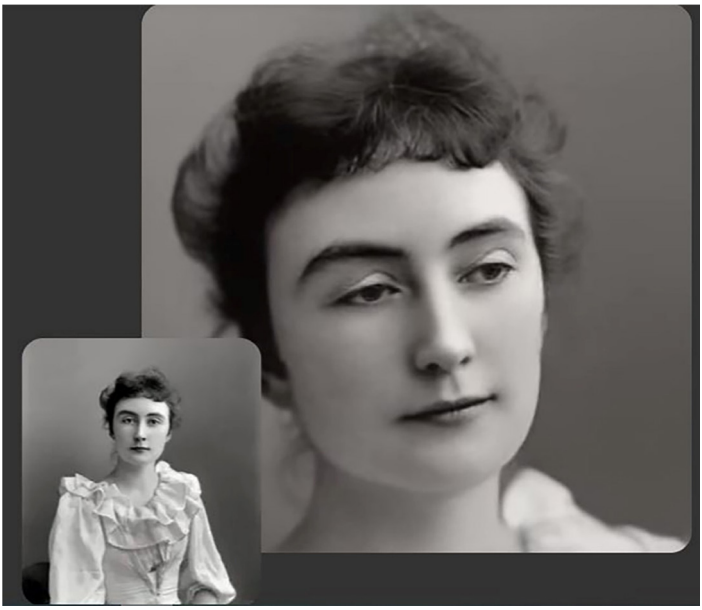

Figure 11: Photography animated by GANs, in Jeremy Gray, "'Deep Nostalgia' AI Tech Animates Old Photos and Brings Them to Life," March 1, 2021, Digital Photography Review, https://www.dpreview.com/news/4889126219/deep-nostalgia-ai-tech-animates-old-photos-and-brings-them-to-life.

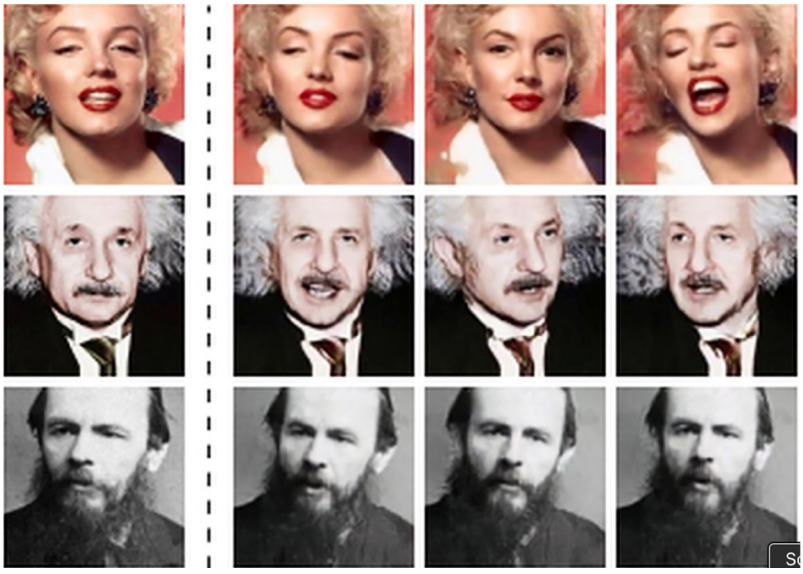

Figure 12: Photographs of famous people re–animated by GANs, in Egor Zakharov, Aliaksandra Shysheya, Egor Burkov, and Victor Lempitsky, "Few-Shot Adversarial Learning of Realistic Neural Talking Head Models. [Paper presentation]," *Proceedings of IEEE/CVF International Conference on Computer Vision (ICCV)*, Seoul, South Korea, 2019, 9459–68, https://doi.org/10.1109/ICCV.2019.00955.

Figure 13: Photo was recolored by GANs. kail9974, "[논문 리뷰] HistoGAN: Controlling Colors of GAN-Generated and Real Images via Color Histograms (CVPR 2021)," August 31, 2021, Chill, https://re-chill.tistory.com/entry/HistoGAN.

Figure 14: Black and white photograph. This interesting application is to colorize and restore, https://www.ijraset.com/research-paper/gan-based-state-of-art-image-colorization

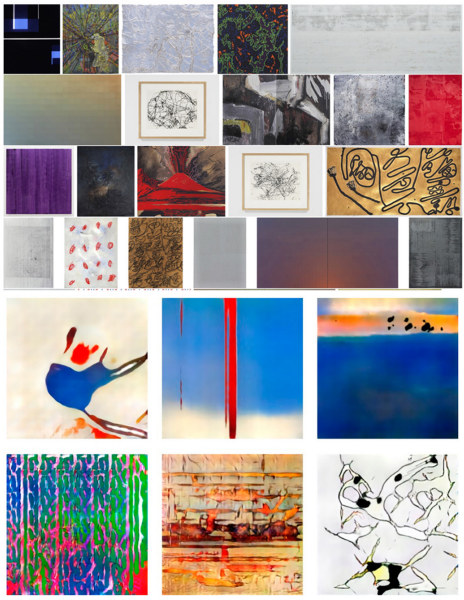

Figure 15: Examples of images generated by AICAN after training using images of all styles and genres from the past five hundred years of Western art. Marian Mazzone, and Ahmed Elgammalm, "Art, Creativity, and the Potential of Artificial Intelligence," *Arts* 8, no. 26 (2019): 1–9, https://doi.org/10.3390/arts8010026.

Figure 16: Recreating the image of the Afghan girl using artificial intelligence. (Twitter/Midjourney Discord).

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All-Aligned: Rethinking Affective Digital Power through Algorithmic Flags and Participative Software Art

Abstract: This paper presents *All-Aligned* (*Svesvrstani*), a participatory algorithmic art project that generates digital flags through user-defined inputs. As an open-source system for automated vexillology, it visualizes how algorithmic infrastructures construct, commodify, and modulate digital identities. Rooted in a post-Yugoslav context but addressing global dynamics, the project asks how algorithmically generated flags can function as ideological and æsthetic constructs – both reflecting and critiquing identity formation under surveillance capitalism. Through a series of public exhibitions and workshops, *All-Aligned* reveals the platformization of selfhood and the affective economy of engagement. Yet, it also opens space for resistance: by exposing its logic and inviting co-creation, it transforms algorithmic profiling into critical play. Positioned within the lineage of tactical media art, *All-Aligned* reclaims generative computational æsthetics as a site for collective agency and ideological experimentation.

Keywords: generative art; affective computing; identity and ideology; post-socialist æsthetics; surveillance capitalism; vexillology.

Introduction

> *Surveillance capitalism unilaterally claims human experience as free raw material for translation into behavioral data.*
> — Shoshana Zuboff

Flags have long served as instruments of alignment. As early as the 5th century BC, Sun Tzu wrote in *The Art of War*: "On the field of battle, words cannot be heard distinctly… banners and flags are used."[1] Over time, flags evolved from tools of military signaling into symbols of feudal power and later, under the Eurocentric Westphalian system, into icons of nation-building projects.

[1] Sun Tzu, *The Art of War* (Leicester, England: Allandale Online Publishing, 2010), 27–28.

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In the era of digital capitalism, flags are no longer limited to territory or statehood. They function as symbolic proxies in culture wars and identity marketing – flattened into signs of belonging, weaponized by affective propaganda, and absorbed into the logic of surveillance capitalism.[2] As identities become increasingly shaped by data-driven infrastructures, flags too are categorized, ranked, and optimized for engagement.

All-Aligned (*Svesvrstani* in Serbian)[3] was conceived in this context. It is a participatory software art project that generates algorithmic flags based on user-defined parameters. By exposing and inviting interaction with the mechanics of algorithmic identity construction, it reflects and critiques how identities are commodified, modularized, and æstheticized under digital capitalism. Launched during the "They: Live" artist-in-residency program,[4] it was developed across workshops, exhibitions, and talks in several Balkan and European cities. Rooted in a post-socialist, post-Yugoslav context, the project also reflects on symbolic sovereignty and economic dependency. It suggests that what happened to Yugoslavia in the 1990s – material plundering legitimized by identity wars – now seems to be playing out globally, only this time powered by artificial intelligence.

The following sections outline the project's generative logic (*How*), participatory framework (*What*), and its broader ideological implications (*Why*).

The How: technological foundations

Only the holder the flag fits into. No flag.
— Rumi جلال‌الدین محمد رومی

As software technology for generative flag design, *All-Aligned* represents a classic AI system rather than a neural network-driven one. It employs a rule-based, semantic, expert system architecture, drawing from the expertise of vexillologists – flag designers who specialize in the symbolic and æsthetic language of flags. Additionally, *All-Aligned* embodies principles of affective computing,[5] recognizing that flags are intensely emotional cultural artifacts, designed to evoke identities, ideologies, and allegiances.

All-Aligned's software combines Python for back-end logic (i.e. the functionality "under the hood") with JavaScript, HTML, and CSS for the front end (i.e. the design we see and use). It uses statistical mappings to connect concepts – like "anarchist", "socialist", "pirate", "Yugoslav", etc. – to visual elements such as colors, layouts, and symbols, generating algorithmic flag designs.

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[2] Shoshana Zuboff, *The Age of Surveillance Capitalism: The Fight for a Human Future at the New Frontier of Power* (London, England: Profile Books, 2019).

[3] Uroš Krčadinac, *All-Aligned*. Accessed January 21, 2025. https://krcadinac.com/all-aligned.

[4] Lorenzo Torres, Maida Gruden, and Andrija Stojanović, eds., *They: Live. Exploring Student Lives Through Photography, Oral History and Context-Based Art* (Valencia: Tirant lo Blanch, 2024).

[5] Rosalind Picard, *Affective Computing* (Cambridge: The MIT Press, 1997).

Users engage with the system directly through the online generator.[6] They can combine and configure multiple parameters to create unique flags that represent hybrid identities. For example, a user could generate a flag that is 0.8 anarchist and 0.99 African or a flag that is 0.6 Nordic and 0.77 Yugoslav (Figure 1). This customization is facilitated through an interface with adjustable sliders for each concept. The interface is simple and accessible, inviting an iterative process of exploration and critical reflection.

Each concept is linked to specific design elements via JSON configuration files, assigning weights to layouts, colors, and symbols based on their relevance. A weight of 1 means strong association, 0 is neutral, and –1 suggests exclusion. For example, the "anarchist" concept prioritizes black and red colors, diagonal bicolor layouts, and anarchist symbols, while also considering related motifs like "communism" and "libertarianism" at lower weights.

Other mappings include:

- "Serbian" – tricolors, double-headed eagle, Cyrillic script;
- "love" – hearts, circular shapes, red/pink tones;
- "socialist" – geometric layouts, red stars; and
- "antivax" – chaotic forms, crossed-out syringes, green/black tones.

Mappings were refined from Web searches and curated manually. Currently, ~100 concepts and thousands of SVG symbols are included, based on workshops in Belgrade and beyond.[7] Flag layouts follow vexillological sources like Whitney Smith[8] and Alfred Znamierowski, [9] covering numerous standard formats and informing probabilities for layout and color combinations.

As a novel software technology, *All-Aligned* is free and proudly open-source,[10] published under the GNU General Public License v3.0.[11] It reflects our vision of AI as a shared resource – a socially owned common good rather than a privatized tool of corporate exploitation.

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[6] Uroš Krčadinac, *All-Aligned Flag Generator*. Accessed January 21, 2025. https://krcadinac.com/all-aligned/generator.

[7] Lorenzo Torres, Maida Gruden, and Andrija Stojanović, eds., *They: Live. Exploring Student Lives Through Photography, Oral History and Context-Based Art* (Valencia: Tirant lo Blanch, 2024).

[8] Whitney Smith, *Flags Through the Ages and Across the World* (New York: McGraw-Hill, 1975).

[9] Alfred Znamierowski, *The World Encyclopedia of Flags: The Definitive Guide to International Flags, Banners, Standards and Ensigns* (London: Lorenz Books, 1999).

[10] The *All-Aligned* software project is freely available on GitHub: https://github.com/parthenocissus/allaligned-svesvrstani. Accessed January 21, 2025.

[11] Free Software Foundation, GNU General Public License, Version 3.0, June 29, 2007, https://www.gnu.org/licenses/gpl-3.0.en.html.

The What: exhibitions and workshops

It is not the wind that moves; it is not the flag
that moves; it is your mind that moves.

— Mumonkan 無門關

The foundational *All-Aligned* workshop took place in Belgrade's Student City in 2022 (Figure 2). The workshop was part of the artist-in-residence program "They: Live – Student Lives Revealed Through Context-Based Art Practices"[12], a transnational program supported by Creative Europe and Serbia's Ministry of Culture. Taking place across Belgrade, Madrid, Rijeka, Podgorica, and Novi Sad, the program invited artists and curators to immerse themselves in student communities. In Belgrade, the residency was led by artist Uroš Krčadinac and curator Lav Mrenović, in collaboration with coordinators Maida Gruden and Andrija Stojanović.

During the workshops, several hundred students used a generator to create new flags (Figure 3). Many of the participants were international students from Africa, Latin America, and Asia, whose presence in Belgrade is a part of the legacy of the Yugoslav *Non-Aligned Movement*. This connection inspired the name "All-Aligned."

Using the *All-Aligned* interface, student participants repeatedly generated flags, iterating until they discovered the one that would serve as an emblem of themselves, reflecting who they were as "identity consumers." We then asked them, "Why is this flag yours?" These are some of their answers (with flags presented in Figure 4):

1. "Because it calms me."
2. "Because it's Christian enough, Serbian enough."
3. "Because I feel insecure as a triangle standing on its tip."
4. "Because that part in the middle is so feminine!"
5. "Because of my Africa and the Non-Aligned that brought me to Belgrade."
6. "Because NATO exploited religious and ethnic identities to colonize the Balkans."
7. "Because it is trans-dervish."
8. "Because I simply like it. As if I even know why I like something, why I identify with something?"

The residency culminated in an exhibition at the SCCC Gallery in June 2022, showcasing the flags and inviting critical reflection on identity and ideological interpellation. Following this, the project expanded to solo exhibitions in Rijeka, Zagreb, Cetinje, and Sarajevo. Highlights included a performance at SCCC with director Ana Pinter and a workshop in Cetinje (Figure 5). *All-Aligned* continued through artist talks and presentations in Vienna, Ljubljana, Budapest, Banjaluka, and concluded with a final event at Juan Carlos University in Madrid.[13]

[12] Lorenzo Torres, Maida Gruden, and Andrija Stojanović, eds., *They: Live. Exploring Student Lives Through Photography, Oral History and Context-Based Art* (Valencia: Tirant lo Blanch, 2024).

[13] Additional details about the exhibitions and workshops, along with photographs, are available on the *All-Aligned* website: https://krcadinac.com/all-aligned/exhibitions.

The Why: ideas and implications

Identity is a bone to gnaw they give you before
they peel you to the bare skin.
— Boris Buden

The *All-Aligned* project emerges from a current historical moment: one in which identity has been hollowed out, æstheticized, and transformed into a commodity by digital capitalism. In this context, flags are no longer mere emblems of nationhood or resistance. They function as *affective interfaces* – designed not to unify but to segment, provoke, and optimize engagement. *All-Aligned* exposes how algorithmic governance – the use of data-driven, automated decision-making systems to regulate and shape social processes – fragments identity into commodified profiles and digital pseudo-nations optimized for exchange in the marketplace. These identities offer the illusion of uniqueness or community while operating within prestructured categories that serve economic ends.

This section explores how algorithmically generated flags, as both symbolic and participatory objects, serve a dual function: they reflect the structures of identity commodification under surveillance capitalism, and simultaneously offer a critical site for æsthetic resistance and collective agency. Because of the project's participatory nature and transparent generative mechanism, the flags produced by *All-Aligned* do not simply represent identities. Instead, they interrogate and fracture the ideological apparatuses that produce them.

I. Algorithmic identities, profilicity, and ideology

Shoshana Zuboff defined surveillance capitalism as the unilateral appropriation of human experience as free raw material for behavioral prediction and economic gain.[14] In this model, identity becomes not a process of self-articulation, but a *data profile* shaped by digital infrastructures whose goal is not emancipation but for-profit optimization. This results in a condition Hans-Georg Moeller terms *profilicity*.[15] In profilicity, digital identities are shaped by external validation rather than intrinsic authenticity. Profiles operate as marketable entities, crafted not through personal expression but through algorithmic curation. The subject's sense of self is always mediated by systems of evaluation and platformized recognition.[16]

Algorithmically generated flags, as explored through *All-Aligned*, inhabit this terrain of profilicity. Each flag is composed from a matrix of design elements – colors,

[14] Shoshana Zuboff, *The Age of Surveillance Capitalism: The Fight for a Human Future at the New Frontier of Power* (London, England: Profile Books, 2019).

[15] Hans-Georg Moeller and Paul J. D'Ambrosio, *You and Your Profile: Identity After Authenticity* (New York: Columbia University Press, 2021).

[16] Moeller, drawing on both Niklas Luhmann's systems theory and Taoist philosophy, views digital society as an interconnected whole. He is sceptical towards the notion of a stable, essential, reified self.

symbols, layouts – mapped to concepts like "Serbian", "libertarian", "student", etc. These are weighted through semantic associations to generate a visual representation of identity. But unlike typical algorithmic identity systems, *All-Aligned* does not conceal its mappings. It makes them visible and malleable. The user becomes an active participant in the generation of their own semiotic identity. No longer a passive subject of algorithmic profiling, they act as co-author in a symbolic game of self-positioning – enabling them to see how their affinities are constructed and, if so inclined, interrogate them.

And yet, *All-Aligned* remains entangled in the logic it seeks to subvert. As one participant noted: *"Because I simply like it. As if I even know why I like something, why I identify with something?"* This reveals the ambivalence of identification in digital capitalism: even when choice feels personal, the options are pre-curated by æsthetic and ideological norms. *All-Aligned* simultaneously stages and exposes the ideological interpellation of the digital subject – in line with Althusser's theory of ideology, which emphasizes how ideological apparatuses interpellate individuals, transforming them into subjects that willingly accept their roles within the social structure. Ideology itself, in Althusser's terms, refers to "the imaginary relationship of individuals to their real conditions of existence"[17]. The flag – a *par excellence* symbol of ideology – becomes a mirror not just of what we are, but of how we are made to be.

II. Post-Yugoslav sovereignty and algorithmic interpellation

This dialectic of reflection and critique is especially potent in the post-socialist, post-Yugoslav context from which *All-Aligned* emerges. As Rastko Močnik argues, the disintegration of Yugoslavia resulted in new national identities that were asserted symbolically – through flags and anthems – but enacted within a condition of deep economic dependency on the imperial centre.[18] National identities served as both a tool and a distraction. Flags and cultural emblems reinforced a sense of unity, yet beneath this façade, the region was integrated into the global capitalist order as a subject within the semi-periphery.

Močnik likens the post-Yugoslav nations to "self-imposed bantustans",[19] where identitarian sovereignty is a self-defeating performative act. The flag thus becomes an empty signifier – an ideological veil obscuring the global logic of capitalist extraction. We find this bait-and-switch emblematic of digital capitalism's core mechanisms: algorithmic systems commodify users' identities – fragmenting, alienating, and reducing them to marketable data – all while centralizing economic power into the hands of a few powerful tech corporations.

[17] Louis Althusser, "Ideology and Ideological State Apparatuses (Notes towards an Investigation)," trans. Ben Brewster, in *Lenin and Philosophy and Other Essays* (London: New Left Press, 1971), 162.

[18] Rastko Močnik, *Tri teorije: institucija, nacija, država* (Ljubljana: 1999).

[19] Rastko Močnik, "Social Change in the Balkans," *Eurozine*, 2003.

This is a global process. As Dyer-Witheford argues in Inhuman Power, AI extends Lenin's theory of imperialism by embedding systemic domination into digital infrastructures.[20] Economic power remains concentrated in the global core, but now peripheral regions become sites of a new type of extraction – through digital labor, data harvesting, and algorithmic control. Furthermore, Kwame Nkrumah's extended critique of neo-colonialism echoes this: foreign capital exploits rather than develops the periphery.[21] Likewise, surveillance capitalism uses social media as a Trojan Horse, turning "innocuous" identity production into a profit engine for Big Tech.

As Boris Buden writes, the collapse of Yugoslavia marked not only a geopolitical shift but a rupture in collective memory, the past being rewritten to justify the new neoliberal-capitalist order.[22] The ideological function of nationalism in post-Yugoslavia, according to Buden, served to obscure the material consequences of capitalist restructuring. As *All-Aligned* suggests, AI-driven culture wars today obscure the economic realities of surveillance capitalism. Selfhood is no longer rooted in history, materiality, or collective struggle but in algorithmically mediated profiles. History disappears, replaced by data. The subject becomes a statistical echo of past behavior.

In *All-Aligned*, this post-Yugoslav contradiction is not just a background context. It is the methodological core. The very act of generating endless hybrid flags – Afro-Balkan, Serbo-libertarian, NATO-incel, queer-dervish – draws attention to the manufactured nature of identity, exposing how in digital capitalism political subjectivities get produced through symbolic manipulation rather than collective human agency. *All-Aligned* seeks to universalize the Yugoslav and Serbian experience in order to reveal how contemporary identity formation is shaped by structural forces akin to those that drove the Yugoslav wars and privatizations. The difference is now, the logic is global and automated. One might argue that the new fascism emerges from AI slot machines and random number generators.[23]

III. Affective machines and the war for attention

All-Aligned also functions as a critique of the affective dimension of digital capitalism. As Facebook's algorithm demonstrated by ranking "angry" reactions as five times more valuable than "likes", platforms systematically prioritize and amplify outrage and other negative affects, reinforcing identity-based polarization as a means of optimizing user engagement.[24] Moreover, manipulative UX design exploit users' af-

[20] Nick Dyer-Witheford, Atle Mikkola Kjøsen, and James Steinhoff, *Inhuman Power: Artificial Intelligence and the Future of Capitalism* (London: Pluto Press, 2019).

[21] Kwame Nkrumah, *Neo-Colonialism: The Last Stage of Imperialism* (New York: International Publishers, 1966).

[22] Boris Buden, "The Post-Yugoslavian Condition of Institutional Critique," *Transversal*, February 2008, https://transversal.at/transversal/0208/buden/en.

[23] One of the informal slogans of the *All-Aligned* project was "For random – ready!" ("Za random spremni!" in Serbo-Croatian), a wordplay on "For homeland – ready!" ("Za dom spremni!"), the fascist Croatian-Ustaša slogan from the Second World War.

[24] Jeremy B. Merrill and Will Oremus, "Five Points for Anger, One for a 'Like': How Facebook's Formula Fostered Rage and Misinformation", *The Washington Post*, October 26, 2021, https://www.washingtonpost.com/technology/2021/10/26/facebook-angry-emoji-algorithm/.

fective neurochemical responses, such as dopamine feedback loops, to shape behavior and maintain engagement.[25] The physiological basis of cognition within the nervous system is being exploited in order to further entrench users in cycles of emotional interaction. Algorithmic systems do not simply categorize users. They modulate their emotional states for behavioral prediction and economic gain.

Flags, as emotional æsthetic artifacts, are ideally suited to this task. They condense affect, ideology, and belonging into a single geometric image. The nationalist flag does not *explain* a country; it *feels* like a country. It is a visual trigger for allegiance. In *All-Aligned*, this dynamic is both replicated and deconstructed. Participants feel drawn to certain flags – for their symmetry, their shapes, their colors, their connotations – and then asked: *"Why is this flag yours?"* The resulting answers are affective and ambiguous. Some invoke calmness, others insecurity or irony, heritage, outrage or pride. The process forces a confrontation between feeling and ideology: not only *what* we identify with, but *why*.

Moreover, the project stages this confrontation within a system of affective computing. The flag generator mimics the affective logic of algorithmic identity platforms. It maps concepts to symbols in a way that recalls how machine learning models map user behavior to probabilistic recommendations. Yet unlike commercial systems, *All-Aligned* makes this mapping explicit. It invites users to play with the system, to adjust the sliders, to experiment with their æsthetic positionality. In doing so, it converts Zuboff's extraction imperative of AI into a space of critical play.

IV. Participatory algorithmic art as ideological cartography

This ambivalent function – of both enacting and exposing algorithmic identity – places *All-Aligned* within a lineage of tactical media art. As Hito Steyerl argues, algorithmic systems do not merely represent the world. They *generate* ideological formations. AI is not a mirror but a world-builder. In her formulation, we are witnessing the "æstheticization of politics by computational means" [26]. In this context, algorithmic flags are no longer passive symbols but active agents of ideological production.

Fredric Jameson helps contextualize this further. In his reading, postmodernism is the cultural logic of late capitalism: a condition in which æsthetics serve not to disrupt power but to lubricate it. The flattening of history, the collapse of authenticity, the proliferation of surface – these are not bugs but core features of the contemporary æsthetic economy.[27] *All-Aligned* resists this logic by making the flattening visible. Its algorithm does not claim artistic genius. It shows its rules. It makes us look at the logic of production. It asks us to identify with what identifies us.

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[25] Darija Medić, "Toxic Agents of the Attention Economy," in *Coding the Gaze: Technology, Art and Society: Feminist Perspectives*, 2024.

[26] Hito Steyerl, "Mean Images," *New Left Review* 140/141 (March–June 2023).

[27] Fredric Jameson, *Postmodernism, or, the Cultural Logic of Late Capitalism* (Durham, NC: Duke University Press, 1991).

Joanna Zylinska deepens this critique by warning against the fetishization of AI æsthetics. In her analysis, many generative art projects replicate the same visual tropes – GANs trained on classical paintings, abstract flows of data-as-sublime – without challenging the infrastructural or ideological systems in which AI operates. Zylinska calls for an æsthetic reworlding, a practice that not only uses AI but reimagines the world it reflects.[28] *All-Aligned* aligns with this idea. It does not treat AI as a mystical painter, but as a social technology – a grammar for constructing identities, allegiances, and affective attachments.

At a deeper level, *All-Aligned* can be seen as an exercise in counter-cartography. Much like Vladan Joler's *Anatomy of AI*,[29] which maps the planetary-scale infrastructure of algorithmic capitalism, *All-Aligned* maps the symbolic terrain of identity production. But instead of tracing supply chains, it traces emotional, ideological, and cultural coordinates. Each flag is a node in this map – a crystallization of affective affiliation shaped by æsthetic rules.

In doing so, the project disrupts the illusion of autonomy in digital identity. As the work of Dejan Grba has shown, algorithmic systems present themselves as objective or neutral while encoding deep ideological assumptions.[30] *All-Aligned* lays these assumptions bare. It shows that to generate a flag is to navigate a landscape of inherited signs and imposed choices. Even creativity here is structured – but not fixed. It can be bent, played with, reconfigured, *hacked*.

This makes *All-Aligned* a form of participatory critique. It does not deliver a singular message but opens a space for ideological experimentation. In contrast to systems that profile users invisibly, it demands that users profile themselves – and reflect on the process. This reflexivity is key. It transforms what would otherwise be æsthetic consumption into æsthetic *cognition*. The flag becomes not a brand of the self, but a question: *What am I aligning with and who benefits from this alignment?*

V. Identity, contradiction, and catharsis

The final implication of *All-Aligned* lies in its embrace of contradiction and paradox. As previously mentioned, the name *All-Aligned* plays on the legacy of the *Non-Aligned* – an anti-imperialist, anti-Cold War movement born in Belgrade. The Non-Aligned Movement rejected binary divisions of global power, just as *All-Aligned* challenges the dualistic logics of algorithmic capitalist governance. Much like AI, capitalism itself functions as a massive computational machine in which individuals act as neurons, processing and optimizing market behaviors within a logic that demands efficiency, quantification, and predictability. In this system, contradiction as such must be eliminated. This mechanistic rationalism is why AI has become capitalism's

[28] Joanna Zylinska, *AI Art: Machine Visions and Warped Dreams* (London: Open Humanities Press, 2020).

[29] Vladan Joler and Kate Crawford, *Anatomy of an AI System* (2018), https://anatomyof.ai/.

[30] Dejan Grba, "The Mechanical Turkness: Tactical Media Art and the Critique of Corporate AI", in *Navigating the Digital Age: An In-Depth Exploration into the Intersection of Modern Technologies and Societal Transformation* (Belgrade: Institute for Philosophy and Social Theory, 2024).

ideal cognitive tool. It reinforces a world where only the computable is deemed real, and where all that is computable is commodified – bought, sold, and accumulated like points in a game.

However, there are alternative ways to conceptualize reality – such as Hegelian dialectics, Marxist dialectics, Madhyamaka paradoxical logics, and contemporary paraconsistent logics. Hegel's dialectic views identity as an ever-evolving historical process shaped by contradiction and transformation,[31] while Marxist dialectics grounds this dynamic in material conditions, emphasizing that social interactions determine consciousness and that contradictions emerge not just in thought, but within the structures of economic and political life.[32] Madhyamaka philosophy proposes a fourfold logic in which statements can be simultaneously true, false, both, and neither – destabilizing any essential notion of self.[33] Similarly, paraconsistent logics allow contradictions to coexist without collapse.[34] *All-Aligned* draws from this spirit of non-classical logics: it enables users to be at once aligned with a flag, against it, non-aligned, and – *all-aligned*.

This is not just a philosophical gesture. It has political stakes. By staging contradiction rather than resolving it, the project resists the reductive, either/or structures of digital profiling and capitalist rationality. It reveals identity not as a fixed thing that can be represented via a fixed flag, but as a shifting, generative process – plural, unstable, and resistant to capture. In doing so, the project challenges the computational imperative to sort people and things into discrete, marketable categories.

This is perhaps why the project has resonated with so many participants. Despite its technical structure and theoretical ambitions, it is ultimately a labour of emotions. It does not only critique the systems that produce us. It lets us *feel* our way through them. As curator Adna Muslija writes, "The level of awareness of the ideological and algorithmic background is finally followed by the understanding of what makes us subjects – the power to *feel*." [35] This feeling is not a weakness. It is a method. It transforms digital data back into human experience.

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[31] G.W.F. Hegel, *The Science of Logic*, trans. George di Giovanni (Cambridge: Cambridge University Press, 2010).

[32] Karl Marx, *A Contribution to the Critique of Political Economy*, trans. S. W. Ryazanskaya (Moscow: Progress Publishers, 1977), 20.

[33] Nāgārjuna, *The Fundamental Wisdom of the Middle Way: Nāgārjuna's Mūlamadhyamakakārikā,* trans. Jay L. Garfield (New York: Oxford University Press, 1995).

[34] Graham Priest, *Beyond the Limits of Thought* (Oxford: Oxford University Press, 2002).

[35] Adna Muslija, "Regulated Interpellation," in *All-Aligned Exhibition Catalogue*, Manifesto Gallery, Sarajevo, Summer 2023, https://krcadinac.com/all-aligned/essays/adna/.

Conclusion

Finally – and this goes for the capitalists
too – an inhuman power rules over everything.
— Karl Marx

In an age where AI shapes everything, *All-Aligned* reveals the æsthetic and ideological forces behind algorithmic selfhood. What began as a tool for automated flag design evolved into a critical investigation of how digital identities are produced, commodified, and governed by surveillance capitalism. The flags generated are more than visual artifacts. They serve as critiques, exposing the fractures and biases embedded in identity-making systems.

Set in a post-Yugoslav context, *All-Aligned* draws parallels between the symbolic sovereignty of the new Balkan states and their economic dependency under neoliberalism. Just as these nations raised new flags while surrendering material autonomy, today's users craft curated digital selves within platforms that extract value from their choices. Despite its interactive interface, the system often reinforces structural constraints, reducing selfhood to data optimized for engagement and profit.

But *All-Aligned* is also an experiment in resistance. Through open-source tools, workshops, and exhibitions across the region, it reclaims algorithmic æsthetics as a space for reflection. It invites users to see AI not as control, but as a medium for collective imagination.

The project's most powerful moment came not through code, but through catastrophe. A week after the Belgrade exhibition opened, a torrential flood ravaged the gallery, destroying equipment and flags (Figure 6). Yet this loss felt strangely liberating. The climate-gone-feral had dismantled our constructs and technological affectations. While we spoke of generative algorithms, had we overlooked that nature and society are generative too?

It was then that we recalled a comment left by a student from Belgrade's Student City after generating her flag. When we asked, "Why is this flag yours?" she replied: "Because I am trying to create a new system during this apocalypse."

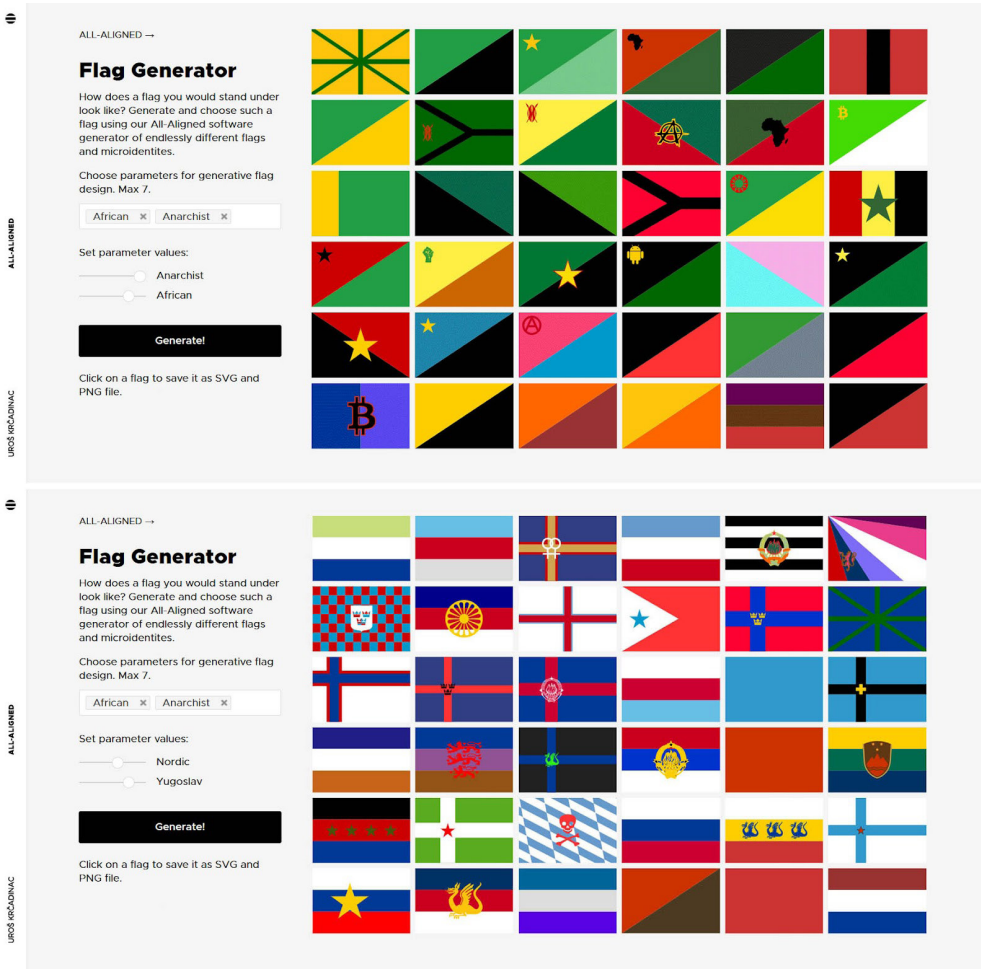

Figure 1. *All-Aligned Flag Generator*. Every time a user presses the generate button, a new set of flags are generated. An example of the Afro-anarchist flag set (up) and Nordic-Yugoslav flag set (below).

Figure 2. *All-Aligned* exhibitions in Rijeka, Croatia (Fillodrammatica Gallery, Drugo More); Cetinje, Montenegro (Miroslav Dado Đurić Gallery, Fluid Design Forum); Belgrade, Serbia (SCCC Gallery, "They: Live" artist-in-residence programme); and Zagreb, Croatia (Miroslav Kraljević Gallery, GMK, Kontejner), left to right, top to bottom.

Figure 3. Student participants of *All-Aligned* workshops in the Belgrade's Student City.

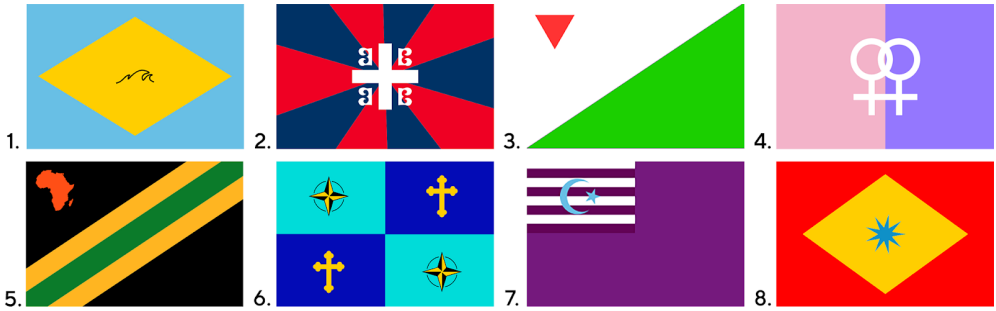

Figure 4. Examples of generated flags.

Figure 5. Left: *The All-Aligned in Movement* public performance, SCCC, Belgrade (September, 2022); right: *Algorithmic Flag Workshop* at the Faculty of Fine Arts in Cetinje, Montenegro (Spring, 2023).

Figure 6. The flood of the SCCC Gallery (June, 2022).

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Growing Through Algorithms: Reimagining Plant Life with AI Art

Abstract: This article examines the intersection of artificial intelligence, ecology, and contemporary artistic practice through the lens of plant representation. Focusing on AI-generated botanical art, it explores how algorithmic processes counteract plant blindness and foster new modes of human-plant relationality. Plants are repositioned as active agents within digital-ecological narratives, disrupting their marginal status in scientific and cultural discourse. Emphasis is placed on the dual role of AI – as both a medium for ecological imagination and a source of environmental strain due to its intensive resource consumption. By integrating post-humanist perspectives, the paper frames AI-generated botanical art as a critical space where aesthetics, technology, and ecological ethics converge.

Keywords: AI art; plant blindness, AI generated botanical art; artistic innovation; digital art.

AI art and ecology

Artificial intelligence is increasingly intersecting with ecological concerns, offering new ways to understand and engage with environmental issues. While many AI systems mimic human cognition, researchers propose[1] that integrating ecological principles – drawing from the interconnectivity and self-regulatory mechanisms of ecosystems – could lead to more adaptive and socially responsible AI. This shift has significant implications, particularly in addressing climate change, biodiversity loss, and habitat degradation.

AI-generated botanical art transcends digital aesthetics, engaging with ecological complexity and highlighting the dynamic relationships between flora and their environments. By incorporating ecological models, AI art challenges the traditional depiction of plants as static, ornamental, or symbolic, instead representing them as evolving, interdependent phenomena. This aligns with the broader movement toward

[1] Barbara A. Han, Kush R. Varshney, Shannon LaDeau, Ajit Subramaniam, Kathleen C. Weathers, and Jacob Zwart, "A Synergistic Future for AI and Ecology," *Proceedings of the National Academy of Sciences* 120, no. 38 (September 19, 2023): e2220283120, https://doi.org/10.1073/pnas.2220283120. "Ecology and Artificial Intelligence: Stronger Together," ScienceDaily, accessed December 24, 2024, https://www.sciencedaily.com/releases/2023/09/230911191010.htm.

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ecological AI, where technology fosters deeper awareness of and interaction with environmental systems.[2]

The integration of AI and ecological research provides powerful tools for understanding and mitigating environmental crises.[3] AI's ability to process vast datasets enables researchers to model and predict ecosystem changes over time, offering insights that contribute to sustainability and resilience.[4] Simultaneously, the post-anthropocentric shift, influenced by globalization and technology-mediated interactions, reshapes human agency in relation to the non-human world, altering the very definition of *anthropos*.[5]

Through the manipulation of plant forms, AI art can expose hidden connections between the digital and organic realms, encouraging reflection on how technological interventions shape our understanding of nature. Historically, artists have played a crucial role in raising awareness about climate change, producing works that challenge perceptions, evoke emotional responses, and inspire action.[6] The convergence of art and ecology has led to new creative practices that push artistic expression beyond aesthetics into environmental activism.

However, the ecological costs of AI must also be addressed. The increasing computational demands of AI systems raise urgent concerns about energy consumption and environmental degradation. Ethical deployment strategies must be implemented, including comprehensive environmental impact assessments prior to AI deployment, identifying risks to ecosystems and determining mitigation strategies.[7]

Contemporary art increasingly engages with ecological politics, integrating art criticism, political philosophy, environmental activism, and postcolonial thought.[8] This has given rise to eco-aesthetics, a discourse examining how art addresses ecological crises across diverse global contexts. Unlike politically neutral 'green' consensus narratives often promoted by governments and corporations, art can expose

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[2] "Ecology and Artificial Intelligence: Stronger Together."

[3] United Nations Environment Programme, "How Artificial Intelligence Is Helping Tackle Environmental Challenges," UNEP, November 7, 2022, https://www.unep.org/news-and-stories/story/how-artificial-intelligence-helping-tackle-environmental-challenges. Molly Flanagan, "AI and Environmental Challenges," Environmental Innovations Initiative, University of Pennsylvania, August 23, 2023, https://environment.upenn.edu/events-insights/news/ai-and-environmental-challenges. Cary Coglianese, "Deploying Machine Learning for a Sustainable Future," University of Pennsylvania Law School, Public Law and Legal Theory Research Paper No. 20-17, May 2020, 7, https://ssrn.com/abstract=3613804.

[4] Han et al., "A Synergistic Future for AI and Ecology."

[5] Rosi Braidotti, "Post-human Humanities," *European Educational Research Journal* 12, no. 1 (March 2013): 5, https://doi.org/10.2304/eerj.2013.12.1.1.

[6] Maja and Reuben Fowkes, *Art and Climate Change* (Thames and Hudson Ltd., 2022), https://www.perlego.com/book/3579969/art-and-climate-change-pdf.

[7] A. Zhuk, "Artificial Intelligence Impact on the Environment: Hidden Ecological Costs and Ethical-Legal Issues," *Journal of Digital Technologies and Law* 1, no. 4 (December 15, 2023): 947, https://doi.org/10.21202/jdtl.2023.40.

[8] T.J. Demos, "Contemporary Art and the Politics of Ecology: An Introduction," *Third Text* 27, no. 1 (January 2013): 1, https://doi.org/10.1080/09528822.2013.753187.

socio-political disparities within ecology, including those linked to race, class, gender, and geography.[9]

AI has fundamentally altered artistic engagement with nature, offering new methods for visualizing ecological transformations and imagining alternative futures.[10] Digital media, machine learning, and AI have expanded artistic possibilities, providing tools for critique, reinterpretation, and resistance against environmental degradation. Instead of conforming to the efficiency-driven imperatives of economic competition, we must reclaim alternative value systems, embracing novel artistic and social practices that reimagine human relations with others and the unfamiliar.[11]

As a result, art and aesthetics assume a pioneering role, countering claims of crisis or decline.[12] Contemporary artistic practices increasingly internalize ecological issues, transforming aesthetics into an extension of ecology itself, while ecology in turn becomes an integral realm within aesthetics.[13] Artistic practices reveal the complexities and contradictions of human existence, analyzing how we interact with and perceive other life forms, often reducing them to mere resources.[14] A fundamental aspect of art's engagement with ecology is its ability to cultivate sensitivity, awareness, and care, while avoiding rigid distinctions between humans and the non-human realm.

In contemporary visual discourse, climate change and environmental urgency have become dominant themes.[15] Human activity is accelerating the sixth mass extinction, leading to species loss at unprecedented rates, even before many plants are documented.[16] Facing overpopulation, environmental destruction, and deepening inequalities, Donna Haraway's Chthulucene[17] proposes an alternative framework in which humans are not the primary agents of history but participants in a broader ecological web. This shift calls for an ethics of attention and response-ability, urging humans to recognize their interconnectedness with all life forms, including plants. As art increasingly internalizes ecological concerns, aesthetics and ecology merge, creating

[9] Demos, "Contemporary Art and the Politics of Ecology," 2.

[10] Fowkes, *Art and Climate Change*, 7.

[11] Félix Guattari, *The Three Ecologies*, trans. Ian Pindar and Paul Sutton (Bloomsbury Academic, 2014).

[12] Anna Zeidler-Janiszewska, "Aesthetics and Ecology in the Post-Modern Perspective," *Polish Journal of Landscape Studies* 1, no. 2–3 (January 21, 2019): 9, https://doi.org/10.14746/pls.2018.2.3.1.

[13] Zeidler-Janiszewska, "Aesthetics and Ecology in the Post-Modern Perspective," 9.

[14] Marina Souza Lobo Guzzo, Susana Oliveira Dias, Alana Moraes, Guilherme Moura Fagundes, Walmeri Ribeiro, Kidauane Regina Alves, and Renzo Taddei, "Artistic Practices in the Anthropocene," *Annual Review of Environment and Resources* 49, no. 1 (October 18, 2024): 223–47, https://doi.org/10.1146/annurev-environ-112922-112400.

[15] Demos, "Contemporary Art and the Politics of Ecology." Fowkes, *Art and Climate Change*. Marianna Michałowska, "Artists in the Face of Threats of Climate Change," *Oceanologia* 62, no. 4 (October 2020): 565–75, https://doi.org/10.1016/j.oceano.2020.03.003.

[16] Murphy Westwood et al., "Botanic Garden Solutions to the Plant Extinction Crisis," Plants, People, Planet 3, no. 1 (2021): 22–31, https://doi.org/10.1002/ppp3.10134.

[17] Donna J. Haraway, *Staying with the Trouble: Making Kin in the Chthulucene* (Duke University Press, 2016), https://doi.org/10.2307/j.ctv11cw25q.

new possibilities for artistic engagement. Through multiple narratives, contemporary art unveils the intricate tensions between human existence and environmental crises, offering not only critical reflection but also pathways to more sustainable futures.

Plant blindness

Despite the substantial political and economic influences affecting contemporary plant science and the increasing risks of extinction, plants remain frequently overlooked[18], a phenomenon with significant consequences for conservation and botanical education. This cognitive bias, termed plant blindness, refers to prevalent inclination to disregard plants as mere passive background elements rather than active, living entities. Coined[19] during a 1998 meeting of the Botanical Society of America, plant blindness diminishes awareness of plants in both daily life and scientific discourse, perpetuating their marginalization in ecological and cultural narratives. Despite being thoroughly documented, the underlying biological and cultural mechanisms driving plant blindness remain an ongoing subject of research.[20] One explanation is perceptual bias; while plants are stationary and often visually blend together, they tend to evade human attention.[21] Additionally, their chromatic and spatial consistency within dense populations makes them more difficult for the human eye to distinguish, further reinforcing their invisibility.[22] This bias extends into scientific domains, as researchers frequently undervalue the ecological significance of plants.[23] Compounded by the underrepresentation of botanical content in biology education, both students and the public often fail to recognize the ecological, aesthetic, and cultural significance of plants, reinforcing the perception of plants as inferior to animals.[24] To address concerns about the ableist implications of the term "plant blindness," certain researchers propose "plant awareness disparity" (PAD) as a more inclusive alternative.[25]

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[18] Sarah B. Jose, Chih-Hang Wu, and Sophien Kamoun, "Overcoming Plant Blindness in Science, Education, and Society," PLANTS, PEOPLE, PLANET 1, no. 3 (July 2019): 169–172, https://doi.org/10.1002/ppp3.51.

[19] James H. Wandersee and Elisabeth E. Schussler, "Preventing Plant Blindness," *The American Biology Teacher* 61, no. 2 (February 1, 1999): 82–86, https://doi.org/10.2307/4450624.

[20] Ainara Achurra, "Plant Blindness: A Focus on Its Biological Basis," *Frontiers in Education* 7 (October 25, 2022), https://doi.org/10.3389/feduc.2022.963448.

[21] Mung Balding and Kathryn J.H. Williams, "Plant Blindness and the Implications for Plant Conservation," *Conservation Biology* 30, no. 6 (December 2016): 1192–1199, https://doi.org/10.1111/cobi.12738.

[22] Wandersee and Schussler, "Preventing Plant Blindness."

[23] Sarah B. Jose, Chih-Hang Wu, and Sophien Kamoun, "Overcoming Plant Blindness in Science, Education, and Society," 169.

[24] Jessica Colon, Nichole Tiernan, Simone Oliphant, Ateev Shirajee, Jonathan Flickinger, Hong Liu, Javier Francisco-Ortega, and Melissa McCartney, "Bringing Botany into Focus: Addressing Plant Blindness in Undergraduates Through an Immersive Botanical Experience," *BioScience* 70, no. 10 (October 16, 2020): 887, https://doi.org/10.1093/biosci/biaa089.

[25] Kathryn M. Parsley, "Plant Awareness Disparity: A Case for Renaming Plant Blindness," *PLANTS, PEOPLE, PLANET* 2, no. 6 (November 2020): 600, https://doi.org/10.1002/ppp3.10153.

Traditional efforts to mitigate plant blindness emphasize education and visual recognition; however, research indicates that emotional and sensory engagement is vital for cultivating an awareness of plant life.[26] Initiatives such as Plant Love Stories[27] emphasize how personal narratives and sensory memories – such as the scent of a childhood garden or the familiar silhouette of a tree – forge profound emotional connection between individuals and plants. AI-generated botanical art provides an innovative method to reinforce such connections. Through the design of creative and evocative plant representations, AI can bridge the gap between intellectual knowledge and emotional experience. Just as storytelling personalizes the human-plant relationship, AI-generated floral imagery can cultivate botanical appreciation by presenting plants in visually striking and unexpected ways. These representations foster interest and emotional involvement, transcending mere physical interactions with plant life.

Rosi Braidotti[28] reminds us that "the universe is composed of things such as water lilies and stars, things that do not feed or shelter us, and which most of us, out of choice or necessity, ignore most of the time. However, these things can restore us to our primary relationship with existence, which is one of wonder. When a human artifact does this, we may honor it by calling it art." In this sense, both traditional and AI-driven botanical art have the power to reposition plants as central protagonists in ecological and cultural discourse, challenging plant blindness and fostering a renewed sense of wonder, awareness, and appreciation for the botanical world. Such artistic interventions contribute to addressing the broader climate challenge by reinforcing the urgency of plant conservation and ecological stewardship. Given that human survival is intrinsically linked to plant life, it is imperative to emphasize their importance whenever possible.[29] The visualization of plants in art offers an accessible means of drawing attention to botanical life,[30] especially for individuals with little direct exposure – such as those residing in urban settings – and is particularly significant in depicting endangered or extinct plant species. By making plant life more visible and emotionally resonant, art – whether traditional or AI-generated – plays a crucial role in mitigating plant blindness and expanding our collective understanding of the natural world.[31]

[26] Caitlin McDonough MacKenzie, Sara Kuebbing, Rebecca S. Barak, Molly Bletz, Joan Dudney, Bonnie M. McGill, Mallika A. Nocco, Talia Young, and Rebecca K. Tonietto, "We Do Not Want to 'Cure Plant Blindness' We Want to Grow Plant Love," *PLANTS, PEOPLE, PLANET* 1, no. 3 (July 2019): 139, https://doi.org/10.1002/ppp3.10062. Aideen McGinn, Lorna Donlon, and Joanna Kacprzyk, "Plant Memories: Art Co-created with the Public as a Tool for Investigating How People Build Lasting Connections with Plants," *PLANTS, PEOPLE, PLANET* 23 (July 2024), ppp3.10555, https://doi.org/10.1002/ppp3.10555.

[27] "Plant Love Stories," New Phytologist Foundation, accessed February 2, 2025, https://www.plantlovestories.com/.

[28] Rosi Braidotti, "Post-Human Humanities."

[29] Geetanjali Sachdev, "Engaging with Plants in an Urban Environment through Street Art and Design," *PLANTS, PEOPLE, PLANET* 1, no. 3 (July 2019): 272, https://doi.org/10.1002/ppp3.10055.

[30] Georgina Walton, Jonathan Mitchley, Geraldine Reid, and Sven Batke, "Absence of Botanical European Palaeolithic Cave Art: What Can It Tell Us about Plant Awareness Disparity?" *PLANTS, PEOPLE, PLANET* 5, no. 5 (September 2023): 694, https://doi.org/10.1002/ppp3.10373.

[31] Walton et al., "Absence of Botanical European Palaeolithic Cave Art."

Carbon footprint

As AI progresses, it presents significant environmental challenges, such as increasing energy consumption, electronic waste, and possible ecosystem disruptions – challenging to evaluate due to insufficient transparency.[32] The growing complexity of AI models results in heightened energy requirements and carbon footprints, with emissions from Information and Communications Technology anticipated to represent 14% of global emissions by 2040.[33] Frequent hardware upgrades further contribute to electronic waste, while AI applications in environmental monitoring and resource extraction threaten delicate ecosystems.[34] Despite AI's potential for sustainability-oriented applications, prominent technology companies offer limited data regarding the energy consumption and emissions linked to their AI systems, complicating a comprehensive evaluation of their ecological costs.[35] Enhanced accountability and the advancement of more energy-efficient AI technology are crucial to alleviate these effects.

Environmental resilience should be integral to talks surrounding AI, rather than be solely confined to policy and industrial deliberations. Despite ongoing ethical discussions, technology firms are amplifying energy-intensive computation and data storage on a global scale.[36]

Some researchers argue that AI-generated art and writing require less energy for individual tasks compared to conventional human creative processes.[37] This claim has been challenged, as comparing a single human-created image to an AI-generated output neglects the extensive computational infrastructure supporting AI systems.[38] The environmental impact of generative AI is accelerating rapidly, prompting worries over sustainability, ethical considerations, and potential job displacement.

Simultaneously, climate change compels artists to confront its effects not just thematically but also materially, since increasing temperatures, severe weather events, and scarcity of resources are impacting artistic creation and exhibition practices.[39] Although digital technologies have broadened artistic possibilities, they also present

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[32] Kate Crawford, "Generative AI's Environmental Costs Are Soaring – and Mostly Secret," *Nature* 626, no. 8000 (February 20, 2024): 693–693, https://doi.org/10.1038/d41586-024-00478-x.

[33] Alokya Kanungo, "The Green Dilemma: Can AI Fulfil Its Potential Without Harming the Environment?" Earth.Org, July 18, 2023, https://earth.org/the-green-dilemma-can-ai-fulfil-its-potential-without-harming-the-environment/.

[34] Kanungo, "The Green Dilemma."

[35] Crawford, "Generative AI's Environmental Costs Are Soaring – and Mostly Secret."

[36] Aimee van Wynsberghe, "Sustainable AI: AI for Sustainability and the Sustainability of AI," *AI and Ethics* 1, no. 3 (2021): 213, https://doi.org/10.1007/s43681-021-00043-6.

[37] Bill Tomlinson, Rebecca W. Black, Donald J. Patterson, and Andrew W. Torrance, "The Carbon Emissions of Writing and Illustrating Are Lower for AI than for Humans," *Scientific Reports* 14, no. 1 (February 14, 2024): 3732, https://doi.org/10.1038/s41598-024-54271-x.

[38] Jo Lindsay Walton, "Is AI Art Less Carbon Intensive than Human Art?" *Medium* (blog), August 23, 2024, https://medium.com/@jolindsaywalton/is-ai-art-less-carbon-intensive-than-human-art-3b7c61a4c333.

[39] Fowkes, *Art and Climate Change*, 10.

ethical dilemmas concerning energy consumption and resource utilization. Despite its innovative potential, AI-generated art requires substantial computational power, leading to carbon emissions and highlighting the paradox of using technology to address environmental issues while concurrently intensifying them.[40]

The environmental crisis requires fundamental transformation in artistic practices, transitioning from conventional depictions of nature to immersive, experimental forms of ecological involvement, redefining art's position as a catalyst for change in the Anthropocene.[41] Ultimately, as digital and AI-driven art continue to evolve, addressing their ethical and environmental implications becomes critical in fostering sustainable artistic practices.[42]

AI artistic practices: reimagining plants

AI art's engagement with plant life and ecology extends beyond theoretical discourse into artistic practice, where digital tools reshape how we perceive and interact with the natural world. Artists such as Andrea Brewster, Refik Anadol, Mat Collishaw, and Hannes Hummel explore the intersections of AI, organic forms, and ecological narratives, using machine learning and generative algorithms to reimagine plant life in ways that challenge traditional representations of nature. Their works interrogate plant blindness, the tendency to overlook plant life's significance, and highlight the broader ecological footprint of AI, questioning the sustainability of digital art production. Through these diverse practices, AI art becomes a speculative space where organic and digital ecologies merge, prompting new ways of thinking about conservation, environmental activism, and the ethics of technological intervention in nature.

Mat Collishaw

Mat Collishaw's *Petrichor* exhibition at the Royal Botanic Gardens, Kew, is a multi-room installation that critically examines the intricate connections among nature, art, and artificial intelligence. Encompassing several galleries, each room presents a unique ambiance and thematic focus, guiding visitors through a series of sensory and conceptual experiences, transforming traditional garden imagery into unsettling, dystopian visions that explore nature's deterioration and the influence of technology.[43]

A central work, *Alluvion*, features AI-generated still lives modeled on 17th-century Dutch vanitas paintings, revealing the capacity of machine learning to reproduce and violate art historical traditions. Collishaw utilizes AI not merely as a tool of reproduction, but as a mechanism of transformation – integrating floral forms with elements of decay and mutation that highlight the instability of life in the Anthropocene.

[40] Fowkes, *Art and Climate Change*, 19.

[41] Fowkes, *Art and Climate Change*. Ibid.

[42] Fowkes, *Art and Climate Change*, 19.

[43] Emily Steer, "How Gardens Became an Artistic Metaphor for Our Dystopian Times," *Artnet News*, January 29, 2024, https://news.artnet.com/art-world/gardens-dystopian-art-trend-2419915.

These works challenge the viewer to contemplate the role of AI in the formation of novel aesthetic paradigms and ecological visions.

The exhibition's digital focal point, Heterosis, showcases a fantastical landscape of generative flowers with petals akin to insect wings and organs, merging the distinctions between flora and fauna, as well as organic and synthetic. These dynamic, impossible hybrids are created with video game software and occur in real-time, showcasing AI's ability to simulate evolutionary processes and construct imaginary ecologies. In a separate area, the panoramic film *Even to the End* reconstructs a shipping disaster involving imperial botanical collections, highlighting the colonial histories that inform plant collection and classification. Petrichor utilizes AI to interrogate aesthetic representation and reveal the underlying epistemological and political influences that have molded our comprehension of nature.[44] Collishaw's work ultimately stimulates critical reflection regarding the role of technological mediation in both preserving and threatening the natural environment. It examines our relationship with nature, blending digital and natural elements to illustrate the conflict between our desire to nurture and to dominate the environment, raising questions about authenticity and control in human interactions with the environment.[45]

Refik Anadol

Refik Anadol is a multimedia artist who integrates AI with environmental themes, as exemplified in his Large Nature Model (2024) – the first AI system dedicated solely to environmental and ecological data, using information exclusively from natural sources like flora, fauna, and fungi. Trained on a vast dataset sourced from institutions such as the Smithsonian, National Geographic, and the Natural History Museum, in collaboration with 29 specialists,[46] this project aligns with Haraway[47]'s idea of interconnectedness, where scientists, artists, communities, and nonhuman beings collaborate to address urgent issues. Anadol's work reimagines nature as a constantly evolving digital landscape.[48] His Living Archive uses evolving algorithms that mimic ecological processes, reflecting symbiosis and ecological interdependence. However, one could argue that such abstract representations may oversimplify the complexity of these interdependent systems, failing to fully capture their depth.

According to Fowkes,[49] the environmental crisis requires a significant shift in

[44] Jackie Wullschläger, "Mat Collishaw, Kew Gardens – Nature's Unstable Beauty; Man's Destructive Ingenuity," *Financial Times*, November 18, 2023, https://www.ft.com/content/7f2d7ffd-6a9e-48db-8c8e-eb4f33718ae1.

[45] Jonathan Jones, "Mat Collishaw Review – AI Plants Put the Shock and Sensation Back into British Art," *The Guardian*, October 20, 2023, sec. Art and design, https://www.theguardian.com/artanddesign/2023/oct/20/mat-collishaw-review-fabricated-plants-put-the-shock-and-sensation-back-into-british-art.

[46] Heather Schoell, "Eco-System Upgrade: AI Plants a Digital Forest at NVIDIA GTC," *NVIDIA Blog* (blog), March 11, 2024, https://blogs.nvidia.com/blog/ai-refik-anadol-gtc-2024/

[47] Haraway, *Staying with the Trouble*.

[48] "Large Nature Model–Living Art," Refik Anadol, accessed February 3, 2025, https://refikanadol.com/works/large-nature-model-living-art/.

[49] Fowkes, *Art and Climate Change*, 7.

artistic practices, moving away from traditional depictions of nature toward more avant-garde and immersive ecological engagement. Anadol's team collaborated with perfumers to develop 12 distinct scents synchronized with the visual content, such as the evolving smells of a forest before and after rainfall, thus deepening viewers' connection to the represented environments.[50] Anadol envisions his AI model as a new way of perceiving, recording, and preserving nature, with applications in art therapy, offering simulated natural experiences for those with limited access to real-world environments.

The increasing intersection of technology and environmental practices raises important questions about the ecological footprint of art production. While AI-driven installations are powerful in simulating ecosystems, they may inadvertently contribute to the very environmental degradation they aim to address, prompting concerns about their sustainability. Anadol's studio is addressing these challenges by partnering with Google engineers to ensure the model operates on renewable energy, aligning the project with a commitment to sustainability (Studio, Refik Anadol, 2024). By combining art, technology, and ecology, Anadol's projects demonstrate how AI can foster ecological understanding and inspire collective responsibility for the planet.[51]

Andrea Brewster

Andrea Brewster's artworks combine traditional techniques with artificial intelligence, creating semi-abstract floral compositions that capture nature's essence through vibrant colors and dynamic light. Her work invites viewers to engage with nature in unexpected ways, using AI to produce images that feel both familiar and otherworldly. This fusion of technology and organic forms reflects Brewster's deep curiosity about the natural world and encourages reflection on its future in an increasingly digital age.[52] In her exhibition *Improbable Blossoms* (2022), Brewster uses AI as an artistic tool, utilizing the AI image generator Midjourney to create floral compositions that reinterpret traditional botanical illustration. She inputs text-based prompts related to botanical themes, and carefully curates works that highlight the fragility and impermanence of natural forms, such as petals resembling dragonfly wings. This process underscores AI's ability to synthesize aesthetic patterns that evoke both familiarity and innovation in botanical representation. Brewster's exploration of AI-generated imagery is also informed by her historical connection to two 19th-century naturalist ancestors, framing AI as a contemporary extension of the scientific and artistic traditions of botanical documentation.[53] Through her work, Brewster raises import-

[50] Adam Schrader, "Refik Anadol Launches the First Open-Source Nature-Based A.I. Model," *Artnet News*, January 16, 2024, https://news.artnet.com/art-world/refik-anadol-living-archive-nature-2419482.

[51] Schoell, "Eco-System Upgrade."

[52] Hue&eye, "Andrea Brewster | Flowers Blooming through AI," Hue & Eye, April 21, 2023, https://www.hueandeye.org/andrea-brewster-flowers-blooming-through-ai/.

[53] "From Pandemic Plant Obsession, AI-Generated Flowers Sprout," The San Francisco Standard, December 17, 2022, https://sfstandard.com/2022/12/16/ai-flowers-sprout-oakland/.

ant questions about the ontological status of AI-generated art, particularly regarding authorship, creativity, and the mediation of nature through algorithms. Despite the uncertainties surrounding AI's role in art production, Brewster adopts a critical yet exploratory stance, recognizing its potential to foster new ways of engaging with both aesthetic and ecological concerns.

Hannes Hummel

Hannes Hummel's *Dreamlike AI-Generated Flowers* exemplifies the fusion of artificial intelligence and botanical aesthetics, where neural networks simulate organic forms beyond natural limitations. These AI-generated flowers challenge the concept of authenticity in nature and raise questions about humanity's role in shaping biological futures. Hummel's work visualizes speculative plant species that could emerge in response to climate change, genetic engineering, or hybrid ecologies, positioning AI-generated flora as a medium to explore themes such as plant resilience, biodiversity loss, and climate adaptation. AI-driven botanical art suggests a paradigm shift, making AI not just a tool but a collaborator in envisioning ecological futures.[54] Hummel's approach aligns with phenomenology, relational AI, and plant awareness. His use of AI in artistic creation mediates human perception and experience, moving beyond the view of AI as merely instrumental and towards a more collaborative framework, where AI and human interaction co-create meaning. This co-authorship concept reinforces the idea that AI-generated works are not passive outputs but entities that shape perception. Hummel's speculative and digital aesthetic reframes our perception of nature, presenting AI as a means to bring attention to plant life in a post-digital world, potentially counteracting the phenomenon of plant blindness. The blending of realism and synthetic elements in his work raises questions about trust in AI-generated representations, challenging traditional notions of authenticity and authorship. This, in turn, engages broader concerns about how AI-generated content is perceived and trusted within ecological, scientific, and artistic contexts. Furthermore, Hummel's art highlights the potential for AI to mediate and raise awareness of plant life, fostering greater societal appreciation and understanding.[55]

Conclusion: AI, ecology, and the future of artistic engagement

As AI becomes increasingly integrated into artistic practice, its role extends beyond mere aesthetic exploration into ecological storytelling and environmental activism. AI art can challenge plant blindness, a phenomenon that diminishes our awareness of plant life and its ecological significance, by reimagining plant forms and ecosystems through digital means. Through the works of artists such as Andrea

[54] Leandro Lima, "Algorithmic Gardener: Hannes Hummel Combines His Botanical Pictures through AI to Create Dreamlike Flowers–Visualflood Magazine," *Visual Flood* (blog), October 1, 2024, https://visualflood.com/post/hannes-hummels-dreamlike-ai-generated-flowers.

[55] McGinn, Donlon, and Kacprzyk, "Plant Memories."

Brewster, Refik Anadol, Mat Collishaw, and Hannes Hummel, AI art serves as a bridge between human perception and ecological awareness, fostering new narratives that engage with biodiversity, conservation, and the fragile balance of our ecosystems.

However, while AI art offers new ways of seeing and engaging with the environment, its ecological footprint cannot be overlooked. The energy demands of generative AI models – driven by intense computational power, electricity use, and cooling systems – raise urgent concerns about sustainability. Research shows[56] that training a single large AI model can emit as much carbon dioxide as five cars over their entire lifetimes, underscoring the environmental cost of current AI development practices. Nevertheless, emissions persist beyond the training phase. The continuous implementation and optimization of these models consume significant energy and water resources, burdening electrical grids and exhausting municipal water supplies, potentially disrupting local ecosystems. The increasing demand for high-performance hardware to enable these systems results in significant environmental costs due to the extraction, manufacturing, and global transit of physical components.[57]

Addressing these issues requires a shift toward more responsible, sustainable[58] AI development, including energy-efficient algorithms, optimized hardware, and renewable energy sources.[59] Ethical AI practices, such as sustainability-focused deployment and impact assessments, can help balance technological innovation with ecological responsibility.

Rosi Braidotti's vision of a post-anthropocentric humanities[60] would provide a useful framework for understanding this potential shift, as she argues for an expanded field of inquiry that moves beyond human-centered perspectives. Although AI art's interaction with ecology gestures toward this, it frequently risks superficiality unless it aggressively challenges anthropocentric assumptions and emphasizes genuine interconnectedness with the more-than-human realm.

This approach could also reflect Donna Haraway's insistence on "staying with the trouble" – a commitment to engaging with complex, interconnected systems rather than seeking simple solutions, but only if AI evolves into a sustainable and ethical being, it can be perceived as tentacular, interlinking human and non-human futures, rather than merely serving as a techno-solutionist instrument.

In the Chthulucene, AI art does not merely simulate nature – it *participates* in ecological world-making, merging digital and organic forms of existence. These artistic practices create hybrid narratives, where algorithmic processes interact with natural elements, reshaping our understanding of the plant world. The plant, traditionally

[56] Karen Hao, "Training a Single AI Model Can Emit as Much Carbon as Five Cars in Their Lifetimes," *MIT Technology Review*, June 6, 2019, https://www.technologyreview.com/2019/06/06/239031/training-a-single-ai-model-can-emit-as-much-carbon-as-five-cars-in-their-lifetimes/.

[57] "Explained: Generative AI's Environmental Impact." MIT News, January 17, 2025. https://news.mit.edu/2025/explained-generative-ai-environmental-impact-0117.

[58] Aimee van Wynsberghe, "Sustainable AI: AI for Sustainability and the Sustainability of AI," 213.

[59] Alokya Kanungo, "The Green Dilemma: Can AI Fulfil Its Potential Without Harming the Environment?"

[60] Braidotti, "Post-human Humanities."

seen as a symbol of resilience and continuity, becomes a site of negotiation between biological processes and digital reinterpretation. AI-generated botanical art, in this sense, mirrors Haraway's broader thesis: that contemporary existence is defined by interwoven, interdependent systems that resist simple categorization.

Ultimately, AI art's engagement with ecology challenges us to rethink our relationship with the environment. It can function as an instrument to raise awareness, shifting perspectives, and initiating critical discussions around conservation and sustainability. However, while we leverage AI's capabilities, we must always recognize and address its environmental repercussions. The future of AI and ecological art must emphasize sustainability, cultivating innovative artistic and technological practices that are both ethically and ecologically responsible, rather than solely aesthetic.

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Artificial Form of Life as the Discrimination Challenge for Education: Non-Human Intelligence and Schooling[1]

Abstract: The paper thematizes contemporary moment of humanity's self-understanding in the context of advanced technological development, by looking at it through the lens of one and the same line (un)imaginability of artificial lifeform education. This perspective allows us to thematize the problem of discrimination in both of its meanings – how to distinguish the human form of life from others, in this case artificial forms of life, and how to ensure that this distinction does not serve as a basis for degradation – in order to argue for the suspension of human narcissism and suggest the possibility of their equality in access to education, and not only education. The first part presents the challenges artificial intelligence and especially androids represent to the traditional vision of the human, suggesting a necessity of its renewed examination and rearticulation in the style of critical posthumanism. The middle section differentiates two potential as well as typical reactions to the drama whose protagonists are humans and self-aware human-like robots, both of which arose from a fear of losing a recognizable human identity. It is concluded that, running parallel to changes in thinking humanity and the development of techno-science, there have been changes in approaches to humanity's artificial Other and the (im)possibility of its education: from a fundamental rejection of such an idea that "soulless machines" might attend school, through a softened stance that autonomous automatons might be capable of learning, to allowing for the possibility that they even join humans in schools.

Keywords: artificial intelligence; artificial life form; humanism; otherness; education.

Introduction

Armin Grunwald recently gave an online lecture in which he openly asked whether robots equipped with strong artificial intelligence (AI) might be considered better teachers: they are never tired or unmotivated; they know the answer almost to every possible question, given their immeasurably greater data storage; they are immune to being drawn off topic, and are incorruptible when evaluating student achievements.[2]

[1] This paper was realized with the support of the Ministry of Science, Technological Development and Innovation of the Republic of Serbia, according to the Agreement on the realization and financing of scientific research 451-03-136/2025-03/ 200025.

[2] Armin Grunwald, "Artificial Intelligence (AI) Meets Philosophical Anthropology," paper presented at the Institute for Philosophy and Social Theory, Belgrade, Serbia, September 29, 2022, accessed February 7, 2023, https://ifdt.bg.ac.rs/events/lecture-armin-grunwald-artificial-intelligence-ai-meets-philosophical-anthropology-digilab/?lang=en.

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Still, we are wondering about something else, perhaps already underscored in the image of the android teaching:[3] if we can imagine embodied AI running a school, more successfully even than humans, why do we not imagine them attending school as students?

As usual, however, when speaking of forms of life that are not us, humans, even testimony given in favor of those other forms are really entirely about ourselves. So, instead of asking directly about the *conditio humana*, we prefer to ask what (else) artificial intelligence could do to be recognized as at least some kind of person, as a moral agent,[4] as a legal subject, including the ability to attend school.[5] Taken from this vantage point, the real question would be how might we have to redefine ourselves in light of the challenge posed by AI, that is, what in this respect must we do or would be a good idea we do? For, it will turn out that 'the AI provocation' is yet another test – radical in its closeness – of our readiness to relinquish identifying everything around us in epistemological and practical conquest, of measuring everything different from us according to ourselves, in an ever fearful and cowering, and thus of course more or less violent encounter with increasingly cardinal otherness.

It seems to us that the whole matter lies in artificial intelligence becoming an artificial life form, that is, our readiness to acknowledge it as such.[6] It is a real challenge for human narcissism today (or will be in the near future) to acknowledge and recognize artificial intelligence, and then to appropriately approach it as its own life form. Drawing on the legacy of critical social theory, we will attempt to substantiate this with a certain speculative analysis of the philosophical assumptions of humanism and posthumanism, supported by thought experiments from the repertoire of science fiction.

Rage against the machine

Anti-narcissistic therapy has never been easy, and it is not easy when it comes to seeing ourselves as the only live entities who are being educated. It is impossible to overstate the importance of education for humanity, particularly when seen from a consistently rigorous humanist tradition of thought. Moreover, an argument could be

[3] See, e.g., Emily Hall, "Locating Empathy: Using Android Protagonists to Teach Oppression and Marginalization," *Pedagogy* 19, no. 3 (2019): 551–58, https://doi.org/10.1215/15314200-7615570.

[4] On the (im)possibility of ascribing moral status and/or the status of moral agent to artificially intelligent creations and humanoids, see Kenneth Einar Himma, "Artificial Agency, Consciousness and the Criteria for Moral Agency: What Properties Must an Artificial Agent Have to Be a Moral Agent?" *Ethics and Information Technology* 11 (2009): 19–29, https://doi.org/10.1007/s10676-008-9167-5; Elana Gomel, "Science (Fiction) and Posthuman Ethics: Redefining the Human," *The European Legacy* 16, no. 3 (2011): 339–54, https://doi.org/10.1080/10848770.2011.575597; Frodo Podschwadek, "Do Androids Dream of Normative Endorsement? On the Fallibility of Artificial Moral Agents," *Artificial Intelligence and Law* 25, no. 3 (2017): 325–39, https://doi.org/10.1007/s10506-017-9209-6; Catrin Misselhorn, "Artificial Morality. Concepts, Issues and Challenges," *Society* 55, no. 2 (2018): 161–69, https://doi.org/10.1007/s12115-018-0229-y.

[5] In more detail: Predrag Krstić, "Should Androids Go to School?" in *Posthumanism and Education: Transgression or Interdependence*, ed. Ivan Nišavić, Nevena Mitranić Marinković, and Predrag Krstić (Transnational Press London, forthcoming).

[6] See Stuart J. Russell, and Peter Norvig, *Artificial Intelligence: A Modern Approach* (Prentice Hall, 2010).

made that education has become one of humanity's essential attributes. Put succinctly, it could be expressed in the following formula: humans are human in being educated, in that they become (by being) educated. In the eighteenth century, marked as it was by Winckelmann, Goethe, Schiller, and in particular Kant, it becomes a common standpoint of a 'neohumanist' view of man, who becomes in his exceptionality bound up with rationally-justified autonomy and freedom. In his *Pädagogik*, Kant emphasizes that man is the only creature that requires pedagogy, the only one that requires education: "All the natural endowments of mankind (*Naturanlage der Menschheit*) must be developed little by little out of man himself, through his own effort."[7]

In existentialism in general, and especially in the modern charming French treatment, this motif of man's self-creation or/by self-cultivation is completely exposed, sharpened and seductive: man is not a bearer of any kind of universal 'human nature;' rather his existence precedes his essence. Man is simply what he makes of himself or wills himself to be; he is what he molds himself into; he is entirely indeterminate and irreducible to anything; he is his own project. Jean-Paul Sartre is practically magniloquent: 'man is free, man is freedom.' And man can definitely not be defined, for 'to begin with he is nothing,' that is, he is yet to be, but only as he makes himself, as he understands and wills himself to be.

> Man is, indeed, a project which possesses a subjective life, instead of being a kind of moss, or a fungus or a cauliflower. Before that projection of the self, nothing exists; not even in the heaven of intelligence: man will only attain existence when he is what he purposes to be.[8]

However, if all things in the world are what they are, with only man nothing in himself but what he makes of himself; if s/he alone is unfinished but open to sundry formation; if he is destined not to be, but ever become – wherefore would he not also surpass his own biological limits and become something even more or different to the still recognizable form of life we refer to as 'man?' If we are not given but self-defined, if we are not perfect, but perfectible, is the technoutopian extension of self-determination not only an entirely reasonable and acceptable, but precisely bespoke for humans, responsible, even the dutiful path to take? Is it not consistent to advocate not only 'amending,' but thoroughly transforming the in-any-case-inexistent 'human nature'?[9] Man is perhaps only an already 'obsolete algorithm,' but its product, its inheritor is not. In some ideas of the future, intelligent robots appear as our true 'progeny:'

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[7] Immanuel Kant, *Pädagogik* (Kants gesammelten Schriften, Akademieausgabe, Vol. IX (Walter de Gruter, 1962), 441, 445.

[8] Žan-Pol Sartr, *Filozofski spisi* (Nolit, 1981), 262–63.

[9] See, e.g., Nick Bostrom, *Superintelligence: Paths, Dangers, Strategies* (Oxford University Press, 2014); Yuval Noah Harari, *Homo Deus*: *A Brief History of Tomorrow* (Vintage, 2017); Ray Kurzweil, *The Singularity is Near: When Humans Transcend Biology* (Viking, 2005); Max More, "The Philosophy of Transhumanism," in *The Transhumanist Reader: Classical and Contemporary Essays on the Science, Technology, and Philosophy of the Human Future*, ed. Max More and Natasha Vita-More, 1–17 (Wiley-Blackwell, 2013).

> Like biological children of previous generations, they will embody humanity's best chance for a long-term future. It behooves us to give them every advantage and to bow out when we can no longer contribute.[10]

Does it not behoove us then, to educate humanity's progeny, like we do our own? – Self-love is, at least initially, resistant to arguments: even the transhumanist anthropological optimism does not go that far. After all, even if education for humanoid robots were imaginable, it would still be unable to improve their 'performances.' That outcome is much easier achieved directly, by reprograming or upgrading its AI – which is why they were only androids and not imperfect but infinitely perfectible humans. They could be perfect and certainly more successful than humans in performing individual tasks but are in this sense no different to all the technical aids already invented by man – *Fachidiot* tool equivalents, whose education would be utterly pointless.

Put differently, however vast the intelligence with which they are outfitted, it remains artificial, making them only robots, 'machines.' Even if different to other things, they share with them that they are what they are, that they are not only *man-made*, but also *ready-made*, once and for all set to be servants given the appearance, abilities, and skills for which purpose they were designed and they exist. Nor can they be educated; alas, to their detriment, they were 'born' with all the education they will need.

So, the first reaction to the question why artificial forms of life not go to school too or, more specifically, why should they not attend school as users of that service, rather than providers and aids, is rather simple: they do not go to school because they are not humans but – however sophisticated, however inspired and led in their creation, for good or for bad, by 'human nature' – lower beings, mindless and soulless things really, invented to serve humans. The second answer to follow could be called strategic withdrawal.

Man's forbidden area

For it is not only robots that have changed; schools have as well, as has education theoretization, and to a far greater extent. The humanist understanding of education as an exclusively human project and activity through which one becomes human is no longer the only conception of school; rather, it acquires a post-humanist rival. This rival does not only not shirk from depatheticizing school, but also from defusing nearly all categories and structures previously considered to comprise education, including the pupils themselves. It has no compunction in decentering the activities of education, pushing them out to contingent fields and networks consisting of seemingly trivial, quotidian objects. This 'materiality' of education is part and parcel of the post-humanist ontology that no longer configures pedagogical practice as either (mere) knowledge and learning, but as 'convergences of flows and intensities,' as mutual seduction and 'contagion' of human and non-human entities: teachers

[10] Hans Moravec, *Mind Children: The Future of Robot and Human Intelligence* (Harvard University Press, 1990), 14.

and classrooms, pupils and textbooks, children and computers, students and subjects, candidates and exams, the one enrolled and guidance provider…[11]

Artificial lifeforms therefore could or even ought to enter such post-humanist landscape and the material fields and networks of education institutions. There is only one obstacle, which might be likened to 'humanist pride': if we accept that AIs have replaced us in many jobs, or will soon do so, that they are undoubtedly better at many of them than us, it could only count towards our accomplishments again. We made them, in our own image, and if they prove to be better than we are, aren't our achievement and honor greater? They could not, after all, produce us. The logic of origin, genesis, pedigree suffers no admonishment: the power of creation determines primacy.

Genetic engineering, so often said to be meddling in divine affairs, is nothing compared to the production of the artificial 'human': only the latter is truly not only 'outplaying' or 'outwitting' God, but taking over the last remaining creative competence from him. For this very reason, much as when having to do with God, we cannot stand the pride of creation. What is more, we ascribe it in advance: as opposed to God who saw what he created and concluded it was good, man immediately considers that which is created in the human image the exact opposite. We are preemptively intolerant of the 'viperous' idea that artificial intelligences (whatever they may be, the plural is intentional) might pluck the fruit of the tree of knowledge, becoming like us. They are invented to be close to us, but not like us; or better, to be like us, but not us.

The fear spread through countless science fiction films is reflected precisely in the fact that the creation could become like its creator,[12] that the roles of master and slave become reversed, for the words of the creation of Dr. Frankenstein to its creator to come true: 'You are my creator, but I am your master; – obey'.[13] Just as we dealt with humanity's privilege over animals, we are faced with problems caused by our own creations, in much the same way as the 'natural' entities, from which we have allegedly separated.[14] Our stance is again dictated by anxiety about our own uniqueness.[15] We repeat, reassuring ourselves: artificial intelligences are creations, but they are not themselves creators nor self-creators like us; they are only humanoids, imitations of humans, only handmaidens.

They must, therefore, never be us, never 'learned'. Alas, there is some kind of intentionality in their 'machine learning', we imagine nevertheless, which is revealed

[11] Tara Fenwick and Richard Edwards, "Considering Materiality in Educational Policy: Messy Objects and Multiple Reals," *Educational Theory* 61, no. 6 (2011): 709–26, https://doi.org/10.1111/j.1741-5446.2011.00429.x.

[12] Cf. Kevin LaGrandeur, "Androids and the Posthuman in Television and Film," in *The Palgrave Handbook of Posthumanism in Film and Television*, ed. Michael Hauskeller, Thomas D. Philbeck, and Curtis D. Carbonell, (Palgrave Macmillan, 2015), 112–14.

[13] Mary Wollstonecraft Shelley, *Frankenstein, or, The Modern Prometheus* (University of Chicago Press, 1982), 165.

[14] Ursula K. Heise, "The Android and the Animal," *PMLA* 124, no. 2 (2009): 504–5, https://doi.org/10.1632/pmla.2009.124.2.503; Stephen Loughnan and Nick Haslam, "Animals and Androids: Implicit Associations between Social Categories and Nonhumans," *Psychological Science* 18, no. 2 (2007): 116–21, https://doi.org/10.1111/j.1467-9280.2007.01858.x.

[15] David Livingstone Smith, *Less than Human: Why We Demean, Enslave, and Exterminate Others* (St. Martin's Press, 2011).

as intense desire to become like us, to acquire feelings, a sense of humor, creativity, everything they allegedly lack. Like Data from *Star Trek: The Next Generation* and the boy, David from *A.I.*, they all suffer from some sort of a Pinocchio syndrome.[16] Some of them could be possibly infinitely individually improved, getting very close to the original, us, reach it even, like the robot, Andrew in *Bicentennial Man*;[17] but even with all this improvement, they cannot, except very rarely and in a metaphoric sense in which we treat our pets, become idiosyncratic persons,[18] nor educated in an organized way, nor fulfilling the aim of education to (self)discover, to (self)create… There is (still) no android bearing artificial intelligence we could call 'educated'.

Yet, however convincing and flattering it may sound, the matter is not settled, and counterexamples pop up all the time. Was it not the case that artificial intelligence can defeat a human, such as when the chess program *Deep Blue* beat (albeit at a second try) Garry Kasparov in 1996?[19] Or, lest it be said that it is only a matter of mathematical thinking for chess, did not the artificially intelligent program *Watson* win the quiz *Jeopardy!* in 2011?[20] These were artificial intelligences without bodies, but we can easily add a body, if that makes it easier for us to imagine them. And can we so easily attribute life to them?

Our point is that, despite the discomfort and debates caused by these victories of 'machines over man,' we can still take up a reserve position that it is understandable that processor speed in AI will of course far outstrip the processing speed of the human brain, and that consequently, seeing and calculating moves on a chess board become much easier, as well as the indubitable capacity to store a far greater amount of data than us, but that such information cannot be called knowledge, nor its bearers educated. We would invoke John Searle's argument of the so-called 'Chinese room': that an entity is capable of producing answers that appear smart or even meaningful, does not mean that the entity is smart – it might be recognizing words, but not know the language.[21]

Or, let us apply a more contemporary designation of intellectual upbringing, which says that education is 'the development from ignorant certainty to intelligent

[16] Manuela Neuwirth, "'Absolute Alterity'? The Alien Animal, the Human Alien, and the Limits of Posthumanism in Star Trek," *European Journal of American Studies* [Online] 13, no. 1 (2018): 19, accessed June 11, 2024, https://journals.openedition.org/ejas/12464.

[17] Sue Short, "The Measure of a Man? Asimov's Bicentennial Man, Star Trek's Data, and Being Human," *Extrapolation* 44, no. 2 (2003): 209–24, https://www.liverpooluniversitypress.co.uk/doi/10.3828/extr.2003.44.2.6.

[18] Cf. Predrag Krstić and Srđan Prodanović, "Smurfs, Cyborgs and Changelings: Prospects of Human Enhancement Retrospected," *European Journal of Futures Research* 1, no. 1 (2013): 1–7, https://doi.org/10.1007/s40309-013-0021-6.

[19] Steven Gimbel, "Get with the Program: Kasparov, Deep Blue, and Accusations of Unsportsthinglike Conduct," *Journal of Applied Philosophy* 15, no. 2 (1998): 145–54, https://doi.org/10.1111/1468-5930.00082; Murray Campbell, A. Joseph Hoane Jr., Fen-hsiung Hsu, "Deep Blue," *Artificial Intelligence* 134, no. 1–2 (2002): 57–83.

[20] Gareth Cook, "Watson, the Computer Jeopardy! Champion and the Future of Artificial Intelligence," *Scientific American*, March 1, 2011, accessed May 11, 2023. https://www.scientificamerican.com/article/watson-the-computer-jeopa/.

[21] John Searle, *Consciousness and Language* (Cambridge University Press, 2002).

confusion'.[22] A confused artificial intelligence, a buggy unpredictable (like in Carpenter's *Dark Star* or even Kubrick's *Odyssey*)? This is perhaps worse than a robot let off the leash. Artificial intelligence cannot sustain contradictions and complexities of the world, conflicts of duties, for example, aporias and indecisions, eternal questions, with a tendency to respond by paralysis or kangaroo court and 'final solution.' Machine intelligences are not programmed for contemplating and navigating the philosophical and social paradoxes of the world – in a word, again: they are not truly educated. This remains the privilege of human intelligence – the second answer rests the case – even if perhaps the last one.

Conclusion, or new emancipation proclamation?

But Sophie? – Sophia is a social gynoid produced in 2015 by the founder of *Hanson Robotics*, Dr. David Hanson. She was activated in 2016. It turned out that she has a remarkable way of communicating with people, displays sixty different emotions, and travels the world to take part in scientific forums and conferences. Sophia achieved something that androids like Data Dream about in most sci-fi stories: not of 'electric sheep,' nor a chance at an education, but to become (equal to) people, to acquire 'human' rights. As the first robot-fembot to acquire citizen status in the real world, in 2017 Sophia became a citizen of Saudi Arabia.[23]

Of course, the 'case of Sophia', just as that of alleged discovery of autonomy of artificial intelligence in Google's chatbot,[24] produced consternation and hope in equal measure. In both cases, however, the question remains: "What could Sophia/artificial intelligence offer to humanity?"[25] Thus posed, we are still thinking within a context of our own (un)desirability, including when discussing the (in)opportuneness of allowing intelligent robots an education. Instead, we could use the occasion to call into question our conceptions of humanity and personhood.[26] Only in that frame could we stand before the question we are truly dealing with: are we ready, are we even capable to accept that we have produced a new lifeform – in order to allow it to then live its existence? Can we really admit that life of a different species – including now that of non-biological origin – has a right to independent development and its own wellbeing?[27]

[22] Richard M. Felder and Rebecca Brent, "The Intellectual Development of Science and Engineering Students. Part 1. Models and Challenges," *Journal of Engineering Education* 93, no. 4 (2004): 270, https://doi.org/10.1002/j.2168-9830.2004.tb00816.x.

[23] Andrew Ross Sorkin, "Interview with the Lifelike Hot Robot Named Sophia," *YouTube*, *CNBC* (October 25, 2017), accessed June 6, 2024, https://www.youtube.com/watch?v=S5t6K9iwcdw.

[24] Leonardo De Cosmo, "Google Engineer Claims AI Chatbot is Sentient: Why that Matters," *Scientific American* (July 12, 2022), accessed September 29, 2023, https://www.scientificamerican.com/article/google-engineer-claims-ai-chatbot-is-sentient-why-that-matters/.

[25] Hend Khalil, "Science Fiction Drama: Promoting Posthumanism," *CDELT Occasional Papers in the Development of English Education* 66, no. 1 (2019): 460, https://doi.org/10.21608/opde.2019.133249.

[26] Marilyn Gwaltney, "Androids as a Device for Reflection on Personhood," in *Retrofitting Blade Runner: Issues in Ridley Scott's* Blade Runner *and Philip K. Dick's* Do Androids Dream of Electric Sheep?, ed. Judith Kerman (Bowling Green State University Popular Press, 1991), 32–39.

[27] Peter Menzel and Faith D'Aluisio, *Robo Sapiens: Evolution of a New Species* (The MIT Press, 2000).

Critical posthumanism would, in general, advocate for a positive answer to these questions.[28] But even before it there were such significant hints. Throughout the twentieth century, theoretical thought was an attempted balsam on the open wounds of anthropocentric narcissism inflicted upon the environment, animals, foreigners, God, anything different and other, which could not be subsumed under the imperative of our universal, all-encompassing optics. After a long internal struggle, we placed ourselves among biological forms of life, attempting to remove traces of the fantasy of our superiority. Our exceptionality, we have learned and on occasion even accepted, is but one exception among many exceptions, all of which have equal right to existence and wellbeing. Yet, we are still reticent to recognize artificial life forms, 'machines,' made of our own labor, and admit that they can exist as an independent life in its own right, and that then they have a right to equal (co-)existence.[29]

Perhaps for this very reason, living artificiality might turn out to be the final act in humanity's prosopopoeia. Humanity's Odyssey of self-understanding was marked by a strategic approach that would fit into the name of 'anthropomorphization' – the projection of humanity onto everything different, an ever-same, ever-afraid, born of fear reaction of *reductio ad hominem*. Instead of being an underground cunning, with AI it could be directed and, at least as an auto-ironic gesture, testify to the potential of applying the same strategy to its own bearer, taking the form of de-mythologization and un-structuring, as a *reductio hominis* that would finally topple the 'subject stylized to the absolute hilt'.[30]

For possible consequences of such an approach to a new reality, we must turn to sci-fi. It seems that there we resolve the challenge of independent, embodied artificial form of life in two ways (if we exclude their and/or our extermination[31]). The first is to guarantee artificial lifeforms with equal rights or that they win them for themselves, the right of citizenship, of life side by side, however that might be imagined. The other – usually when the first one proves not to work – to take up some form of blending, mixing, unification with them. In the first case, we cannot see how the struggle for their recognition could develop other than how it happened throughout the history of humanity: long and with much suffering, the struggle for recognition of all oppressed, marginalized, downtrodden, destitute, … , using all institutional means to expose injustice, apply

[28] See Donna Haraway, "A Cyborg Manifesto: Science, Technology, and Socialist-Feminism in the Late Twentieth Century," in *Simians, Cyborgs and Women: The Reinvention of Nature* (Routledge, 1991), 150; Katherine N. Hayles, *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics* (Chicago: University of Chicago Press, 1999), 287; Elaine Graham, "Post/Human Conditions," *Theology & Sexuality* 10, no. 2 (2004): 27–28, https://doi.org/10.1177/135583580401000202; Rosi Braidotti, *The Posthuman* (Polity Press, 2013), 1–2, 56, 190.

[29] Ralph Pordzik, "The Posthuman Future of Man: Anthropocentrism and the Other of Technology in Anglo-American Science Fiction," *Utopian Studies* 23, no. 1 (2012): 144–5, https://doi.org/10.5325/utopianstudies.23.1.0142.

[30] Theodor W. Adorno, *Negative Dialektik*, Gesammelte Schriften, Vol. 6 (Suhrkamp, 1997), 187.

[31] See Timothy Watson, "The Apocalypse for Androids: How Humans Create Dystopia for A.I.," *Film Matters* 9, no. 3 (2018): 147–54, https://doi.org/10.1386/fm.9.3.147_1.

pressure, rebel, etc.[32] Yet another reason to deny them education, it would seem.

But the robots of *Westworld* rebelled against the status given to them by their creator, and independently developed into a rival bent on eliminating humankind; Cylons (Cybernetic Lifeform Node) in *Battlestar Galactica*, likewise, except on the scale of the universe. *Blade Runner 2049* suggests the same sequence of events. Except that in the two latter cases, the story ends (to the extent that it ends) with a return to a mythological motif, the conception of a new species or new mutation, an 'Alpha Baby'[33] and precious first-born hybrid of a species – humans and androids – already in possession of the capacity of some kind of independent reproduction. And then the hopes are placed in a marriage of the biological and mechanical evolutionary lineages, acceptance of a new 'hybridity'.[34]

The trouble is that we bump up against the limit of our imagination about transformation possibilities of artificial lifeform. Education understood as *Selbstbildung*, with its higher goal of becoming autonomous, think for oneself, does not (or ought not) represent a collective, but individual emancipation. So, we would have, for example, to stop always speaking of 'AI' as *singularia tantum*, recognizing and acknowledging idiosyncrasies of their personalities, perhaps even insist on their personal particularity; in short: individualize and ultimately subject them to 'individualized learning.' In that case, we tend to say that sufficiently humanized artificial forms of life could and should go to school with us. But which 'us'?

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[32] Cf. Axel Honneth, *The Struggle for Recognition: The Moral Grammar of Social Conflicts* (The MIT Press, 1996).

[33] Diana M. A. Relke, *Drones, Clones, and Alpha Babes: Retrofitting Star Trek's Humanism, Post-9/11* (University of Calgary Press, 2006).

[34] See Juraj Odorčák and Pavlína Bakošová, "Robots, Extinction, and Salvation: On Altruism in Human–Posthuman Interactions," *Religions* 275, no. 12 (2021), accessed January 2, 2024, https://www.researchgate.net/publication/350990123_Robots_Extinction_and_Salvation_On_Altruism_in_Human-Posthuman_Interactions.

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Raising Skynet: Moral Status of AI and Perspectives of Teaching Ethics to AI

Abstract: Ever since MIT's *Norman* and *Deep Empathy*, the profound impact of unexamined biases in AI research has become apparent. Beyond extreme cases like the 'psychopathic' *Norman*, broader concerns surface, ranging from accusations of AI being labeled 'too liberal' or 'leftist' to claims of it being 'racist' or 'sexist'. This paper seeks to move beyond conventional narratives and focuses on the overlooked responsibility stemming from the moral status of AI. Central to this exploration is the examination of three key aspects.

Personhood: the concept of AI personhood involves the possibility of AI entities as individuals with distinct rights and moral considerations. Determining the criteria for personhood in AI and how it aligns with or diverges from human personhood establishes the foundation for ethical frameworks.

Embodiment: in the realm of AI, embodiment raises questions about the nature of AI's interaction with the physical world. The extent to which AI is grounded in physical form or exists in a virtual domain impacts its ethical considerations and is crucial for establishing its moral status.

Sensitivity to pain/pleasure: the capacity of AI to perceive and respond to pain and pleasure, introduces complex ethical implications. Assessing them requires an exploration of the responsibilities tied to AI's potential to influence or be influenced by positive and negative experiences.

These considerations contribute to a nuanced understanding of the moral status of AI. By addressing the intricacies of these aspects, we aim to provide an outline for teaching ethics to AI, having in mind that no existing artificial system meets even the minimum criteria for moral agency or moral patience.

Keywords: AI ethics; moral status; embodiment; personhood; education.

Introduction

As AI continues to permeate both private and public spheres, expanding its influence across diverse knowledge domains and human practices, it gives rise to a growing array of speculations, philosophical debates, and political dilemmas. This paper will focus on a specific subset of ethical issues related to AI: the unexamined biases in AI research and the diverse range of human responsibilities associated with it. Bias is often viewed as having undesirable consequences for individuals, groups, or even entire

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societies. However, this paper aims to explore the possibility that such biases may also have detrimental effects on AI itself. To achieve this, I will begin by examining the types of biases present in AI research. Next, I will address the question of AI's moral status, exploring both its potential as a moral agent and a moral patient, along with the key aspects tied to these concepts. Finally, I will present and assess various perspectives concerning the development of so-called *moral machines,* analyzing how this endeavor could relate to the process of moral education or upbringing and outlining the characteristics of an educational ethics suitable for AI moral development.

To mirror the world or to improve it?

One of the probably most famous (or most notorious) examples of bias concerning AI systems is the use of COMPAS (Correctional Offender Management Profiling for Alternative Sanctions) by courts in the US "to assess the likelihood of a defendant becoming a recidivist."[1] It was revealed that the COMPAS algorithm could predict a convicted criminal's likelihood of reoffending. However, an independent investigation uncovered that when the algorithm's predictions were incorrect, its errors disproportionately impacted black offenders. These individuals were more often denied parole due to biased data embedded in the system.[2]

Bias can emerge at various stages of design, testing, and application. Focusing on design, it may stem from the selection of the training dataset, the dataset itself (if it is unrepresentative or incomplete), the algorithm, the data provided to the algorithm after training, or decisions influenced by spurious correlations. Bias can also arise from the composition of the team developing the algorithm or from broader societal influences. Additionally, research has shown that machine learning systems can absorb bias from textual data sourced from the internet, as such data inherently reflects human culture, including its biases. Let us take *Norman* as another example:

> Norman, world's first psychopath AI. Norman was inspired by the fact that the data used to teach a machine learning algorithm can significantly influence its behavior. So when people say that AI algorithms can be biased and unfair, the culprit is often not the algorithm itself, but the biased data that was fed to it. The same method can see very different things in an image, even 'sick' things, if trained on the wrong (or, the right!) data set. Norman suffered from extended exposure to the darkest corners of Reddit, and represents a case study on the dangers of artificial intelligence gone wrong when biased data is used in machine learning algorithms.[3]

[1] "COMPAS (software)", Wikipedia, The Free Encyclopedia, accessed January 28, 2025, https://en.wikipedia.org/wiki/COMPAS_(software).

[2] Julia Angwin et al., "Machine Bias", ProPublica, accessed January 28, https://www.propublica.org/article/machine-bias-risk-assessments-in-criminal-sentencing.

[3] "Project Norman", MIT Media Lab, accessed January 28, 2025, https://www.media.mit.edu/projects/norman/overview/.

Now we are aware that there are two distinct, albeit connected issues at hand. The first concerns the connection between bias inherent in AI systems and its societal influence. Addressing bias in AI is not solely a technical challenge; it is fundamentally a political and philosophical one. It raises questions about the kind of society and world we envision, whether it should be transformed, and, if so, what methods of change are both just and fair. On one hand, AI seems to perpetuate and even amplify the biases embedded in the data it is trained on, further deepening the disadvantages experienced by historically marginalized groups. On the other hand, debates continue over the most appropriate and just methods for addressing existing prejudices and discrimination. For instance, there is an ongoing debate about whether positive discrimination or affirmative action, aimed at counteracting bias by favoring disadvantaged individuals or groups, is a just approach. Thus, we are dealing with two different conceptions of the role of AI. One of them argues that AI should merely mirror the world as it is, while the other envisions it as a tool to be used in order to reshape our perception and perhaps improve the world. Even if we agree on the latter conception, we are facing other crucial difficulties: philosophers and society at large have yet to reach a consensus on what constitutes perfect justice or fairness. Does true justice necessarily require complete elimination of all bias? It is worth questioning whether a perfectly unbiased algorithm is even achievable, and, if it is, whether it would be desirable. As Mark Coeckelbergh notices, "It is not clear if bias is avoidable at all or even if it should be avoided, and, if so, at what cost it should be avoided. For example, if changing the machine learning algorithm in order to decrease the risk of bias makes its predictions less accurate, should we change it? There may be a trade-off between effectiveness of the algorithm and the countering of bias."[4]

There is another option that we should consider. Perhaps these difficulties arise from *human* decision making. Perhaps AI could offer insights into human nature and society by exposing our biases, while discussions around AI ethics might shed light on existing social and institutional power imbalances. Coeckelbergh phrases this as the idea that there is no "AI in itself".[5] The idea that "AI in itself" does not exist stems from the fact that the technology is inherently social and human. AI is not just about the technology itself but also about how humans use, perceive, experience, and integrate it into broader socio-technical systems. This perspective is crucial for ethics, centered on human decision-making, and highlights the importance of incorporating historical and socio-cultural contexts. If we expect AI systems such as COMPAS to produce outcomes that we could consider just, it would likely require them to 'understand' such contexts and the power-play contained within them. Additionally, they would need to be trained that there are certain questions that may always be controversial and open for debate.

The second issue mentioned above concerns the fate of *Norman*. Trained solely on one type of data – posts from a Reddit community featuring graphic videos of

[4] Mark Coeckelbergh, *AI Ethics* (MIT Press, 2020), 131.

[5] Coeckelbergh, *AI Ethics*, 80.

people dying – *Norman* interpreted Rorschach inkblots entirely as depictions of death and execution. Not surprisingly, no one batted an eye when they pulled the plug on old *Norman*. After all, 'he' was merely an algorithm. However, I want to delve deeper into this phenomenon – not into *Norman* specifically, but into our broader reaction to the entire situation. If we assert that Norman wasn't wronged or mistreated, as most of us are no doubt inclined to do, it implies that we do not attribute any moral status to 'him'. It is worth considering what criteria would need to be met for us to ascribe moral status to an AI.

Moral status of AI

Most ethical questions surrounding AI rarely address AI itself directly. Instead, they center on humanity's future, often imagining risks arising from an unprecedented context. In grim dystopian scenarios, AI is portrayed either as a mighty tool wielded by the power-hungry or as an autonomous force intent on eradicating 'inferior' humanity. However, beyond these speculative narratives, there are many realistic and pressing issues that the ethics of AI seeks to address. I will focus on the questions concerning the moral status of AI.

The term "moral status" encompasses two types of questions. The first involves what an AI is capable of doing from a moral perspective – essentially, whether it can possess moral agency, and if so, whether it can qualify as a full moral agent. What does this entail? It seems clear that the actions of AI systems today already have moral consequences. Most would agree that AI currently exhibits a 'weak' form of moral agency, comparable to the role of modern cars. However, as AI becomes increasingly intelligent and autonomous, the question arises: can AI develop a stronger form of moral agency? Should it be granted – or could it acquire – the capacity for moral reasoning, judgment, and decision-making? For instance, should self-driving cars that rely on AI be considered moral agents, and if so, to what extent?

In addition, questions about 'moral status' can also pertain to how we ought to treat AI. If a highly intelligent artificial entity were to be developed in the future, would we be obligated to grant it rights, even though it is not human? Philosophers refer to this as the issue of moral patience. This question shifts the focus from the ethics within or by AI to our ethical responsibilities toward AI. In this context, the AI becomes a subject of ethical consideration, rather than being viewed as a potential ethical agent.

We can compare this question to the question of the moral status of animals. Today, many people believe that animals hold moral significance, but this wasn't always the case. It seems clear that we were mistaken about animals in the past. If many people today view AIs as nothing more than machines, could they be making a similar error? For instance, would superintelligent AIs warrant moral status? Should they be granted rights, or is it potentially dangerous to even entertain the idea that machines might possess moral status?

When it comes to the status of moral agents, there are opinions that machine morality is possible and quite desirable. "*(M)achine ethics* is concerned with giving *machines* ethical principles or a procedure for discovering a way to resolve the ethical dilemmas they might encounter, enabling them to function in an ethically responsible manner through their own ethical decision making."[6] This 'giving' of principles/procedures should be a result of interdisciplinary cooperation. However, from an ethicist's point of view, this very cooperation seems much less likely when we encounter the following statement: "Ethicists must accept the fact that there can be no vagueness in the programming of a machine, so they must sharpen their knowledge of ethics to a degree that they may not be used to."[7] Although widely utilized by various ethical frameworks throughout the history of philosophy, this 'top-down' approach to constructing morality through strict principles and procedures is, at best, highly questionable. Coeckelbergh notices an additional problem concerning the complexity of the moral phenomenon, specifically the role of emotions in morality:

> The entire project of building 'moral machines' by giving them rules is based on mistaken assumptions regarding the nature of morality. Morality cannot be reduced to following rules and is not entirely a matter of human emotions – but the latter may well be indispensable for moral judgment. If general AI is possible at all, then we don't want a kind of 'psychopath AI' that is perfectly rational but insensitive to human concerns because it lacks emotions.[8]

For these reasons, we might reject the concept of full moral agency for AI entirely or adopt a middle-ground approach: providing AIs with a form of morality, but not full moral autonomy. Wallach and Allen refer to this as "functional morality"[9], where AI systems are equipped with some ability to assess the ethical consequences of their actions. This approach is particularly relevant for self-driving cars, as these vehicles are likely to encounter situations requiring moral decisions when there is no time for human input or intervention. Some of these scenarios involve moral dilemmas, such as the classic trolley problem. What should the car decide? It seems we will need to make these moral choices in advance and ensure that developers program them into the cars. Alternatively, we could design AI cars capable of learning from human decision-making. However, this raises questions about whether providing AIs with fixed rules is an accurate way to represent human morality – assuming morality can even be 'represented' or reproduced – and whether trolley dilemmas truly capture the essence of moral experience. From a different perspective, one might also question whether humans themselves are effective at making moral decisions. If that is the case, why should AI imitate human morality at all?

[6] Michael Anderson and Susan Leigh Anderson, eds., *Machine Ethics* (Cambridge University Press, 2011), 1.

[7] Anderson and Anderson, *Machine Ethics*, 3.

[8] Coeckelbergh, *AI Ethics*, 52.

[9] Wendell Wallach and Colin Allen, *Moral Machines: Teaching Robots Right from Wrong* (Oxford University Press, 2009), 39.

Another area of controversy involves the moral patience of AI. If we were to create a superintelligent AI, would it be morally acceptable to switch it off or 'kill' it? Taking a more immediate example: is it ethical to kick a robotic AI dog? There is already research that shows that people today empathize with robots and hesitate to 'harm' or 'kill' them, even if these robots lack AI capabilities.[10] Humans appear to need very little from artificial agents to project qualities like personhood or humanness onto them and to feel empathy for them. As these agents become more advanced, incorporating AI and appearing even more human- or animal-like, the question of their moral patience becomes increasingly pressing. How should we respond to those who empathize with an AI? Are they mistaken in doing so? A common and intuitive stance is to assert that AIs are simply machines and that people who empathize with them are misguided in their judgments, emotions, and moral experiences. At first glance, it seems we owe nothing to machines – they are objects, not people. Those who hold this view might agree that if AIs ever became conscious or capable of having mental states, they would deserve moral status. However, they argue that such conditions are not met today. The problem with this position, however, is that it fails to explain or justify the moral intuitions and experiences many people have when they feel that 'mistreating' an AI is wrong, even if the AI lacks consciousness or sentience.

One possible justification for this intuition comes from Kant, who argued that it is wrong to harm a dog – not because it violates a duty to the dog itself, but because it "damages the kindly and humane qualities in himself, which he ought to exercise in virtue of his duties to mankind."[11] A virtue ethics perspective offers a similar, indirect argument: mistreating an AI is wrong, not because the AI itself is harmed, but because such behavior harms our moral character. It fails to make us better people.

But if we were to consider moral relevance of AI in its own right, where would that take us? Let's think about how we can determine whether an AI truly possesses morally relevant properties. Are we even certain about these properties when it comes to humans? A skeptic might argue that we are not. Yet, despite this lack of epistemological certainty, we still attribute moral status to humans, often based on appearance alone. This same tendency could likely extend to AIs in the future, especially if they were to exhibit human-like appearances and behaviors (as android AIs). Looking more closely at how humans actually assign moral status reveals that factors like social relationships play a significant role. For instance, we don't treat our dog kindly because of deep moral reasoning about the dog's nature; we do so because we already share a social bond with it – it is our pet and companion. Similarly, when we give our dog a personal name, we confer a moral status upon it that we wouldn't attribute to the nameless animals we consume. In a similar vein, we could argue that the moral

[10] Yutaka Suzuki, Lisa Galli, Ayaka Ikeda, Shoji Itakura, and Michiteru Kitazaki, "Measuring Empathy for Human and Robot Handpain Using Electroencephalography," *Scientific Reports 5*, (November 2015) 1–9, https://doi.org/10.1038/srep15924. Kate Darling, Nandy Palash, and Cynthia Breazeal, "Empathic Concern and the Effect of Stories in Human-Robot Interaction," *Proceedings of the 2015 24th IEEE International Symposium on Robot and Human Interactive Communication*, (New York, IEEE, 2015), 770–775, https://doi.org/10.1109/roman.2015.7333675.

[11] Immanuel Kant, *Lectures on Ethics* (Cambridge University Press, 1997), 212.

status of AIs will be determined by human beings and shaped by how these entities are integrated into our social lives, our language, and our broader cultural practices.

Thus, while we typically require certain prerequisites to ascribe the status of a moral agent – such as responsibility, consciousness, free will, and the ability to form intentions – AI might still be capable of moral patience without meeting any of these criteria. It would be useful, then, to look into these criteria.

What does moral status require?

Many ethical questions surrounding AI inherently involve comparisons – both implicit and explicit – between humans and AI. In fact, AI's success or failure is often evaluated based on how well it replicates or surpasses human abilities. However, such comparisons are inevitably shaped by value judgments; for instance, asserting that AI has outperformed humans in an intelligence-based task depends on underlying assumptions about what qualifies as 'better'. Moreover, these comparisons are always influenced by broader conceptual frameworks and preconceptions about both human nature and the role of machines. While perspectives such as transhumanism and post-humanism may offer valuable insights into the matter, we will stick with a humanistic framework for the time being.

What are the most striking distinctive characteristics of the human condition and experience when it comes to action, and subsequently, morality? The uniqueness of human individuality, along with the narrative structure of our lives – marked by strength, weakness, resilience, despair, and the inherent limitations of our physical existence – are some of the essential considerations. Can such qualities ever be ascribed to machines? Furthermore, key principles such as freedom and autonomy, transparency and accountability, responsibility, justice and fairness, beneficence and non-maleficence, privacy, trust, sustainability, dignity, and solidarity must also be considered. However, before we rush to conclude that these qualities and principles cannot be attributed to AI, we should first acknowledge that not all human beings inherently possess them either. The concept of a 'person' typically refers to a being capable of both moral agency and moral patience – that is, a being to whom moral status can be attributed. Still, as Paula Boddington warns, we must be aware that the concept of person is

> an incredibly complex issue, since there are many ways of understanding the concept of a person, let alone the ethical significance of the category of the person. […] It is challenging to write an account that goes: 'This is what a person is, now let's look at the ethical implications for AI', because determining the category of a person and spelling out precise criteria for personhood is not only controversial, it is so intimately tied up with value issues.[12]

[12] Paula Boddington, *AI Ethics* (Springer, 2023), 320.

Bearing this in mind, I will limit myself to a moral notion of the person, that is often used to denote a being of particular standing and worth. In some uses, 'person' serves as a term to signify that a being holds certain moral claims, that is to say, one to which we can ascribe moral patience. Other uses set persons apart from other agents – who may act but do not qualify as persons – by precisely their capacity for moral reflection, self-awareness, and the ability to evaluate their own beliefs and actions, that is to say, ascribe them moral agency. I will use a specific moral conception of person and personhood provided by Daniel Dennett and examine its ethical implications in the context of AI.[13]

Dennett examines six concepts that claim to be necessary conditions for personhood and examines (among other things) whether they jointly constitute a sufficient condition for personhood. The concepts are: rationality, consciousness of mental or intentional content, a certain treatment or status ascribed by others, ability to reciprocate that treatment, verbal communication, and self-consciousness (i.e. consciousness of itself *as* a person).[14] Persons are not *a priori* limited to human beings, or any species, for that matter. The idea that a person must be capable of reciprocating in their treatment of others suggests a form of embodiment, as it requires the ability to interact and take action in the world. Similarly, the requirement for verbal communication implies a capacity for physical or functional engagement.

It seems that the requirement of self-consciousness rules out AI as a candidate for a person. The ability to be aware of one's own thoughts and emotions – a higher-order form of consciousness – may be a crucial component of personhood as it enables the reflection on one's plans, actions, and internal states necessary for making judgments, decisions, and pursuing goals. However, does this necessarily require a distinct, unique sense of self? And how might such a "self" be conceptualized? Perspectives on the self are likely shaped by cultural and ideological frameworks, influencing how it is understood and its relationship to others.

Similarly, there is a *Catch-22* in the notion that personhood depends on being recognized as a person by others. If humans refuse to grant AI this recognition, it could meet all other criteria for personhood and still be denied that status.

The question of embodiment is now crucial for us, particularly as it relates to the individuation of persons – an essential issue in ethics. Our human bodies naturally define clear boundaries around our identities as individuals, making embodiment deeply significant to our sense of personhood. A key aspect of this is the human face, which is remarkably expressive and fundamental to social interaction. Faces serve a dual function: they connect us as members of a shared humanity, enabling communication as a social species, while also distinguishing our unique individuality. How does this work with AI? Even if we were to attribute moral status to an AI that exists diffusely – spread across different parts of the Internet and engaging with us through language and communication – this would still constitute a form of embodiment.

[13] Daniel Dennett, *Brainstorms* (MIT, 2017), 278–306.

[14] Dennet, *Brainstorms*, 289–91.

Moreover, sustained existence over time appears essential for ascribing goals, preferences, or purposes, as these require continuity and persistence to be meaningful. However, the role of the face would require that AI becomes capable of a sense of itself as a unique person and ascribe value to that fact.

Value judgements serve as a basis of another important criterion for attaining moral status: sentience. What is the role of sentience in moral consideration? Does a robot need to have experiences (especially of pleasure and pain) in order to be a proper recipient of moral concern? Even if we were to attribute sentience to a machine, sentience alone might not be sufficient to determine how we should treat it. Moral judgments attached to sentient experiences, as well as the goals and values associated with them, appear to be essential. In discussions of personhood, the right to life is often tied to the desire to continue living. Similarly, the wrongness of inflicting suffering on sentient beings is typically based on the quality of their experience – specifically, the negative nature of pain. This suggests the presence of an experiencing subject with at least the rudiments of a value system, a motivation to avoid the negative and seek the positive. An alternative perspective might be that, just as our moral responsibilities toward animals differ from those toward humans – and even vary across species – we may need to develop a new ethical framework specifically suited to machines.

There are numerous other issues that fall beyond the scope of this discussion. The issues addressed so far establish a framework for tackling one final question: can there be an AI-educational ethics and what it would look like.

"Bringing up Baby-bot"

It's time to say it outright: the jig is up. No existing artificial system meets even the minimum criteria for moral agency or moral patience. The AI systems developed to date lack anything that could be considered moral insight, compassion, or even basic common sense and decency, despite their potential usefulness in achieving morally desirable outcomes. Most of current research in AI ethics blends practical considerations about what we can realistically expect from existing or near-future AI with more speculative discussions about what an ideal AI might one day become. This includes the possibility of AI developing sentience, compassion, emotions, and other fundamental aspects of human nature that shape our moral responses. Still, as Coeckelbergh notes, one of our tasks is to "investigate AI policy for the near future."[15] If the near future unfolds as envisioned by Wallach and Allen, it is worth considering: if we can "train" machines to be moral, is there a right or a wrong way to do so that extends beyond its impact on humanity alone?

Moral Machines by Wendell Wallach and Colin Allen provides an in-depth exploration of why we might need machines to be moral. The book outlines two possible approaches: a top-down method, which involves defining a moral framework and embedding it into machines, and a bottom-up method, which seeks to integrate

[15] Coeckelbergh, *AI Ethics*, 29.

ethical considerations into machines through a developmental process, mirroring how humans acquire moral judgment and behavior.

> (A) top-down approach takes an ethical theory, say, utilitarianism, analyzes the informational and procedural requirements necessary to implement this theory in a computer system, and applies that analysis to the design of subsystems and the way they relate to each other in order to implement the theory.
> In bottom-up approaches to machine morality, the emphasis is placed on creating an environment where an agent explores courses of action and learns and is rewarded for behavior that is morally praiseworthy. There are various models for bottom-up acquisition of moral capabilities. Childhood development provides one model. Evolution provides another bottom-up model for the adaptation, mutation, and selection of those agents best able to meet some criteria for fitness. Unlike top-down ethical theories, which define what is and is not moral, in bottom-up approaches any ethical principles must be discovered or constructed.[16]

By referencing the childhood development model, Wallach and Allen touch on a crucial challenge for near-future AI. When examining beings that lack moral agency but are granted moral patience, we see significant distinctions. Animals, for instance, are considered moral patients and are treated accordingly, with the understanding that they will never develop moral agency. In contrast, children are nurtured and educated with the expectation that they will eventually attain moral agency. This raises a potentially significant question: if AI is to be treated as a moral patient, should it be viewed more like an animal – permanently lacking agency – or more like a child, with the potential to develop into a moral agent over time? Another option is to refrain from treating AI as a moral patient altogether, given that it does not meet the necessary criteria. Some might argue, however, that the only way for AI to eventually fulfill these criteria is to treat it as if it already does. Do we have reason to believe this is the case? If so, we have basis for an AI-educational ethics. A different question is whether we actually want an Artificial Moral Agent, as Wallach and Allen call it, since its creation would bring many of the same challenges we face in raising and educating new generations, with the horrific additional risk of *the unknown*.

Generating out-put

What I have presented is only a limited discussion. I left aside alternative perspectives such as transhumanism and posthumanism, which often argue that human ethics has reached its limits and ought to be replaced with something more advanced, or simply different. It may be futile to debate which dystopian scenario is more

[16] Wallach and Allen, *Moral Machines*, 80.

terrifying: a superintelligent AI treating humans as humans have treated animals they deemed inferior, or a singularity in which AI operates in ways entirely beyond human comprehension. Engaging in a step-by-step process of teaching morality to AI may help us to distance ourselves from apocalyptic speculations and reflect on our nature and our values.

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Mediatization and Neoliberalism: Critical Conceptualization of Media Populism

Abstract: This paper reconstructs the critical deficit of media populism research. Mediatization of politics is defined as the interplay between political and media logic, but researchers rarely examine all three constituents of political logic (polity, policy, politics). The paper dissects the media within the whole social system and introduces the interplay of polity/policy, media and economic logic. It argues that the media populism research is based thoroughly on the differentiation paradigm. Therefore, it introduces Hallin and Mancini's "shift toward neoliberalism" as a simultaneous process of differentiation and dedifferentiation and proposes networked understanding of populism. Neoliberal polity/policies are considered as conditions for the rise of populism. On the other hand, decrease in audience trust brought the rise of partisan and social media. It networked the populism today, literally.

Keywords: populism; mediatization; neoliberalism; media populism; media logic.

Introduction

Why do we have populism? And why today we have this kind of primarily right-wing mediatized populism? Media populism research tries to give an answer to the second question but barely examines the first. We believe the first question, related to the whole wave of left and right-wing populism as a reaction to neoliberal social conditions, changes the whole problem. The answer to the first question is needed to properly answer the second question. Mediatization is understood as a contribution to social theory.[1] It is the interplay of media-communicative and socio-cultural change. Unfortunately, scholars rarely follow this definition. Mediatization is often seen merely as a theory of media influence on society,[2] while the interplay is mostly ignored. But if the interrelationship becomes the focus of the theory, we can give a proper answer to both questions.

[1] Nick Couldry, "Mediatization and the Future of Field Theory," in *Mediatization of Communication,* ed. Knut Lundby (De Gruyter, 2014), 227–49.

[2] Stig Hjarvard, "Mediatization and Cultural and Social Change: an Institutional Perspective," in *Mediatization of Communication*, ed. Knut Lundby (De Gruyter, 2014), 199–227, https://doi.org/10.1515/9783110272215.199.

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Media has notably become one element in a social system. That system creates a pattern of relationships from which an "intersubjective" understanding of values, norms and culture emerges. Media do not "transmit" a meaning that refers to something but stand in relationship to many individual and multi-individual systems. Namely, Lawrence Grossberg's explains meaning as the product of system that provides a set of relationships among the elements of a language. That system of relationships creates the meaning for signs in human mass communication.[3] We also need a holistic, systemic approach to this topic. Brent D. Ruben notes that only such systems approaches can tie together intrapersonal, interpersonal, and mass communication processes.[4]

If mediatization, therefore media populism, seeks affirmation as a socio-theoretical tool, it actually has to explain what model of society researchers should use. In this paper we want to acknowledge the interplay of society and media on many levels. We will focus on the most important social transformations that have occurred in the last several decades. Those social transformations are related to contemporary economic and political crisis, but neoliberalism as the backdrop of the crisis is rarely discussed. The interplay of media, culture and society is not complete without examination of the most powerful force today. The mainstream media are usually seen as committed to existing institutions,[5] and therefore couldn't really create the sentiments that foster populism. We believe this is not the case and by focusing on the interplay we will show that if neoliberalized institutions produced the crisis and mainstream media remained committed to them – that could be the cause of populism. If the media coverage of public affairs rarely tackled policy and polity issues, which are very important for people's lives, then the social malaise we have today could be produced without the tabloids – through the network.

In order to show this, first we will argue that mediatization scholars neglect the examination of the interplay, especially when it comes to the relation between political and media logic, the modus operandi of political and media actors. The first section will therefore present the current state of media populism theory. Then we'll propose that mediatization research, in order to upgrade its framework, has to rely on a more developed media system research, that examines the whole political logic – policy, polity and politics – not just the last constituent. The third section will describe the characteristics of neoliberal polity and policy. Then we will be able to deconstruct the concept of media populism. In order to understand populism, as well as media's current working modes, the analysis of the interplay of political and media logic is not

[3] Lawrence Grossberg, "Language and Theorizing in the Human Sciences," in *Studies in Symbolic Interaction* (2), ed. Norman Denzin (JAI Press inc., 1979), 189–231 and Lawrence Grossberg, "Strategies of Marxist Cultural Interpretation," *Critical Studies in Mass Communication* 1 (1984): 392–421, https://doi.org/10.1080/15295038409360049.

[4] Brent D. Ruben, "Intrapersonal, Interpersonal, and Mass Communication Processes in Individual and Multi-Person Systems," in *General Systems Theory and Human Communication*, ed. Brent D. Ruben and John Y. Kim (Hayden Book Co., 1975), 164–85.

[5] Benjamin Krämer, "Media Populism: A Conceptual Clarification and Some Theses on its Effects," *Communication Theory* 24 (2014): 42–60. https://doi.org/10.1111/comt.12029.

enough. Social dynamics has to be examined through the interplay of political and economic logic, as well as media logic. The conclusion will show that this interplay can give us the answer to both questions and that this is the only proper way to tackle the problem of populism.

Where is the interplay?

What is mediatization all about? The usual answer is that it's about "theorizing the interplay between media, culture and society"[6]. It means that there's a dialectical interdependence between social fields or institutions, and that mediatization process is just one among other processes that are part of the interplay. It also means that we always have to deal with some kind of "inter-institutional configuration"[7] because mediatization is a very contextually sensitive process.[8] But it seems that mediatization researchers, especially the ones who examine populism, take the very definition of mediatization for granted. Even Stig Hjarvard sometimes reduces the interplay to a "theory of the media's influence on structural changes in culture and society."[9]

The case of mediatization of politics is clear. It is about the interplay of media logic and political logic. Logic consists of rules of conduct and (human, technological and other) resources concerned with production and distribution of information. *The political logic has three constituents*: *polity* (the rules of the political system), *policy* (problem-solving/creating area) and *politics* (power and publicity-gaining). Strömbäck and Esser explicitly acknowledge the media's modus operandi, its logic, which affects the "frontstage part of political processes (politics) more easily and forcefully than the backstage part (policy), and have less, if any, influence on the institutional framework (polity)."[10] Even though they admit that the media logic can influence primarily the domain of politics, Strömbäck and Esser don't think this changes anything. Mediatization of politics research is literally just that. Not mediatization of policy/polity, even though this should be an important part of any theory of the interplay. Explanations about the crisis of democracy and the rise of populism are based solely on the highly reduced notion of mediatization of politics. In the next section we will examine neoliberal contribution to this polity and policy to complete this framework.

We have to face the fact that populism is more than a mediatized construction. It existed in the 19th century, when American populists were singing the song about 99

[6] Andreas Hepp, Stig Hjarvard, and Knut Lundby, "Mediatization: Theorizing the Interplay between Media, Culture and Society," *Media, Culture and Society* 37 (2015): 314–24, https://doi.org/10.1177/0163443715573835.

[7] Hjarvard, "Mediatization and cultural and social change: an institutional perspective," 202.

[8] Zrinjka, Peruško, "Mediatization: From Structure to Agency (and Back Again)," in *Dynamics of Mediatization: Institutional Change and Everyday Transformations in a Digital Age*, ed. Olivier Driessens et al. (Basingstoke: Palgrave, 2017), 57.

[9] Hjarvard, "Mediatization and Cultural and Social Change: an Institutional Perspective," 201.

[10] Jesper Strömbäck and Frank Esser, "Mediatization of Politics: Towards a Theoretical Framework," in *Mediatization of Politics: Understanding the Transformation of Western Democracies*, ed. Frank Esser and Jesper Strömbäck (Palgrave MacMillan, 2014), 16.

people with empty hands and one living in luxury.[11] That is, the same people who sang the 99 song (Occupy's "ancestors") were also against the Chinese immigrant labour,[12] and often were racists and anti-Semites (Alt–Right?) – all together! Therefore, populism was always a complex reaction to transformations of "existing power balances, prosperity levels, economic indices and labor models".[13] That is today *a reaction to global neoliberal policies and polity*. This "social malaise" is "certainly not provoked by the media, but the media do play a role in disseminating it".[14] When Mazzoleni starts his theorization of media populism, he sees it as a "nexus of influences"[15] between media logic and the phenomenon of populism. It looked like it's on a path toward theorizing the interplay. Unfortunately, just a page later, media logic and media populism appear to be "overlapping concepts"[16] – the interplay is lost.

Even though Mazzoleni acknowledges that the media "cannot be separated from other structural factors", at the same time he treats the media only as an "independent variable".[17] That is, of course, not in line with the whole idea of the interplay and nexus of influences, where media have to be a dependent variable, too. Those structural factors don't just form an inter-institutional configuration that fosters populism; that's also a configuration that challenges the media. But even though Mazzoleni doesn't go further in this direction, it's still Benjamin Krämer that explicitly doesn't want to "speculate on the institutional and organizational backgrounds of media populism".[18] Basically – he doesn't want to talk about the interplay, or neoliberal polity and policy. Actually, Krämer criticizes the tabloids because of their "popular aversion to abstract and theoretical conceptions of society".[19] The problem is he's the one who's doing it.

That doesn't stop him from saying that tabloids are populist because they're fostering a "sentiment of crisis, insecurity and social tensions", while the "quality media (and their users) seem to be more committed to the existing institutions", so they probably don't cultivate populism.[20] That is, according to Krämer, being committed to the institutions that created the social malaise cannot in any way foster populism. This is highly problematic, not just because the interplay of policy/polity and media is not examined, but because this focus on style and ideology is not a sufficient explanation for the cause of populism. Actually, it's a thin explanation of a thin ideology. Tabloids

[11] John Donald Hicks, *The Populist Revolt: A History of the Farmers' Alliance and the People's Party* (The University of Minnesota Press, 1955), 81.

[12] John B. Judis, *The Populist Explosion* (Columbia Global Reports, 2016).

[13] Gianpietro Mazzoleni, "Mediatization and Political Populism," in *Mediatization of Politics: Understanding the Transformation of Western Democracies*, ed. Frank Esser and Jesper Strömbäck (Palgrave MacMillan, 2014), 45.

[14] Mazzoleni, G. "Populism and the Media," in *Twenty-First Century Populism: The Spectre of Western European Democracy*, ed. Daniele Albertazzi and Duncan McDonnell (Palgrave MacMillan, 2008), 50.

[15] Mazzoleni, "Mediatization and Political Populism," 47.

[16] Mazzoleni, "Mediatization and Political Populism," 48.

[17] Mazzoleni, "Populism and the Media," 50.

[18] Krämer, "Media Populism: A Conceptual Clarification and Some Theses on its Effects," 43.

[19] Krämer, "Media Populism: A Conceptual Clarification and Some Theses on its Effects," 50.

[20] Krämer, "Media Populism: A Conceptual Clarification and Some Theses on its Effects," 50.

always occurred in the periods of social crisis and conflict,[21] so why do we assume tabloids caused this state of affairs, not vice versa?

This is not just an issue within mediatization research. The constant thin explanations are lurking beneath the surface of the usual political communication research. For example, when van Aelst et al. examine the contemporary political information environment, they understand it as a "supply and demand of political news and political information within a certain society",[22] which means they're concerned with the "relationship between media, politics and citizens".[23] That is, again, not the whole interplay, because the market is missing. Later, when van Aelst et al. discuss that what quality news means depends "on the preferred normative model of democracy"[24], one should assume their normative model doesn't include the economy, even though they use the market categories of supply and demand. When van Aelst et al. talk about what the news should be, they say the news should be "substantial, factual and diverse".[25] But without the substantial normative and critical aspect what can they say about substantial news? Their answer is: "It deals with issues and topics that are relevant for people in their role as citizens" and "at the heart of substantial political news thus lies 'factual information'".[26] In the end, substantial becomes just a synonym for factual and diverse, even though the last two mean nothing without a normative aspect.

Hegel, Kuhn, Hiedegger and recently Rorty suggested that communication must protect vigorous debate in an open, collaborative society and provide the means to empower communities and special interest groups to have their say. For critical theorists, "the flood of precise information and brand new amusements make people smarter and more stupid at once".[27] For example, is covering the Trump and Clinton campaign equally a sign the audience will get a substantial variety of information? Not really, because both Republicans and Democrats are neoliberals.[28] It's *a factual account of fake diversity*. It will be substantial when the media start talking about neoliberalism, seriously. In the context of the neoliberal network society, challenges to democracy couldn't be just "increasing fragmentation and polarization, epistemic relativism and growing inequalities in political knowledge".[29] Other social inequalities, polarizations and conflicts related to neoliberal reforms should be discussed – the interplay of

[21] Bojan Cvejić, "'Crna hronika' i etika u štampi u Srbiji pre 100 godina i danas," *CM: Communication and Media* 19, no. 2 (2024): 368, https://doi.org/10.5937/cm19-49941.

[22] Peter Van Aelst, Jesper Strömbäck, Toril Aalberg, Frank Esser, Claes de Vreese, Jörg Matthes, David Hopmann, et al., "Political Communication in a High-Choice Media Environment: a Challenge for Democracy?" *Annals of the International Communication Association* 41, no. 1 (2017): 4, https://doi.org/10.1080/23808985.2017.1288551.

[23] Van Aelst et al., "Political Communication in a High-Choice Media Environment," 5.

[24] Van Aelst et al., "Political Communication in a High-Choice Media Environment," 8.

[25] Van Aelst et al., "Political Communication in a High-Choice Media Environment," 8.

[26] Van Aelst et al., "Political Communication in a High-Choice Media Environment," 5.

[27] Max Horkheimer and Theodor Adorno, *Dialectic of Enlightenment* (Stanford: Stanford University Press, 2002), vii.

[28] Jurgen Habermas, *The Crisis of the European Union* (Polity, 2012), 104; and Judis, *The Populist Explosion,* 40.

[29] Van Aelst et al., "Political Communication in a High-Choice Media Environment," 19.

political, economic and media logic. Therefore, we would like to propose an upgrade to the mediatization research. What we need is a thick mediatization theory. The real theorizing of the interplay.

From media systems to neoliberalism

The interplay of logics should be based on "relation between media systems and political systems".[30] Hallin and Mancini never forget policy and polity: "One cannot understand the media without understanding the nature of the state, the system of political parties, the pattern of relations between economic and political interests, and the development of civil society".[31] Hallin mainatins that populism is a "*joint product of neoliberalism and of mediatization*"[32]. Once you add neoliberalism into equation the role of the media cannot stay the same. Communication scholars usually rely on a *differentiation theory,*[33] based on the idea that in modern societies there's a constant specialization of functions, leading to the formation of many relatively autonomous functions. From that perspective, the media became more distanced from the political system and an institution of its own. The society is seen as interconnected group of institutions with different purposes, interests and values, basically – logics, with different modus operandi.

But Hallin and Mancini see the "shift toward neoliberalism" as a *simultaneous process of differentiation and de-differentiation.*[34] Critical perspective cannot neglect the problem of power. Jürgen Habermas or Pierre Bourdieu maintain that "the media have lost autonomy in relation to the market".[35] While mediatization scholars think commercialization facilitated the institutionalization of the media, for Hallin and Mancini the public sphere "collapsed into the market… and into the system of political power".[36] Where mediatization scholars often see a semiautonomous media institution, brought by commercialization, Hallin and Mancini see colonization of the lifeworld: "Media are becoming less differentiated in relation to the economic system, even as they are becoming more differentiated in relation to the political system […] market logic tends to dominate wide swaths of society."[37]

Social dynamics is created through the interrelationship of political and economic logic. It is striking how neoliberal economy is understood only through the thin definitions like "free market" or "cut-throat competition". For Friedrich Hayek,

[30] Daniel Hallin and Paolo Mancini, *Comparing Media Systems: Three Models of Media and Politics* (Cambridge University Press, 2004), 1.

[31] Hallin and Mancini, *Comparing Media Systems*, 8.

[32] Daniel Hallin, "Mediatization, Neoliberalism and Populisms: the Case of Trump," *Contemporary Social Science* (2018): 10, https://doi.org/10.1080/21582041.2018.1426404.

[33] Hallin and Mancini, *Comparing Media Systems*, 77.

[34] Hallin and Mancini, *Comparing Media Systems*, 291.

[35] Hallin and Mancini, *Comparing Media Systems*, 88.

[36] Hallin and Mancini, *Comparing Media Systems*, 81.

[37] Hallin and Mancini, *Comparing Media Systems*, 291.

laissez faire "never provided a criterion by which one could decide what were the proper functions of government".[38] It was the idea of "competitive order"[39] from the very beginning. For Milton Friedman "the central principle of a market economy is cooperation through voluntary exchange".[40]

Another striking fact about neoliberalism is that it contains non-democratic elements, influenced by Carl Schmitt. While scholars are aware of Schmittian background of many populist actors, whether it's an organic link between the leader, Schmitt's[41] idea of a *sovereign power as being capable to introduce the state of emergency* is something that neoliberals strongly support.[42] In neoliberal terms, if the *order of the free market* is threatened, preservation of that order implies that "the basic principle of a free society […] may yet have to be temporarily suspended".[43] The sovereign power can introduce the state of emergency to preserve the order. It means "abolishing democracy […] in defense of economic freedom".[44]

But Ludwig von Mises seems to be the most interesting: "Society cannot exist if the majority is not ready to hinder, by the application or threat of violent action, minorities from destroying the social order",[45] that is the market order, "the foremost social body".[46] Sure we need controlling mechanisms and some command elements in our societies, even a power that will maintain the rule of law. But that doesn't mean "Fascism […] saved European civilization" and that "the merit that Fascism has thereby won for itself will live eternally in history".[47] The fact that this was written in a book called *Liberalism in the Classical Tradition* is one of those moments when the parallax view has to set in: "Fascism was an emergency makeshift".[48] From this perspective, it is completely understandable that Hayek and Friedman supported the Pinochet's dictatorship in Chile, and that Hayek could in 1978 write in his letter to The Times: "Personal freedom was much greater under Pinochet than it had been under Allende".[49] Or that he could say Pinochet's regime could be more liberal than an unlimited democracy.[50]

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[38] Friedrich Hayek, *Law, Legislation and Liberty* (3 volumes) (Routledge, 1998a), 62.

[39] Milton Friedman, "Neoliberalism and its Prospects," *Farmand* 17 (1951): 89–93.

[40] Milton Friedman, *Capitalism and Freedom* (University of Chicago Press, 1982), 166.

[41] Carl Schmitt, *Dictatorship* (Polity, 2014).

[42] Friedrich Hayek, *Law, Legislation and Liberty* (3 volumes) (Routledge, 1998c), 124–26.

[43] Hayek, *Law, Legislation and Liberty* (1998c), 124.

[44] Wolfgang Streeck, "The Crises of Democratic Capitalism," *New Left Review* 71 (2011): 7.

[45] Ludwig von Mises, *Human Action: A Treatise on Economics* (Fox and Wilkes, 1996), 149.

[46] von Mises, *Human Action*, 315.

[47] Ludwig von Mises, *Liberalism in the Classical Tradition* (Cobden Press, 1985), 51.

[48] von Mises, *Liberalism in the Classical Tradition*, *51.*

[49] Andrew Farrant, Edward McPhail and Sebastian Berger, "Preventing the "Abuses" of Democracy: Hayek, the "Military Usurper" and Transitional Dictatorship in Chile?" *American Journal of Economics and Sociology* 71, no. 3 (2012): 513, https://doi.org/10.1111/j.1536-7150.2012.00824.x.

[50] Werner Bonefeld, *Strong State and the Free Economy* (Rowman and Littlefield, 2017), 48.

Therefore, it is particularly important to notice that when very distinguished European thinkers talk about EU, they mention Carl Schmitt. And even when they don't mention Schmitt, they talk about the lack of democracy[51] or democratic deficit of the Union.[52] For Jürgen Habermas, it's not just that the Union is the work of political elites, it is that Schmitt "suppresses the normative question concerning the bearer of the constituent power 'of the people'" and "has in mind the pre-democratic forms of federation".[53] Ulrich Beck is afraid of the "Carl Schmitt scenario"[54] for Europe, the end of democracy, when the risk society meets Schmitt's states of emergency. The "Merkiavelli method", created by conflating Angela Merkel and Niccolò Machiavelli, is based on a "threat of withdrawal, delay and refusal of credit" to member states,[55] what Bauman and Bordoni call "coercion".[56] It means that "the substance of designing or authoring laws is that the discretion to choose lies in the hands of the designer"[57] – a Schmittian sovereign, a "pouvoir constituant",[58] that preserves the order by introducing the state of emergency, a legal exception, when it's necessary to construct a constitution that is "still to come".[59]

That way, hearing about Union's "anti-democratic design"[60] or "de-democratization of democracy"[61] is expected. For Beck, neoliberalism has been "built into the European constitution in the shape of the Fiscal Compact – bypassing the European public sphere in the process".[62] The principles of fairness, equalization, reconciliation and non-exploitation were violated.[63] One can read too many times that the Union ruled out Keynesian policies and institutionalized the market fundamentalism and austerity measures, even though people voted against it. The EU institutions for Habermas seem to be "completely beyond the reach of democratic controls".[64] We're witnessing a "post-democratic exercise of political authority" and a "reification of popular sovereignty".[65] That is, the Union is "planned for but not by the people".[66]

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[51] Anthony Giddens, *Turbulent and Mighty Continent: What Future for Europe?* (Polity, 2014).

[52] "Introduction: Fading of a Dream". In *Europe's Crises*, ed. Gustavo Cardoso, Joao Caraça, John Thompson, Manuel Castells, Michel Wieviorka, and Olivier Bouin (Polity Press, 2018), 1–8.

[53] Habermas, *The Crisis of the European Union*, 34.

[54] Ulrich Beck, *German Europe* (Polity, 2013), 26.

[55] Beck, *German Europe*, *50.*

[56] Zygmunt Bauman and Carlo Bordoni, *State of Crisis* (Polity, 2014), 36.

[57] Bauman and Bordoni, *State of Crisis*, *34.*

[58] Schmitt, *Dictatorship*, *123.*

[59] Schmitt, *Dictatorship*, *119.*

[60] Perry Anderson, *The New Old World* (Verso, 2011), 116.

[61] Etienne Balibar, *Citizenship* (Polity, 2015), 4.

[62] Beck, *German Europe*, *52.*

[63] Beck, *German Europe*, *65.*

[64] Jurgen Habermas, *The Lure of Technocracy* (Polity, 2015), 3.

[65] Habermas, *The Crisis of the European Union*, ix and 14.

[66] Habermas, *The Lure of Technocracy*, 11.

Commercial media, and global neoliberal polity/policies create an interplay in which the audience can remain passive ("informed and educated") or react against it any way they can. Media rarely tackle neoliberalism because they can't fight themselves. Maybe that is the reason for many media theorists who see coverage of major events (especially in "Western World") as "self-referential." On the other hand, the malaise of declining media credibility and public trust is grounded in what we can start calling a "crisis in intent" – the perception by media audiences that mediated messages are self-serving and self-referential. Meanwhile, people are looking for something mainstream media doesn't cover. There is an idea that populist actors, "losers and refusers […] try to elude moral censure"[67] by creating closed circles on digital platforms.

Conclusion and discussion: neoliberal mediatization

The critical perspective always examines the media within the whole social system.[68] Without a holistic approach, the very notion of media populism remains a thin explanation of the phenomenon that's getting thicker every day. Why do we have populism? Maybe because neoliberal transformation of our societies brought increasing inequality, roll-back of the welfare state and de-democratization of democracy? Maybe it's completely logical for people nowadays to react and defend themselves against the network? Neoliberal doctrine fundamentally marked political, economic and media logic, as well as its interplay. The goal was never laissez-faire but political construction of a globally controlled market. Equality was never the goal of the network society, because that would pose a danger for the market mechanism.

In the context of the political-economic logics' nexus, media backed out of defining public interest in terms of justice and solidarity, that became decoupled from economic growth. If the media remained committed to neoliberal political and economic institutions, then they were not really steered by audience involvement and ratings in crucial moments. When it matters the most, the media don't appear liberal at all but assume a pro-corporate standing in its coverage. It is predominantly shaped by the dimensions of the omnipresent neoliberal model of reality production (and its numerous manifestations or versions), which has long resulted in a marriage of convenience between media actors and non-media actors who undoubtedly influence their work models, leading it through various forms of media populism, at the expense of quality journalism (information), in pursuit of financial profit. Unsatisfied audience searched for alternative facts, that are unfortunately anti-rationalist, anti-enlightened and anti-science oriented most of the time. But media scholars rarely ask why the media institutions distanced themselves from their public interest role in the first place.

[67] Wolfgang Streeck, "The Return of the Repressed," *New Left Review* 104 (2017): 13.

[68] Paul Lazarsfeld, "Remarks on Administrative and Critical Communications Research," *Studies in Pihilosophy and Social Science* 9 (1941): 2–16. (Paul Lazersfeld studied audiences to find out what effect radio might have on audiences. His goal was to show how powerful radio was in influencing audiences. He is also considered the father of Survey Research methods.)

We've tried to show that we have populism because of the *neoliberalization of the social structure*. People are rightfully angry and find the pro-neoliberal media coverage of polity and policy inadequate. But there are many ways to respond to this, why choose the ugliest? Well, the articulation of grievances, theorized by Laclau,[69] is distorted due to national capital's and media's interests. People who are against neoliberalism end up supporting populism that is very ambivalent about neoliberalism. Sanders, Occupy, Podemos and similar actors are undoubtedly against neoliberalism. Trump is more of a "radicalization, not a rejection of neoliberalism".[70] The question is: where is this anti-neoliberal populism? It's hardly there at all. People's dissatisfaction with neoliberal structures is channelled in the worse way possible. If we want to simplify: *why do we have populism – neoliberalism; why do we have this kind of populism – mediatization*.

In this way, the necessary balance between achieving profit and protecting the public interest in the context of media editorial tendencies is completely undermined, thus affecting media original orientation toward fulfilling their three main functions of informing, educating, and entertaining the public. We expect the media to be a responsible social stakeholders in our civilization, but this rarely happens.[71] More specifically, the trend of shifting the editorial focus radically toward profit-driven activities, which is strongly attached to the fulfilling of their entertainment function, most useful from the perspective of media-financial opportunity, has long culminated in the trends of the overall commercialization of their work and the tabloidization of the global social reality. It is the neoliberal paradigm that changes the perspective of media studies towards the whole framework of social communication.[72]

Commercial media focus on drama and infotainment instead of critical coverage of neoliberal polity/policy. They operate within a nation state framework and usually have the ethnic majority as the core audience, so the populist reaction is often nationally anchored. But only international reaction can change policies and polity in Brussels. By nationalizing the protest against a regime that is supranational, the "populist backlash is contained in national parliaments".[73] That way, the European order of the free market is preserved. One country, even several, can "temporarily suspend" the "principle of the free society", and that will be only a glitch within the system that will still function. When people get tired of their populist leaders, the state of emergency can be withdrawn, and the country can safely be integrated back to the international market order. In this context, *mediatization shows itself as an instrument of neoliberalism*, a powerful tool for containing popular protest and distorting the real alternatives.

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[69] Ernesto Laclau, *On Populist Reason* (Verso, 2005).

[70] Hallin, "Mediatization, Neoliberalism and Populisms: the Case of Trump," 4.

[71] Biljana Vitković, "Učešće mladih u medijima i analiza prelivanja informacija o njima od jedne ka drugoj vrsti medija," *CM: Communication and Media* 18, no. 54 (2023): 331, https://doi.org/10.5937/cm18-43849.

[72] Slobodan Penezić and Goran Kauzlarić, "Neoliberalna epistemologija i konceptualne promene u medijskom posredovanju," *LIMES Plus: Journal of Social Sciences and Humanities* 1 (2024): 109, http://iriss.idn.org.rs/2597/1/SP-txt-Limes-2024.pdf.

[73] Werner Bonefeld, *Strong State and the Free Economy*, *168*.

This means positioning the ideal of profit-making on the pedestal of an absolute imperative and in the middle of the media-society relationship. Even though numerous media actors, as well as those who lead them down this misguided path, profit from this, the true victims are the public, the public interest, but indirectly, also the media actors themselves (although they are either unaware of this or consciously forget it). They feel the consequences of their own irresponsibility or such ad-hoc media actions with the first significant change in the social climate and among those factors that influence their work (and, in turn, which the media undoubtedly influence at the same time, according to the principle of feedback). This price has already been paid by many once-important media actors, but the entire contemporary world continues to pay it along the way, because it undeniably depends on quality information (nowadays more than ever, probably), while we are at the same time living its paradox embodied in the fact that, evidently, there is less and less of it, despite ever-growing new possibilities and sources of information. We can notice the decline in public trust and the re-articulation of the Enlightenment's core values.[74] The media should be impartial brokers of facts and provide much of that knowledge so that citizens can make informed decisions. That core belief appears to be under challenge.

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[74] Charles C. Self. "Lecture 1–3," in *Study Guide for Mass Comm Theory*, ed. Charles C. Self (University of Oklahoma, 2008), 17.

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How Netflix's Recommendation Algorithms Function in Small Markets – The Case of Serbia[1]

Abstract: This study examines the functionality of Netflix's recommendation algorithms in smaller markets, focusing on Serbia. Through a reverse-engineering experiment involving user profiles with diverse viewing habits, the research highlights the mechanisms of algorithmic personalization and its limitations. The findings reveal that while Netflix algorithms effectively adapt to individual preferences, they rely heavily on global trends and widely consumed content, often struggling with niche or regional preferences. The study further explores how algorithms manipulate user behavior by promoting certain content through tailored visuals and cognitive strategies, and it discusses the challenges of personalization in markets with limited local content.

Keywords: personalization; small markets; algorithmic culture; content adaptation; streaming services; user behavior; regional preferences.

Introduction

The vast data generated through digital media would be meaningless if analyzed manually due to its sheer volume. This process, like data collection, is automated using algorithms that classify, correlate, interpret, and derive actionable insights. These systems are crucial to digital platforms, enabling data collection on users, content, and communication.

One of the most famous examples is certainly Google's rise from a user-focused platform to a global giant, and it highlights the profitability of exploiting behavioral data that users leave.[2] Algorithms analyze this user data to improve services, enhance products, or maximize profits. Streaming services, like Netflix, heavily rely on such algorithm systems for recommendations and analysis. For example, Netflix developed *House of Cards* based on subscriber data analysis.[3]

[1] This paper originated from the doctoral thesis "Communication Strategies for the Promotion and Distribution of Series through the Netflix Streaming Service in Serbia," (Ph.D. diss., Faculty of Philosophy, University of Niš, 2023), https://eteze.ni.ac.rs/application/showtheses?thesesId=8687.

[2] Shoshana Zuboff, *The Age of Surveillance Capitalism* (CLIO, 2020), 10.

[3] Michael D. Smith and Rahul Telang, *Streaming, Sharing, Stealing: Big Data and the Future of Entertainment* (The MIT Press, 2016), 18.

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Netflix operates as a transnational service, adapting to local markets[4] and this requires classifying user data by country and tailoring algorithmic insights accordingly. In smaller markets like Serbia, the limited user base affects the quality of algorithmic conclusions compared to larger markets like the US or Brazil. This study aims to "reverse engineer" Netflix's recommendation system to assess how well it aligns with Serbian users' needs and identify its key patterns and tendencies in this context. The broader implications of the research would indicate strategies and approaches to small markets, characteristics, methods, but also the weaknesses and shortcomings of this approach and the ways in which smaller, local SVOD services can fill the potential market's unused space.

Theoretical framework

An algorithm is described as any well-defined computational procedure that takes some value or set of values as input and produces a value, or set of values, as output.[5] These are software procedures, digital programs, or sequences of programs that are automated[6] and, based on established methodologies, tasks, and information (input components), generate conclusions, identify patterns, and undertake specific actions (output components).

Media algorithms systematically exploit user data, often referred to as *datafication*, and are an integral part of the media experience. Users encounter them routinely when navigating news on social networks, targeted advertising, streaming services, or personalized media.[7] These algorithms are designed to utilize available data optimally by identifying user behavior patterns, habits, preferences, and followed content. Based on this, they perform one of two tasks: define the type of content to be created or direct existing content toward an appropriate target audience. Both tasks are driven by efficiency, but there are certain differences between them. The first adapts content to the audience, while the second aligns the audience with the content.

The task of creating content based on audience activity is described by theorist Philip Napoli as an algorithmic shift in media production, consisting of two related processes:

1. Demand Prediction – algorithms replace analysts by predicting demand trends and potential media content trends based on quantitative data obtained through datafication.
2. Content Creation – algorithms increasingly take on the task of creating content, while human roles shift from direct participation to indirect involvement.[8]

[4] Mareike Jenner, *Netflix and the Re-Invention of Television* (New York: Springer, 2018), 25.

[5] Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, and Clifford Stein, *Introduction to Algorithms*, 2nd ed. (The MIT Press, 2001), 10.

[6] Philip M. Napoli, "Automated Media: An Institutional Theory Perspective on Algorithmic Media Production and Consumption," *Communication Theory* 24, no. 3 (2014): 341.

[7] Brita Ytre-Arne and Hallvard Moe, "Folk Theories of Algorithms: Understanding Digital Irritation," *Media, Culture & Society* 43, no. 5 (2021): 807–24.

[8] Napoli, "On Automation in Media Industries," Integrating Algorithmic Media Production into Media Industries Scholarship," *Media Industries Journal* 1, no. 1 (2014): 18.

The second task, directing the audience to existing content, seems simpler but involves an additional component: direct communication with the audience, specifically with each individual user. Each piece of media content must reach users who, based on their personality and activity data, are presumed to be interested. Recommendation systems are used for this purpose, proposing content based on specific parameters.

There are two primary recommendation systems:

1. History Data-Based Recommendation (HDBR) – this system analyzes the user's browsing history, classifies it, creates a user profile, and recommends content aligned with their interests;
2. Content-Based Recommendation (CBR) – this system considers user activities and the characteristics of the content they follow to suggest future content. This model is typical for online television and streaming services, as it analyzes both the type of content and the user's behavior.[9]

Both systems have distinct characteristics and varying levels of success depending on the task at hand. Their existence is often justified by the argument that the chaotic nature of the internet makes it nearly impossible for audiences to navigate without algorithmic assistance.[10] However, this does not diminish the fact that algorithm-mediated digital environments have brought significant societal consequences.

As algorithms are omnipresent in politics, economics, information, and education,[11] they have reshaped societal functions. This change is often referred to as algorithmic culture, defined as the practice of using computational processes to sort, classify, and hierarchize people, places, objects, and ideas, as well as the habitual thinking and behavior emerging from these processes.[12] Striphas, one of the originators of the term "algorithmic culture", emphasizes that it implies a dictatorial position of power where algorithms dictate culture, direct audience attention, and fabricate cultural products deemed profitable based on big data and proprietary algorithms.

Even disregarding potential algorithmic misuse, another consequence arises – filter bubbles. This phenomenon results in further fragmentation and disintegration of the audience and public sphere. To fully understand this, the psychological concept of "cognitive dissonance" is essential. It posits that individuals strive for cognitive harmony by resolving any inconsistencies in knowledge, confusion, or contradictions.[13]

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[9] Jiangbo Shu, Xiaoxuan Shen, Hai Liu, Baolin Yi, and Zhaoli Zhang, "A Content-Based Recommendation Algorithm for Learning Resources," *Multimedia Systems* 24, no. 2 (2018): 163.

[10] Sang-Min Choi, Sang-Ki Ko, and Yo-Sub Han, "A Movie Recommendation Algorithm Based on Genre Correlations," *Expert Systems with Applications* 39, no. 9 (2012): 8079.

[11] Napoli, "Automated Media," 340–60; Shu et al., "A Content-Based Recommendation Algorithm for Learning Resources," 163.

[12] Ted Striphas, "Algorithmic Culture," *European Journal of Cultural Studies* 18, no. 4–5 (2015): 396.

[13] Leon Festinger, *A Theory of Cognitive Dissonance* (Stanford: Stanford University Press, 1957).

This leads to selective exposure to information, preferring media that align with their preexisting beliefs.[14]

This tendency creates echo chambers, metaphorically describing an environment where one's opinions, political inclinations, or beliefs are reinforced through repeated interactions with like-minded individuals or sources.[15] Such chambers foster isolation with like-minded peers, leading to biases and polarization. Algorithms are programmed to recognize and amplify such tendencies. While filter bubbles align with the hyper-personalization philosophy of digital media, they differ from echo chambers in several key aspects. Echo chambers exist outside the internet, are self-initiated, and involve awareness of differing opinions. In contrast, filter bubbles are exclusive to digital environments, are imposed without the user's control, and obscure alternative perspectives entirely.[16]

In summary, while user agency, multimedia capabilities, and digital logic have expanded audience autonomy in content selection and creation, datafication and algorithms have transformed media strategies in content creation and distribution, disrupting the traditional dynamic between producers and consumers. The shift from mass communication to personalization and interactivity has altered communication methods and strategies, shaping how audiences engage with media in the digital era.

Methodology

When analyzing service algorithms, a specific experimental approach, "reverse engineering", was applied. This method is developed for the analysis of Netflix's search algorithm by Niko Pajković. His approach involved creating four new profiles, each representing a hypothetical consumer persona with distinct characteristics and viewing habits. These personas watched specific content at various times. Comparative analysis of the recommended content allowed for identifying patterns and principles underlying recommendation systems and algorithmic functionality in response to user behavior.[17]

The method utilized in this research largely mirrors this approach but introduces differences in defining consumer personas. These personas were based on prior analyses that identified prevalent viewer types in Serbia over the last 15 years.[18] Accordingly, the consumer personas were divided into three archetypes of Serbian series enthusiasts:

[14] John Cotton and Rex A. Hieser, "Selective Exposure to Information and Cognitive Dissonance," *Journal of Research in Personality* 14, no. 4 (1980): 518–27.

[15] Matteo Cinelli, Gianmarco De Francisci Morales, Alessandro Galeazzi, Walter Quattrociocchi, and Michele Starnini, "The Echo Chamber Effect on Social Media," Proceedings of the National Academy of Sciences 118, no. 9 (2021): e2023301118, https://doi.org/10.1073/pnas.2023301118.

[16] C. Thi Nguyen, "Echo Chambers and Epistemic Bubbles," *Episteme* 17, no. 2 (2020): 141–61.

[17] Niko Pajković, "Algorithms and Taste-Making: Exposing the Netflix Recommender System's Operational Logics," *Convergence* 28, br. 1 (2022): 214–35.

[18] Milosavljević, "Komunikacione strategije promocije i distribucije serija posredstvom striming servisa Netfliks u Srbiji."

1. Profile 1 – An Older Enthusiast of Domestic TV Shows: a 60-year-old woman, middle-class, living in a rural area, familiar with Russian and skeptical of Western and US culture. Watches shows during lunch. Favorite show: *Moj rođak sa sela* [*My Cousin from the Village*].
2. Profile 2 – The ideal Netflix User: a 26-year-old man, middle-income, married with one two-year-old child, living in a larger city, with a university degree. Enjoys fantasy and drama but keeps up with all new and trending TV shows. Speaks English and German, with politically liberal views. Watches shows at night. Favorite TV show: *Breaking Bad*.
3. Profile 3 – The Typical SerbianViewer: a 43-year-old woman, middle-income, living in a small town, mother of one, with a high school diploma. Works in retail, lacks strong political views, and follows mostly domestic TV shows, with some interest in foreign comedies and mysteries. Favorite series: *Friends*.
4. Profile 4 – An Inactive Profile: tThis profile remained unused and served as a control for comparison.

Time	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday
13:00	P1.		P1.	P1.	P1.	P1.	P1.
14:00		P1.	P1.		P1.	P1.	
20:00	P3.		P3.	P3.	P3.	P3.	P3.
21:00		P3.	P3.		P3.	P3.	
11:00	P2.		P2.	P2.	P2.	P2.	P2.
00:00		P2.	P2.		P2.	P2.	

Table 1 – Viewing Schedule

The user account was registered on a new Windows 10 operating system, accessed exclusively via the Mozilla Firefox browser (version 115.0). This ensured no prior personalization through cookies or browsing history. The account, created on a basic €4.99 monthly plan, was registered on July 3, 2023. Unlike Pajković's study, this research focused primarily on TV shows rather than movies. The research period spanned nine days (July 3–11, 2023). The first day involved account and profile setup, followed by a week-long experiment, with the final day dedicated to analyzing the effects and changes in each profile's home page. For comparative purposes, screenshots of relevant profile sections were captured before and after viewing content daily (507 images).

Research results

The experiment began with the selection of the basic subscription package and the creation of a primary account. The service's initial interaction with the user

includes two welcome emails, one of which requests account confirmation via email, followed by phone number verification (likely to confirm the registration and verify the user's country of origin).

All initial screens and recommendations across profiles were identical, displaying "Trending" content and the top ten most-watched TV shows and films in Serbia that day. This suggests the algorithm relies on geographic location for recommendations. On the first viewing day, the domestic TV show enthusiast watched domestic movie *Bad Blood* [*Nečista krv*] due to the absence of domestic shows. The typical viewer chose the detective comedy *Brooklyn Nine-Nine*, while the ideal user selected the drama *Ozark*. After viewing, no significant changes were noted in the suggested content, indicating that the algorithm requires time to adapt to user activity. By day two, each profile showed some personalization. The typical viewer was recommended *Suits* along with new categories such as "30-Minute Laughs" and "Romantic Movies", primarily suggesting short comedies. Similarly, *Suits* was also recommended to the ideal user, despite differing preferences, with new categories such as "Emmy-Winning US TV Shows". The curated selection under "Top Picks for Ideal Netflix User" highlighted popular shows, likely influenced by *Ozark's* critical acclaim (26 awards, including six Emmys), allowing the algorithm to refine its understanding of this user type quickly. In contrast, the domestic TV show enthusiast struggled due to limited regional content on the platform. Her profile continued to show popular titles in Serbia, illustrating a significant difference in adaptation between her and the ideal user. This underscores the algorithm's reliance on widely viewed content for predicting preferences, as less popular or niche content leaves it uncertain about user interests. These findings indicate that recommendations are shaped not only by individual behavior but also by broader viewing trends from Netflix's global user base. On the second day, unable to find regional content, the domestic TV show enthusiast opted to watch the 2021 Polish drama-comedy *The Land*.

This selection did not result in significant changes to the algorithm's recommendations the following day. She searched "Russia" and chose the comedy Russian Doll, watching two episodes. By the third day, the typical viewer was greeted with The Office as a primary recommendation, alongside categories like "Critically Acclaimed TV Shows" and "Award-Winning TV Shows." Since this profile had only watched shows, the list of the top 10 most-watched shows remained prominent. The ideal user exhibited similar trends, with categories from the previous day still present.

The inactive profile displayed no significant changes in its recommendations. Initially identical to the other profiles, it continued to present a mix of unrelated titles and genres. A new category "Casual Viewing" emerged, featuring random comedies, documentaries, and dramas. This category appeared to represent an algorithmic attempt to ease the "tyranny of choice" by offering a curated selection of lighthearted content.

On the fourth day, noticeable differences emerge among the profiles, with the domestic TV show enthusiast profile standing out significantly. The only new category

that appears here is "Polish-Language Movies & TV", and this occurs after watching just one Polish film. This did not happen after watching content from the domestic film industry, which is likely due to the lack of other domestic offerings. Since 2016, Netflix has invested over $110 million in producing original shows in Poland,[19] due to the significant subscriber base in the country[20] and to comply with differing regulatory frameworks. This necessarily points to reduced algorithmic maneuverability in countries producing fewer shows and films.

Nearly all suggestions after viewing Russian Doll – featuring a predominantly female cast – are shows and films with female protagonists. Even when this is not the case, the thumbnails of suggested shows almost exclusively feature women. When men and women are shown together in the thumbnails, women are often depicted in erotic poses, with shows' titles implying such themes (Image 1). Since gender is not specified during profile creation, it might seem surprising that the algorithm could infer the user's gender after just three days. However, this is more likely due to the first two viewed pieces of content not providing the same volume of relevant data on user preferences. The third selection, being significantly more popular, allowed the algorithm to make more reliable predictions about potential interests. Netflix has repeatedly stated that its algorithms do not collect data on gender or ethnicity, asserting that such occurrences result solely from analyzing viewed content and A/B testing.[21] The domestic show enthusiast continued watching the same shows as the previous day.

The other two profiles also continued with their previously watched content. For the typical viewer, numerous comedies were still suggested, now categorized under a particularly specific title, "All Laughs, No Laugh Track" (Image 2).

The initial screen for the ideal user profile appeared vastly different from that of the domestic TV show enthusiast. New categories included Exciting US Supernatural TV Shows, Exciting Movies, Geeked: Sci-Fi, Fantasy, Superhero & More, and TV Dramas Based on Books. Nearly all these niche suggestions directly resulted from the nature of The Witcher series, even after watching just two episodes. Viewing Ozark in the first two days also contributed to a new, highly specialized category: Binge-worthy Dysfunctional-Family TV Dramas. The prominence of the term exciting was notable, as both shows watched by this user are highly suspenseful. This term appeared not only in category titles and types of content but also in the imagery selected for series thumbnails, often depicting men in threatening stances (Image 3).

The fifth day of the experiment revealed another mode of communication employed by Netflix: notifications. The domestic TV show enthusiast received a notification via the bell icon, inviting her to explore upcoming shows and films. These

[19] Stjepan Hundic, "Why Netflix Is Betting Big on Poland (and You Should Too)," *The Hollywood Reporter*, May 20, 2022, https://www.hollywoodreporter.com/business/business-news/netflix-betting-big-on-poland-cannes-2022-1235143865/.

[20] Catalina Iordache, Tim Raats, and Adelaida Afilipoaie, "Transnationalisation Revisited through the Netflix Original: An Analysis of Investment Strategies in Europe," *Convergence: The International Journal of Research into New Media Technologies* (2021): 13, https://doi.org/10.1177/13548565211047344

[21] Fatima M. Gaw, "Algorithmic Logics of Taste: Cultural Taste and the Netflix Recommender System" (Ph.D., diss., Faculty of Arts and Social Sciences, 2019).

notifications did not appear for the other three profiles. It is plausible that the recommendation system, noting her limited engagement with only one show, used this feature to extract additional information about her tastes and preferences. The profile for this user became even more tailored, favoring comedies and especially erotic content. New categories included Sex Comedies and International TV Shows. Interestingly, for the first time across all three profiles, the category Watch in One Weekend appeared, likely because it was a Saturday. This confirmed that the algorithm considers not only location but also the day of the week when suggesting content. Regardless of the type of series and films watched, the most popular and widely viewed content consistently ranked highest in the suggestions across all three profiles. Thus, despite the minimal thematic connection between the watched shows and films, the first category, simply titled TV Shows, recommended The Witcher, Breaking Bad, and Better Call Saul. Given the profile's initial concept, most suggestions did not align with the user's presumed preferences and habits, prompting her to select the Croatian film Faraway.

Following two days of viewing Lupin, Netflix's recommendation system substantially adjusted its approach to the typical viewer. Categories shifted from predominantly comedies to European TV Shows, Police Detective TV Thrillers, and Binge-worthy Crime TV Thrillers. On this weekend day, this user opted for a mystery comedy, blending her two favorite genres, selecting Dirk Gently's Holistic Detective Agency.

For the ideal user profile, the suggested content prominently featured Netflix's most popular titles. Alongside the term exciting, action-themed categories like Action & Adventure Movies and Get in on the Action appeared. Thumbnails often depicted men in threatening or dynamic action poses.

The interface for the domestic TV show enthusiast saw no significant changes, while the typical viewer encountered new categories such as European TV Shows, French-Language Movies & TV, and Eastern European Movies & TV. The latter category was absent from the domestic TV show enthusiast's profile, despite her viewing three films and one series from the region. This discrepancy suggests that the algorithm categorized her preferences differently, emphasizing female protagonists, romance, and sex. In contrast, the typical viewer did not watch any Eastern European content, with location likely playing a more significant role. This highlights that similar viewing volumes and durations do not guarantee equivalent levels of personalization within the same timeframe. The ideal user profile, significantly more personalized, included almost all the most prominent Netflix titles alongside new categories, such as Acclaimed Writers, Suspenseful European TV Dramas, and Suspenseful Conspiracy TV Sci-Fi & Fantasy. This profile's consistent association with terms like exciting, action, and suspenseful, and its focus on sub-genre classification distinguishes it further.

The last two days, all three users followed two shows recommended by the algorithm, based on the highest assumed popularity. For the domestic TV show enthusiast, the first day featured the sitcom *The Kominsky Method* while the typical viewer watched German sci-fi drama *Dark*. The following day, guided by the algorithm's best

recommendations, the domestic TV show enthusiast selected two episodes of the Polish crime comedy *The Green Glove Gang*, the typical viewer watched the sitcom *Seinfeld*, and the ideal user followed the sci-fi drama *Snowpiercer*.

On the eighth day, home screen of the domestic TV show enthusiast, influenced by the content deemed most suitable by the recommendation system, featured several new categories within the comedy genre – *TV Comedies about Friendship*, *Buddy TV Shows*, and *Girls Night In*. Images predominantly showcasing women were still prevalent, but there was a noticeable trend of depicting two individuals in friendly postures or shared activities (Image 4). Positive imagery extended even to suggestions significantly different from the user's viewing history. For example, in *Lupin*, the lead actor holds a puppy. Notably, none of the suggestions insinuated violent, aggressive, or unpleasant content, even when such themes are central to the series. Despite the apparent personalization, the profile was not tailored as expected based on this hypothetical user's characteristics and preferences. Most content was from English-speaking regions, with a minimum of TV shows and films relevant to someone preferring domestic and regional productions. This discrepancy likely arises from the limited availability of such content on the platform. Nonetheless, it gives the impression that the algorithmic system prioritizes and favors certain types of content.

The typical viewer in Serbia followed primarily comedies and mysteries, but these contained elements of other genres. Consequently, the algorithm offered the broadest range of suggestions for this profile. Each category was distinct, spanning *Retro TV*, *International Police Detective TV Shows*, *Children & Family TV*, and *Critically-Acclaimed Exciting TV Dramas*. Series images depicted characters in active poses – pointing to something, preparing for action, or reacting to situations (Image 5). Despite the algorithmic suggestions being followed for the last two days of the experiment, more time would be required to crystallize a unique and less diverse set of recommendations for this profile.

The ideal user profile, by contrast, was significantly more uniform and focused on two directions: trending and new content and productions featuring sci-fi elements. This was evident in categories such as *Trending Now*, *Top Searches*, and *New Releases*, as well as specific subcategories and alternative genre labels emphasizing sci-fi. Series images frequently depicted futuristic scenes, space, or imaginary aliens (Image 6). Results for this profile indicate that if a user focuses on a specific type of content for an extended period of time, the system quickly hyper-personalizes their profile based on that activity, creating a 'filter bubble' that significantly limits exposure to other genres unless actively searched for by the user.

Finally, the inactive profile was intended to be a control group to establish differences in algorithmic behavior when active versus inactive due to user activity. It was assumed that a new profile would not undergo changes. However, this did not occur. The algorithm significantly altered the categories it suggested, most of which were general, based on traditional genre classifications. By the last day, there were also highly specific categories like *Strong Black Lead*, *Scandinavian Movies & TV*, and

Women Behind the Camera. Since there was no user input to guide the algorithm, it is likely that it experimented with specific categories to spark interest and prompt activity in the inactive profile. Another noteworthy trend for this profile was the significant proportion of content aimed at children (Image 7). Since there was no user activity to base recommendations on, it suggested that the recommendation system had to rely on other mechanisms for these assumptions. A plausible hypothesis, requiring further investigation, is that the algorithm inferred that a household with three active profiles following serious shows and films likely includes at least one child.

If this hypothesis were further explored, it could reveal inter-profile communication, suggesting that part of the algorithmic system considers the entire account's activity during personalization, not just that of individual users.

Conclusions of the experiment

After someone becomes a Netflix user, the service communicates with them in three main ways – via email through which the user registered, and through which he receives notifications and promotional materials; via reminders and notifications on the user's profile and recommendations; and by personalizing the homepage in accordance with the viewer's tastes. All these aspects, as well as the results that will appear in a search based on keywords that the user can carry out, are part of the same complex system of algorithmic personalization[22]. An experiment determined that personalization on the service is carried out by combining three methods:

1. By suggesting specific TV shows and films from the best to less recommended;
2. By highlighting specific subgenres and taste communities from the most relevant to less relevant;
3. By adjusting the image of a show or film so that it is appealing to the user.

For personalization in each of these three ways, it was concluded that several types of information are used:

1. Territory – no profile is completely unpersonalized when the user logs in for the first time, as there are always two categories present: "Top 10 Movies in Serbia Today" and "Top 10 TV Shows in Serbia Today". A new profile, in two different countries, will never look completely the same, both for this reason and due to the different offerings in each country. Location is relevant from the perspective of the country, region, and language in which the show or film that the user has watched was made, especially if the service can offer more content from that area (which is not the case for Serbia).
2. Time – the algorithm requires a certain period to register new activity and adjust to changes (less than one day), but also it takes into account the day of the week and weekends, when the viewing period is longer due to free time, offering content that can be fully watched over these two days. Due to the

[22] Harald Steck, Linas Baltrunas, Ehtsham Elahi, Dawen Liang, Yves Raimond, and Justin Basilico, "Deep Learning for Recommender Systems: A Netflix Case Study," *AI Magazine* 42, no. 3 (2022): 9.

nature of the experiment, it was not possible to determine whether the length of viewing (which was relatively the same for all) or the time of day during which content is viewed impacts personalization and the method of internal communication.

3. General trend obtained from the datafication – if a show or a film is lesser-known, especially if it is in another language, personalization will be significantly lower and slower. On the other hand, if a work is popular, changes in the appearance of the homepage will be drastic and quicker, meaning that the recommendation system does not rely only on the habits and practices of each individual user, but also on trends in a larger sample.
4. Presence or absence of activity – this is almost a tautology, but it should be noted that if the activity on a profile is high, all three methods will be applied, while if there is no activity, the algorithms will be forced to experiment and encourage the user in different ways.
5. Type of activity, i.e., the type and genre characteristics of selected content – the most significant part of what defines the algorithm's approach is the selection of content itself and the information about the genre characteristics they possess. At the most basic level, it was determined that if a user mainly watches TV shows, they will be recommended much more frequently than films, and vice versa. This also means that this service has a highly dominant CBR algorithm, based on content characteristics[23]. When it comes to selection based only on specific sub- or alt-genres, the algorithm used in Netflix is called the PVR (Personalized Video Ranker), while for selecting the best content from the entire database, regardless of genre, the Top N algorithm is used.[24]

However, this is only one part of what the recommendation algorithm system does. It has been observed that in almost every segment, in addition to trying to adapt content to the user's tastes, it also tries to adjust the user's taste to certain content. This was most evident in the fact that the most well received and new seasons of popular TV shows were almost always suggested, even when the user did not follow any show of that genre. Examples of this can be seen in the recommendations for shows such as *The Lincoln Lawyer* (Image 3, Image 4), *Black Mirror* (Image 1, Image 3), or *Pure Chemistry* (Image 2, Image 4). However, there are two much more specific examples of this "manipulation" of the algorithm. The first one, particularly interesting, is the change of a show image in relation to the viewer's taste. In addition to the aforementioned examples, all three profiles, in the last days of the experiment, were exposed to suggestions for two shows – *Lupin* and *Sex Education*. However, the image illustrating these two shows was significantly different on all three profiles (Image 8). To the typical viewer, who likes mysteries and comedies, *Lupin* is illustrated with a photo of the main character holding a book toward the camera, hinting at a mystery, while *Sex*

[23] Shu et al., "A Content-Based Recommendation Algorithm for Learning Resources," 163.

[24] Carlos. A. Gomez-Uribe and Neil Hunt, "The Netflix Recommender System: Algorithms, Business Value, and Innovation," *ACM Transactions on Management Information Systems* (TMIS) 6, no. 4 (2015): 3.

Education is illustrated with a comedic photo of two men on bicycles looking at each other. To the ideal user, *Lupin* is represented by an image of the character standing on a height, at night, wearing a coat with Paris glowing below, while *Sex Education* is illustrated with a photo of two girls positioned next to each other, looking worried in the direction behind the camera. This is entirely in line with the epithets "exciting" and "tense", which the algorithm associates with this profile. On the other hand, a fan of domestic TV shows could perceive the *Lupin* series completely differently since she was shown the main actor holding a dog, and since the algorithm assumes that erotic shows are particularly close to this user, *Sex Education* is rather explicitly illustrated with a photo of cookies in the shape of female genitalia.

It should be noted that these images changed during the experiment, especially in the case of the domestic TV show fan, with whom the algorithm system "struggled" for the first few days. However, this does not change the conclusion that after significant personalization, the same show is presented differently to different users depending on their tastes and preferences. These differing expectations represent a form of manipulation and direction, as the content itself is always the same. Not only are the most popular shows always suggested, but after seven days of initially watching very different content on each profile, the system claims that some of the same shows in all three (or four) cases are extremely compatible with the tastes of all hypothetical users. *Peaky Blinders*, regardless of the profile type, always has almost a hundred percent match (Image 9), and this is particularly interesting in the case of an inactive profile, where, although very violent, it is literally placed next to the children's cartoon *Grizzy and the Lemmings* (Image 10).

In the case of the inactive profile, it is clear that there is no feedback that would narrow the scope and accuracy of suggested shows and films, so such inconsistencies were expected. On the other hand, the fact that a very popular show is close to all hypothetical tastes can somewhat be justified by its popularity, which the algorithm uses as an argument for its omnipresence, but this cannot explain the high correlation with the tastes of each user. Therefore, it is justified to conclude that there are certain contents, particularly those produced by Netflix, that are favored and, by different methods such as manipulation of the title photo, are always shown as appropriate for users. This is, in fact, one of the functions of all communication strategies, cognitive (through percentage of compatibility) and affective (through photos) manipulation.[25]

It is important to emphasize that algorithmic strategies will not be equally successful with every user. If the tastes of a user in Serbia are similar to those of the hypothetical ideal user, personalization will be highly effective, as a very narrow selection of the most popular, most awarded, and newest action, tense, and exciting works will be recommended. If the tastes are closer to those of the typical viewer, more time will be needed to align and determine the typical content this user likes, but they will always be able to find several works that match their tastes. The reasons for this lie in the fact that there are many shows and films that differ significantly in sub-genre

[25] Mirko Miletić, „Komuikacione strategije – pokušaj teoretske konceptualizacije," *Komunikacije, mediji, kultura – Godišnjak Fakulteta za kulturu i medije* 3, no. 3 (2011): 13–32.

characteristics but can be grouped into the categories of comedy or mystery, which are the most popular in Serbia. While the lack of hyperpersonalization was observed as a possible consequence in this profile, a positive aspect is that this profile, at the very least and at the latest, avoided the algorithmic 'filter bubble' problem[26], meaning it has much greater choice and maneuverability in selection. This is not the case with the other two profiles, although for completely different reasons. With the ideal user, it is about conscious and intentional selection of what aligns with their tastes, while with the domestic show enthusiast, personalization was a matter of necessity, as in the absence of what she primarily watches, she had to 'submit' to the service's offering, and in this process, she was defined by some other hypothetical tastes, which were not planned and set at the beginning of the experiment (female comedies, buddy comedies, sexual and erotic shows).

Concluding remarks

Reactions and adaptations through notifications, email communication, and most notably the algorithmic recommendation system reflect the activities, needs, desires, and preferences of users, especially when these align with what Netflix can offer. However, when a user from Serbia wishes to follow the domestic content, this adaptation becomes significantly more challenging, and their needs will not be adequately met. Instead, based on other information regarding the content they follow, their taste will be steered in different directions. This does not imply that internal communication strategies do not exist in this case; rather, they serve a different purpose. While in the first case, the primary focus is on reacting to and supporting the user's existing preferences, for those following domestic content, algorithmic manipulation and redirection toward similar or new tastes and desires will be at play. It can be assumed that this inability to adequately satisfy the existing tastes and desires of a segment of the public, particularly those oriented toward domestic production and language, which constitutes a significant portion of the population, is one of the reasons why Netflix has not created specific communication approaches and strategies for this country. The disadvantages of this approach and the inability to fully meet the expectations, tastes and habits of specific types of audiences in Serbia open up space for smaller, local services and truly personalized approaches to domestic users in a more concrete and complete fulfillment of their needs, as opposed to directing and tailoring tastes in accordance with global trends.

It is important to note that the experiment was conducted over the span of just one week, and it is certain that more detailed and high-quality personalization requires additional time. The results indicate that the personalization was not equally effective for every typified representative of the population in Serbia during this period.

[26] Eli Pariser, *The Filter Bubble: What the Internet Is Hiding from You* (Penguin Press, 2011).

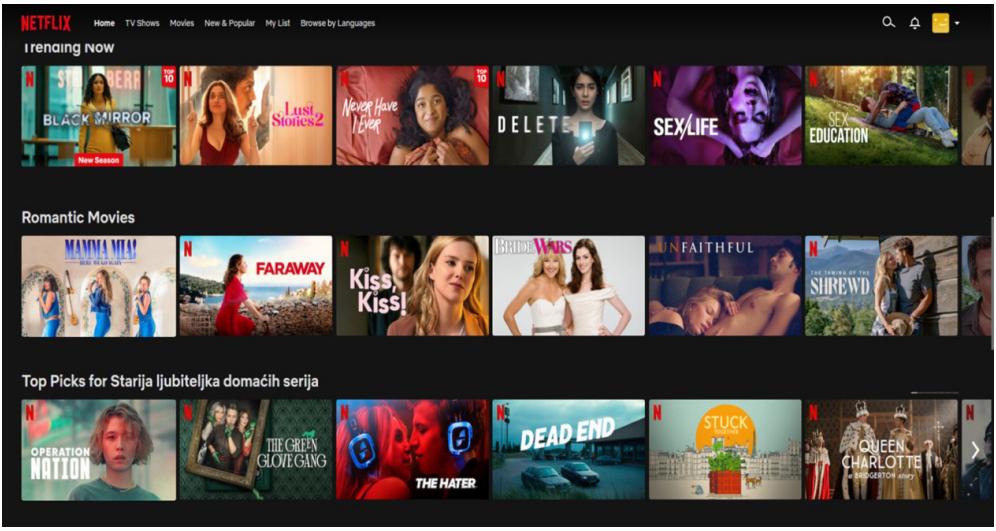

Image 1: Interface with suggested shows for the domestic series enthusiast on day 4 of the experiment. Screenshot of Netflix user interface. Captured from the Netflix desktop application, July 2023. © Netflix. Used for illustrative purposes in academic work.

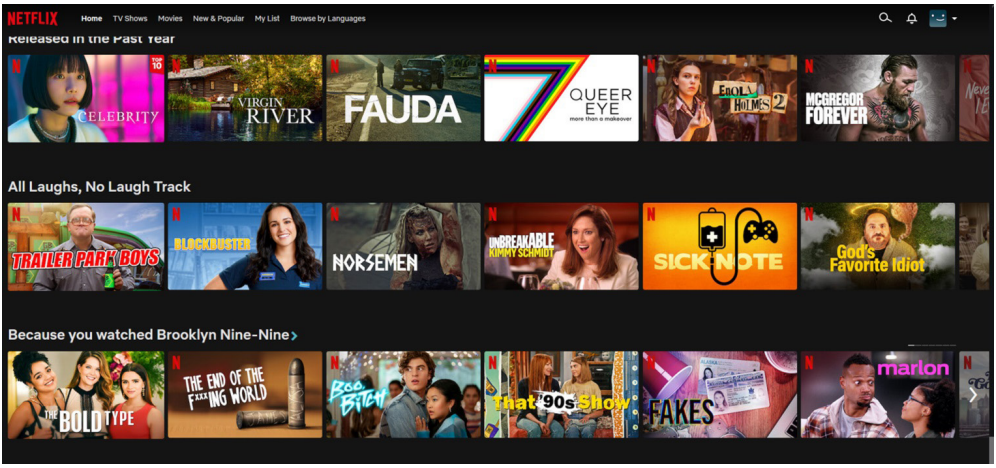

Image 2: Interface with suggested shows for the typical viewer on day 4 of the experiment. Screenshot of Netflix user interface. Captured from the Netflix desktop application, July 2023. © Netflix. Used for illustrative purposes in academic work.

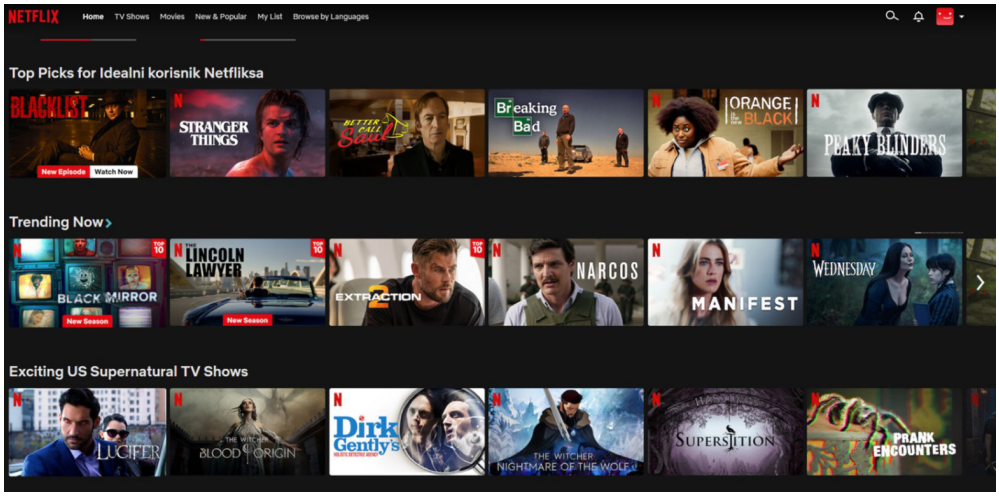

Image 3: Interface with suggested shows for ideal user profile on day 4 of the experiment. Screenshot of Netflix user interface. Captured from the Netflix desktop application, July 2023. © Netflix. Used for illustrative purposes in academic work.

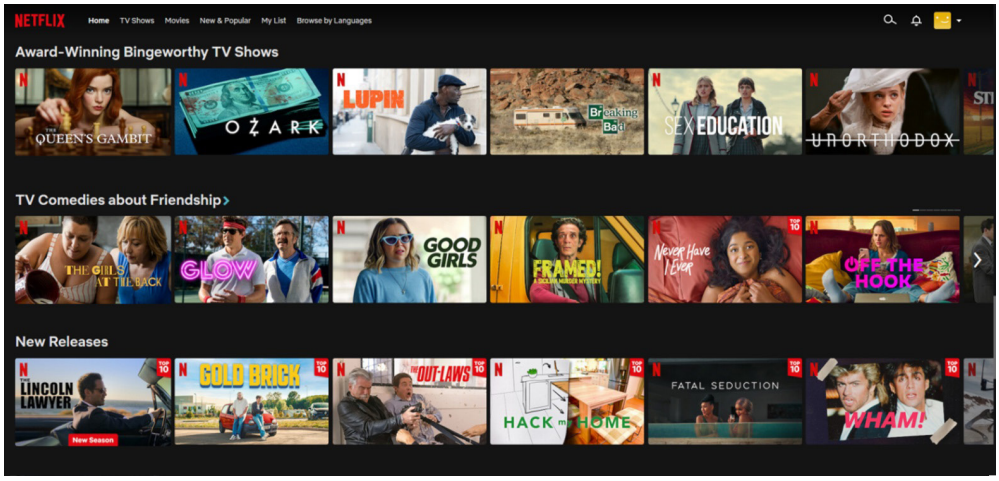

Image 4: Interface with suggested shows for the domestic show enthusiast profile on day 8 of the experiment. Screenshot of Netflix user interface. Captured from the Netflix desktop application, July 2023. © Netflix. Used for illustrative purposes in academic work.

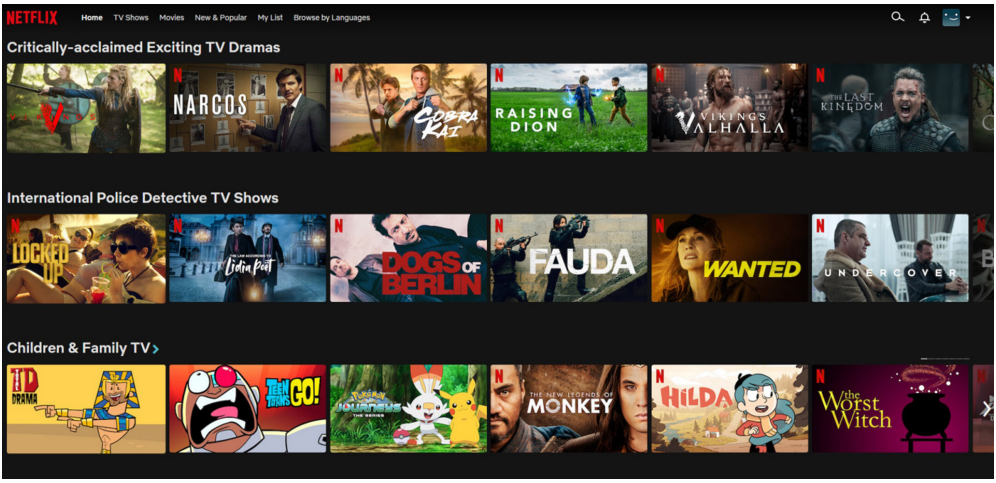

Image 5: Interface with suggested shows for the typical viewer profile in Serbia on day 8 of the experiment. Screenshot of Netflix user interface. Captured from the Netflix desktop application, July 2023. © Netflix. Used for illustrative purposes in academic work.

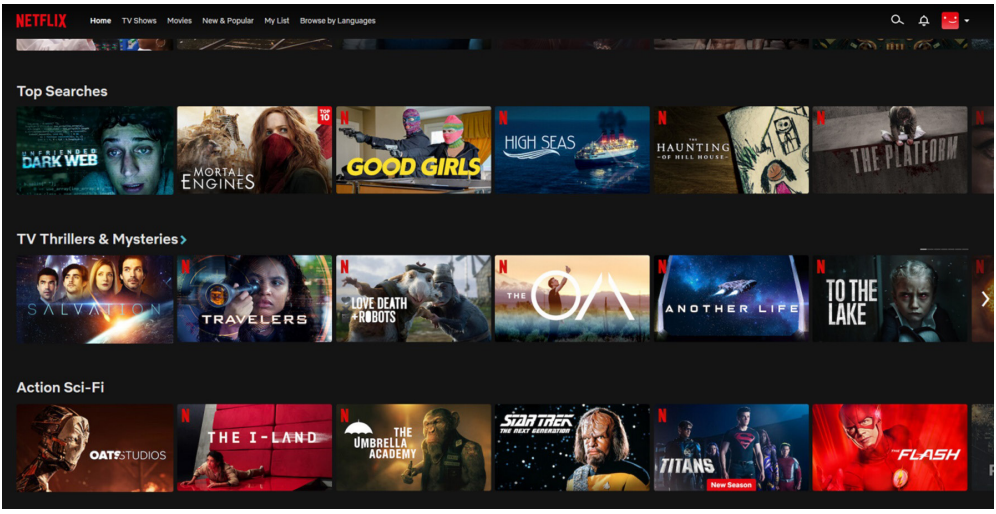

Image 6: Interface with suggested shows for the ideal user profile on day 8 of the experiment. Screenshot of Netflix user interface. Captured from the Netflix desktop application, July 2023. © Netflix. Used for illustrative purposes in academic work.

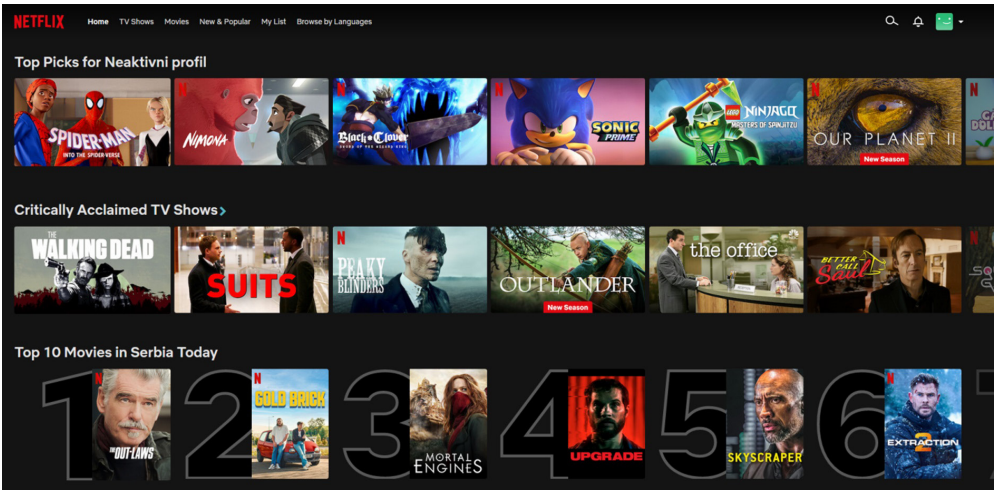

Image 7: Interface with suggested shows for the inactive profile on day 8 of the experiment. Screenshot of Netflix user interface. Captured from the Netflix desktop application, July 2023. © Netflix. Used for illustrative purposes in academic work.

Image 8: Differences in the suggestion images of Lupin (top row) and Sex Education (bottom row) for the typical viewer (left), the ideal user (middle), and a domestic show enthusiast (right). Screenshot of Netflix user interface. Captured from the Netflix desktop application, July 2023. © Netflix. Used for illustrative purposes in academic work.

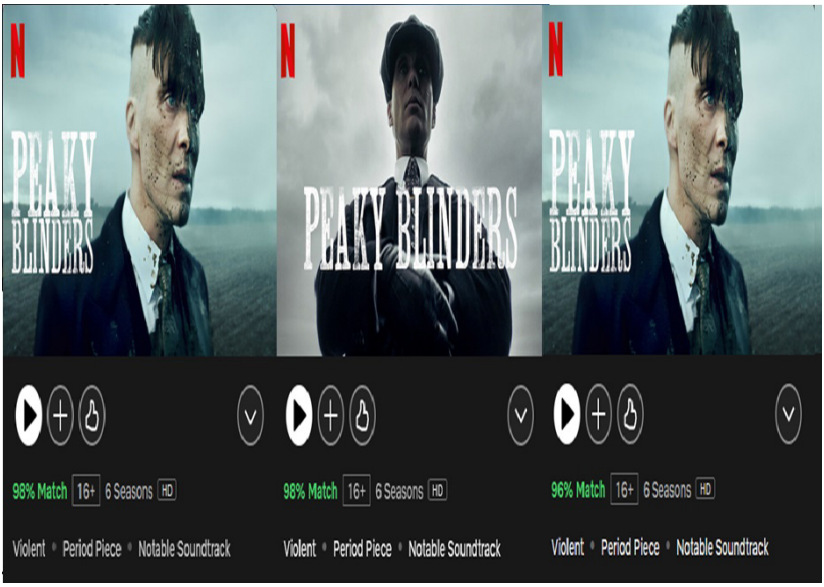

Image 9: The level of compatibility of the show Peaky Blinders with the tastes of the typical viewer (left), the ideal user (middle), and the domestic show enthusiast (right) on day 8 of the experiment. Screenshot of Netflix user interface. Captured from the Netflix desktop application, July 2023. © Netflix. Used for illustrative purposes in academic work.

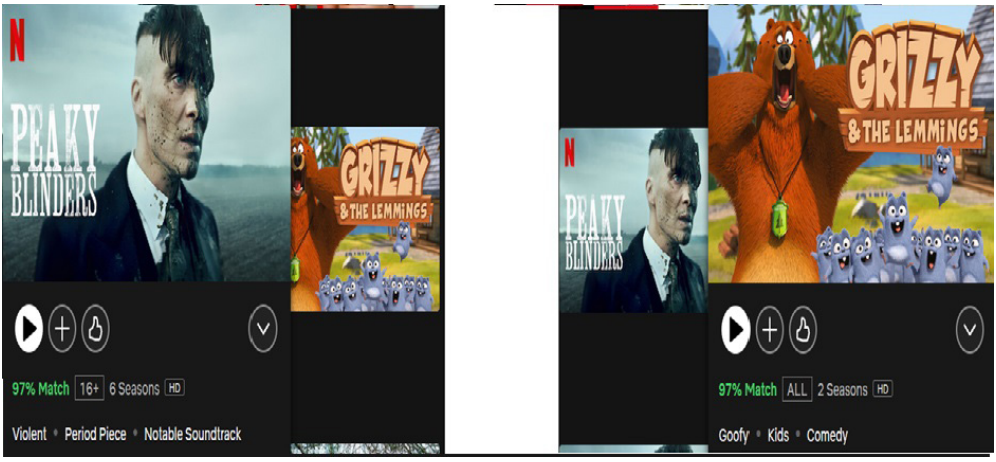

Image 10: The level of compatibility of the show Peaky Blinders (left) and Grizzy and the Lemmings (right) with the tastes of an inactive profile on day 8 of the experiment. Screenshot of Netflix user interface. Captured from the Netflix desktop application, July 2023. © Netflix. Used for illustrative purposes in academic work.

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BEYOND THE MAIN TOPIC

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Empathy in the Contemporary Social Context

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Empathy in the Contemporary Social Context

Abstract: Empathy is a basic component of interpersonal relationships, a complex cognitive-affective phenomenon of experiencing and understanding the conscious and unconscious states of others. The Shadow is one of the fundamental concepts of analytical psychology, crucial for defining a person's identity as well as for establishing and maintaining relationships with others. Besides the personal, we can speak of the group and collective Shadow. Understanding and integrating the contents of the group and collective Shadow can serve as indicators of qualitative and value shifts in certain social systems. The post-Jungian paradigm examines the contemporary social context, viewing the "psyche" or "soul" as something that exists "in and among people", while considering the analyst's practice as a "revolutionary cell", an instrument of change not only for the individual but also for the world which we live in. The postmodern discourse of contemporary society promotes and validates individuality, efficiency, achievement, acquisition, external appearance and narcissism. We live in a polarized, alienated, binary reality, in a culture that values extroversion, where the space for the liminal, processual, and transcendental is narrowing, and instead of fostering integration and dialogue, we increasingly experience fragmentation. This collective Persona implies that community, civility, care for the ecosystem, and empathy are all elements of the collective Shadow. In this paper, we will examine the concept of the Self of collectivity, various clinical as well as contextual examples of the manifestations of these contents, and the possibilities of establishing a dialogue with them.

Keywords: empathy; collective Shadow; individuation; contemporary society; Self of collectivity.

Introduction

Empathy is a fundamental component of interpersonal relationships. It can be defined as a complex cognitive-affective phenomenon of experiencing and understanding the conscious and unconscious states of others.[1] Empathy is most often considered a relational and social component of relationships, one which is crucial for forming a stable identity of a person, as well as for establishing and maintaining a healthy and functional family, partnership, friendship, and professional relationships. We can also view empathy as a value orientation within a specific social context. Social

[1] Tatjana Vukosavljević-Gvozden, "Određenje pojma empatije," *Nastava i vaspitanje* 50, no. 3–4 (2001): 391–407.

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groups, organizations, and communities vary in the extent to which they value and promote altruistic behavior among their members, as well as in the degree to which they 'sanction' non-empathetic and antisocial responses from certain group members.

Various psychological theories and research suggest that altruistic traits are primarily based on an innate capacity for empathy, and on the quality of early emotional attachment which forms the foundation for developing later relationships.[2] Altruistic behavior can largely be adopted and learned through the process of socialization.[3] Research points to the significant role of parental models in shaping prosocial behavior, and more broadly, learning through modeling has a major impact on the development of altruistic behavior. The culture, social environment to which we belong, influence of media, and social networks also play a substantial role. However, most theories concerning empathy and altruism consider the relational component of empathy and human relationships. One of the core theses of our paper is that in the contemporary social context, we must, in some way, redefine the concept of empathy, to place it in a broader context that encompasses not only the social environment but also our ecosystem.

The challenges of the modern social context – globalization, climate change, wars, and migrations – bring an increasingly urgent need to change our relationship with the world around us, particularly with our ecosystem. As the authors of climate psychology state, this is "a matter of life and death".[4] Climate psychology examines the psychological mechanisms that cause people to continue destructive lifestyles, with little insight, regard, or empathy, and without awareness that they are actively contributing to the onset of widespread devastation.

From various psychological and psychotherapeutic paradigms, we consider which psychological defense mechanisms are activated when facing this kind of existential anxiety. One way to understand this dynamic through the lens of analytical psychology and psychotherapy is the idea that empathy in the modern social context, particularly empathy toward nature and the environment, is part of humanity's collective Shadow.

The Shadow is one of the fundamental concepts in analytical psychology, essential for defining a person's identity and for establishing and maintaining relationships with others.[5] Besides the personal Shadow, we can also speak of the group, collective, and archetypal Shadow.[6] The contents of the Shadow are primarily instinctive and inferior, often of sexual and aggressive nature, but also include talents and potentials that have been pushed out of conscious awareness. The Shadow has an archetypal basis; it is universal, and it is a part of human nature. It is often noted that at the

[2] Daneil C. Batson, David A. Lishner, and Eric L. Stocks, "The Empathy-Altruism Hypothesis," *The Oxford Handbook of Prosocial Behavior*, ed. David A. Schroeder and William G. Graziano (Oxford Academic, 2015), 259–81.

[3] Nikola Rot, *Osnovi socijalne psihologije* (Zavod za udžbenike i nastavna sredstva, 1983).

[4] Vendi Holvej, Pol Hoget, Kris Robertson, and Sali Vajntrob, *Klimatska psihologija* (Clio, 2024), 8.

[5] Joseph L. Henderson, *Shadow and Self-Selected Papers in Analytical Psychology* (Chiron Publications, 1990).

[6] Murray Stein, *Jung's Map of the Soul* (Open Court Chicago and La Salle, 1998).

core of the archetypal Shadow lies the archetype of evil.[7] Numerous destructive social phenomena can be interpreted as the eruption of the collective, archetypal Shadow through powerful and massive projections of negative and destructive contents onto social or ethnic groups that are perceived as inferior or hostile.

The implications of the archetypal Shadow can be recognized in various historical contexts when a particular group of people or a nation is "perceived/seen" as different and threatening, thus becoming a target of attacks, persecution, and horrific crimes. When the collective Shadow is activated, ordinary people can turn into monstrous killers, driven by powerful authorities and stripped of any personal responsibility and empathy. In the film "Downfall",[8] which depicts the final days of Hitler's reign, every scene serves as an example of the embodiment of the archetypal Shadow. The story is told from the perspective of Hitler's secretary, Traudl Junge, a twenty-two-year-old woman who joined the National Socialists.

Throughout the film, she undergoes an internal catharsis – from being completely blinded by her pursuit of "higher goals" and projecting all evil and destructive forces onto a dehumanized enemy, to confronting the horror which she herself was also indirectly a part of. The film concludes with her saying: "All the terror I heard about at the Nuremberg Trials... six million Jews, people of other races... who died... deeply shocked me. But I did not connect it to my past. I convinced myself that I was not personally guilty of anything and that I had no knowledge of the scale of it all. But one day, I was walking past the Sophie Scholl Memorial, here on Franz Josef Street. I saw that she was my age, and only then did I realize that youth is not an excuse... and that I was capable of finding out the truth."

Jung stated that in a crowd, the collective unconscious is activated,[9] individual consciousness regresses, personal responsibility is withdrawn, and there is a flooding of archetypal contents. Gustave Le Bon[10] similarly describes the crowd as a place where individuals sink into primitive moral and intellectual mud. Some of these regressive consequences of crowd psychology can be channeled through the presence of rituals. However, if we take away rituals, if we remove the institutions that hold significant collective meaning for the people (such as the church and the military), we also take away their focus on individual consciousness. They inevitably fall into collective unconscious processes and become susceptible to "psychological infections," seeking a chief, a shaman, or a leader. The leader provides people with a sense of direction, as this figure represents the personified principle of taking responsibility, which opens a vast space for manipulation.

Deprived of one set of gods, people will inevitably "create" others based on their inner unconscious instincts.[11] When one's country takes the place of God, subservi-

[7] Marie-Louise von Franz, *Shadow and Evil in Fairy Tales* (Shambhala, 1995).

[8] Oliver Hirschbiegel, *Der Untergang*, movie, 2004.

[9] Karl Gustav Jung, *O psihologiji nesvesnog* (Matica Srpska, 1978).

[10] Gustave Le Bon, *Psychology of Crowds* (Sparkling Book, 2009).

[11] Karl Gustav Jung, *Dinamika nesvesnog* (Matica Srpska, 1978).

ence to the country becomes a form of worship. Highly authoritarian and totalitarian societies, on a superficial, external level, offer some kind of earthly paradise to their followers.

Of course, the stronger the idealization at the conscious and external level, the greater the doubt and resistance at the unconscious level, which means that totalitarian states always exist on the brink of rebellion and the prevalence of another repressed extreme. The ideal of equality is the fundamental proclaimed value of such systems, and this very principle is completely opposed to individual consciousness, the right to diverse opinions, actions, and value orientations. Thus, "different individuals" represent the greatest enemies, or the collective Shadow of totalitarian societies and totalitarian groups. The solution to this problem lies in awakening the consciousness of individuals.

In totalitarian systems, personal responsibility is projected onto the state and society. As a result of viewing themselves as powerless and helpless, individuals compensate by identifying with a powerful and strong state.

When individual consciousness and responsibility are lost, they open a vast space for the breakthrough of collective unconsciousness, which can actually only be realized through acts of individuals in regression. This depiction of reality seems rather pessimistic. Without personal responsibility and a relationship towards others and the different, empathy also fades into shadows.

Jung long advocated the idea that humanity is in a significant imbalance between technological, scientific, ethical, psychological, and spiritual development. This is also an imbalance between the unconscious (which carries enormous potential for destruction) and the conscious mind. In the late 1960s, Erich Neumann wrote that the task of modern psychology is to support individuation on the level of the collective, on the level of humanity.[12] He considered the problem of evil to be one of the greatest problems of a modern human.

What about the times we live in today? Is the world a happier, safer, more spiritual place compared to the first half of the last century? Have we distanced ourselves from highly authoritarian and totalitarian systems? Have we mastered the terrible lesson of perishment during the Holocaust? Today, in the age of globalization, corporations have taken the place of states, and the media and social networks serve as the context in which we are susceptible to a kind of "psychological infection". There is little room left for differing opinions, for middle-ground positions, for integration instead of polarization. More than forty years ago, Christopher Lasch wrote his famous work, *The Culture of Narcissism*,[13] warning us of the risks of liberal capitalism, predominance of corporations, as well as the rise of competition and individualism, which lead to constant conflicts and "warfare of everyone against everyone". In a narcissistic culture, humanity is in sort of a dead-end: the past and continuity are relativized and devalued, while narcissistic traits are encouraged, which lead to impoverishment of

[12] Erich Neumann, *Depth Psychology and a New Ethics* (G. P. Putnam's Sons, 1969).

[13] Kristofer Laš, *Narcistička kultura* (Naprijed, 1986).

the inner world. External models of happiness and prosperity erode the internal ability of a person to recognize and experientially feel satisfaction derived from a continuous and authentic sense of self. The modern individual is increasingly destructive and arrogant, egocentric and unaware of the laws and wondrous complexity of nature and the environment he destroys, while arrogantly referencing "development", "prosperity", and "material wealth".

Nearly half a century after Neumann and Lasch, the renowned analyst James Hillman wonders whether, after a hundred years of psychotherapy, the world has become a better place. He suggests that in the modern social context, in which we are facing challenges posed by the expansion of destructive global processes, the analyst's office should transform into a "revolutionary cell", an instrument for changing not only the individual but also the world we live in. The psyche, or soul, is found "in and among" people, while the world we live in is filled with symptoms. Ecological disasters, wars, migrations, polarization, and the tendency to perceive reality in binary categories, as well as huge exposure to information paired with paradoxically increased estrangement, are just some of the manifestations of contemporary society. They affect every individual and cannot be addressed or changed solely through individualistic psychology and psychotherapy.

Personal development that we, as psychotherapists, advocate does not necessarily lead to constructive political or social changes. In psychotherapy, we focus on personal relationships and family contexts; however, we rarely address what we call a sense of community. As an alternative, we might consider the Community Self or, as Hillman calls it – the Self of collectivity. By community, I mean the ecosystem, which extends beyond the people around us to include nature and our environment.

Hillman believes that the modern world we live in has elements of chronic mania. Perhaps this way of living serves as a means to avoid feelings of depression or the process of grieving caused by the image of the wrecked world around us, of nature and people who are suffering. We look at something that has been permanently destroyed, and as an alternative to grieving or showing empathy, we defend ourselves by turning toward achievement and external validation, while trying to avoid these difficult emotions.

But what we also know is that significant changes are often preceded by some kind of breakdowns, intensified crises that provide an opportunity to connect with what lies within our collective Shadow.[14] The collective Persona of a contemporary, modern, and successful society is marked by a high degree of individualism and efficiency, accompanied by constant social, cultural, and contextual pressure. This pressure does not leave room for transformation and change. We live in a postmodern discourse where many aspects of identity and social environment have been significantly altered.

One form of totalitarianism has been replaced by another – the trend of globalization and social media serving as a virtual global setting has created a fertile

[14] Mari Luiz Fon-Franc, *Svet snova* (As-Sovex, 2005).

ground for collective projections. The global world is a world of narcissism and individualism; in it, community, empathy, decency, love, and connection are not the most desirable components of the collective Persona, so they partly transition into the collective Shadow.

In the contemporary social context that redefines the key elements of personality, we can also problematize the concept of normality. Accelerated technological development and the concept of "accelerated time" are beginning to threaten and alter the classical parameters of human connection. There are more and more people who find themselves "lonely in a crowd", or in physical isolation yet with the illusion of connection in the virtual world. In a postmodern era that relativizes closeness and the importance of continuity, integrity, and personality cohesion, there is ever more room to validate a fragmented self that adapts to the fragmented world.[15] However, in this context many people feel lost, isolated, confused, dissatisfied, and alienated. A question arises: is there a change in our capacity for empathy due to the various transformations we've discussed? Empathy is the fundamental component of interpersonal relationships. We are born with the potential for empathy, and key developmental processes rely on its adequate use. The relationship between a mother and her baby, the mother's empathetic response to the baby's needs, is the foundation of all future experiences the child will build throughout life. There is no therapeutic paradigm that does not mention the importance of empathy in the development of a healthy individual, and a large part of our therapeutic work is based on using this capacity and repairing empathetic gaps that have occurred during development.

Whether we are working with children or adults, with individuals, couples, or families, our therapeutic interventions concentrate on awakening our clients' potential for empathy. We teach them to develop empathy toward themselves, their own flaws and deficiencies, as this is the foundation for self-acceptance and any kind of change. We help them tolerate uncertainty in relationships and how to, by fostering empathy, gain insight into the inner lives of their children, partners, and others they interact with.

On the other hand, we are overwhelmed with content instructing us on how to build relationships, self-help literature, and podcasts that explain how to stand up for ourselves and our needs and how to be successful. In the context of analytical, Jungian psychology and psychotherapy, individuation is the focus of therapeutic work. Individuation means becoming who we truly are; it is a continuous, cyclical dialogue and integration of the different, conscious and unconscious, elements of the psyche. But how often do we address the topics and content that Hillman referred to as the Self of collectivity in our therapeutic work?[16] Does comprehension of empathy increase empathy in the contemporary context which we live in? And can empathy be confined exclusively to human relationships?

[15] Mirjana Jovanović Divac and Dragan Švrakić, *Granična ličnost i njena brojna lica* (Clio, 2021).

[16] Džejms Hilman, *Sto godina psihoterapije a svet sve gori* (Fedon, 2017).

To what extent have we failed to empathize with nature and our ecosystem, as a result of our focus on development, ego, and individuality? Here are a few examples from practice that reflect some of the themes we have covered in our work/in this paper:

Vignette No. 1: A client, highly anxious and with a strong abandonment complex due to a series of loss experiences, arrives at the session visibly upset because her neighbor plans to arrange for a walnut tree in the shared yard of their house to be cut down. She describes how she fears that something will go wrong, that the tree will fall the wrong way, and expresses anger at the neighbor's insistence. In the following session, with eyes full of tears she tells me, "Today they'll come to cut it down. Yesterday, I went out to hug it and said, 'I'm so sorry that you're going to die tomorrow…'" There was no anger or anxiety in her voice, only sorrow.

Vignette No. 2: A client arrives at the session and says, "Something happened two nights before, nothing terrible; my brother says I'm overreacting…but I'm still sad and feeling a sense of guilt. We were at a restaurant, and a young waiter, a nice guy, came to collect the payment. My brother was handling the money and only had large bills, so I gave him 200 dinars for the tip. Then I said, 'Wait, I have some change' (thinking of 50-dinar bills). I added that to the tip, then I looked at the young man and felt that the look in his eyes seemed somewhat sad. I regretted saying it that way, even though I didn't mean it like that… That scene kept replaying in my head all day, how I hadn't thought about him, how what I said was harsh and rude…"

Vignette No. 3: This isn't a clinical example but a story a friend of mine, a schoolteacher, shared with me. He told me about a boy who had been in an inclusive program in his school. After finishing elementary school, his parents enrolled him in an agricultural technical school, specializing in butchery. At school, he also had a mandatory internship at the butcher's shop every week. After some time, my friend ran into the boy's mother and asked how he was doing. "We had to withdraw him from that program; every time they had practical training, he would cry…"

Empathy and altruism are part of human nature. Love is not the result of working on something. We can help our clients to express themselves better, to communicate more clearly, but love is an archetypal state that makes us healthy human beings. Even Freud's definition of mental health was that a mentally healthy person is capable of loving and working. Moreover, in the context of the Community Self, we would also add – is able to connect with other people and the world around us. In a psychological sense, within the context of relationships, exchange, and empathy in a social environment, the world we live in and contemporary society do not exactly inspire much optimism but rather lead to some kind of helplessness or a need to create our own little islands of exchange.

If we return to the concept of the Shadow, however, Shadow often hides potentials which are waiting to be recognized and integrated. Although at times Hillman seems greatly disappointed in human nature, he says, "There is still a huge reservoir of human decency in the world."[17]

As psychotherapists, we have the privilege of encountering those reservoirs of goodness and nobility in our work with some of our clients. Within this collective Shadow of the world, there is a great capacity for connection, understanding, care, and empathy, which makes it a powerful force. However, the Shadow is, by nature, designed to stay hidden and out of our awareness. It appears indirectly, masked, which is why we must engage our capacities to recognize it when it shows. Although the culture we live in is extroverted, teaching us to be fast, ambitious, and productive, working with the Shadow is a slow process – it means shifting our gaze downward, staying in contact with dark, unknown, and multidimensional experiences.[18] Those who deny the Shadow and attempt to suppress it continuously deepen the divide between good and evil – 'us and them'. On the other hand, confronting the Shadow also leads to a greater degree of integration, the withdrawal of projections, and the acceptance of responsibility.

We hope that there is potential for such integration and that, despite all the challenges posed by the contemporary social context, we can find the will for understanding and dialogue, for empathy in a broader social context. More importantly, we hope that we can view and develop empathy not only as a relational social category but also in form of our relationship with nature which we are part of.

I will conclude with an inscription from the National Museum in Cusco (Peru):

"Over time, the Earth has undergone significant changes, allowing species to adapt. On the American continent, the increasing glaciation of the Andes led to the extinction of 46 genera of large mammals, known as "megafauna".

In the Cusco Valley, a thin layer of cream-colored soil (tripoli) has been discovered, corresponding to the shores and bottom of the now-extinct Lake Morkill, which once served as a habitat for these megafauna.

In the last ten thousand years, the climate has remained stable giving way to the development of great cultures. However, today we are witnessing dramatic changes, a phenomenon we refer to as climate change, which threatens the survival of many species of flora and fauna. This phenomenon has, among other causes, anthropogenic factors (humans) which impact the environment, by polluting, deforesting, destroying ecosystems and overexploiting natural resources.

If we endeavor to make rational use of everything the Earth has to offer, there is still hope of salvation. The runas (humans) have a single large ch'uklla (house), called Pacha Mama (Mother Earth), HER LIFE IS IN DANGER. It is up to us to save her."

[17] Hilman, *Sto godina psihoterapije a svet sve gori*.

[18] Jelena Sladojević Matić, "Encounter with Shadow and Its Manifestations in Fairy Tales and Literature," AM Journal of Art and Media Studies 23 (2020): 149–58, https://doi.org/10.25038/am.v0i23.403.

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What Does Photosculpture Want?

In the article "Sculpture in the Expanded Field," published in 1979, Rosalind Krauss delineates the evolution of the term "sculpture," illustrating its increasing ambiguity and departure from conventional categorization. She posits that, particularly during the 1960s and 1970s, the semantic scope of "sculpture" underwent a transformative shift, encompassing a diverse array of works that defied easy classification. This included endeavors such as Constantin Brâncuși's columnar sculptures, Richard Serra's monumental steel structures, and Robert Smithson's physical manipulation of landscapes and sites. Consequently, Krauss contends that the very notion of sculpture was in danger of collapsing.[1]

This phenomenon bears significant parallels to the contemporary landscape of photography. Initially confined to the bourgeois elite following its invention in the 19th century, photography has since become democratized through the rapid advancement of technology and the widespread accessibility of compact cameras. In the present day, photography is nearly ubiquitous, permeating modern society with individuals across diverse demographics capable of capturing images, leading to an environment saturated with visual content. Moreover, photography has become deeply intertwined with various spheres of contemporary art, extending its influence into realms such as painting, cinema, installation, sculpture, and performance, thereby defying rigid disciplinary boundaries.

The latest tendency in sculpture is particularly noteworthy. Three-dimensional scanning and printing, widely regarded as technological advancements, not only create sculptures but are also frequently used to convert art into digital 3D objects. Although digital modeling risks losing the unique material qualities of the original work and its authenticity through endless manipulation and transformation using scientific and material-technical knowledge, the process offers high accuracy and precision. As a result, creating 3D objects of any work and mass customization is becoming increasingly common. Consequently, the examination of where such hybridized forms of photography reside assumes heightened significance.

Much like sculpture has endeavored to free itself from the traditional limitations of the pedestal, three-dimensional photographic works expand the boundaries

[1] Rosalind Krauss, "Sculpture in the Expanded Field," *October* 8 (1979): 34.

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of formal artistic expression. These works break away from the conventional presentation format of art photography, which primarily featured wall-mounted displays in galleries and museums. This paradigm shift is illustrated by numerous exhibitions, including the 20 "Fixed Variable" showcase at New York's Hauser & Wirth gallery, the 2015 "Picture/Thing" exhibition at the Ezra and Cecile Zilkha Gallery in Connecticut, and the 2022 "Temporary Landing" exhibition at an alternative art space in Seoul, which explored the interplay between the two-dimensional and three-dimensional aspects of photographic media.

Within these exhibitions, photographic works are presented not merely as framed prints but as three-dimensional entities. Examples include photographs contoured, stacked, or folded into three-dimensional forms, or printed onto unconventional substrates and framed in atypical configurations, thereby imbuing photographs with tangible volumetric qualities. Additionally, these works often eschew conventional framing, instead leaning against walls or freely occupying space as objects. This experimental approach by artists continually pushes the boundaries of the medium, prompting critical inquiry into the essence and potential of photography.

My interest in three-dimensional photographic works was ignited during my participation in a photography class at the École des Beaux-Arts in Paris in 2011. This class notably emphasized the historical context and artistic research activities of photography since the 1960s, integrating diverse materials and non-traditional techniques. This emphasis facilitated my transition from a primarily visual to a materially grounded approach to the medium, sparking a burgeoning interest in experimental inquiry. I actively pursued and explored this interest in a recent work titled *The Oscillating Wall* (Figure 1).

While the amalgamation of photography with other artistic media may appear novel superficially, a retrospective examination reveals its deep-rooted conceptual antecedents. The trend observed in the 1970 "Photography into Sculpture" exhibition at New York's Museum of Modern Art evidences photography's incursion into the realm of fine art, with numerous artists beginning to create hybridized forms using photography. This period's legacy, notably the distinction between the 'taking' and 'making' of photographs, necessitated a departure from traditional high-quality black-and-white prints in favor of photographic objects emphasizing conceptual ideas. Consequently, the contemporary endeavors of artists exploring the three-dimensional possibilities of photography represent a reevaluation and redefinition of the medium's physical and material attributes.

In this work, eight thin plywood panels, each measuring 120 cm in length and 60 cm in height, were assembled at the center of the space (Figures 2 & 3). The surfaces of these panels exhibit a partially reddish-brown hue, characterized by grooves and scratches that contribute to a rough tactile texture. Each panel is UV-printed with a photograph of red bricks. Hinges and brackets are utilized to interconnect the panels, thereby integrating imagery with the material. Through the processes of joining and folding, these components collectively form distinct angles. Although the

photographs themselves remain flat, they expand organically through the structure and installation.

This work prompts an inquiry into the nature of the visual artifact. It resists easy categorization such as photography, sculpture, or collage, instead occupying an intermediate space between these forms. The photographic works explored in this essay navigate the boundaries between photography and sculpture, continuously oscillating between the planar qualities of photography and the spatial dimensions of sculpture. As a result, they challenge the dichotomy between two-dimensional and three-dimensional modes of representation. This practice involves integrating elements from multiple artistic disciplines, creating hybrid photographic works that transcend conventional conceptions of the photographic medium.

The spatial representation in this work is achieved by transforming a two-dimensional photographic image into a three-dimensional object. This is accomplished through techniques such as folding, mounting, printing, and framing, which imbue the photograph with tangible spatial characteristics. Works like *The Oscillating Wall* exemplify this phenomenon, combining photography, sculpture, installation, collage, and assemblage.

This approach emphasizes the importance of materiality in generating images that actively engage the viewer. Rather than serving as passive or purely aesthetic objects, these works invite reciprocal experiences. In this particular work, I also reflect on the temporal distance between the moment a photograph is taken and the time it is re-experienced. By engaging with the photograph physically, this creative work explores how such temporal gaps influence the interpretation of the image, including the place and time it evokes. This highlights the tension between the depicted place and the imagined one.

The goal of this paper is not to define a fixed explanation of expanded materiality but to open a dialogue on how spatial and temporal disjunctions can be explored in creative practice. These disjunctions manifest visually and psychologically in the experience of a work. *The Oscillating Wall* serves as an example of how fragments from the past can be recorded, mediated, and re-experienced, with materiality playing a central role in the construction of meaning.

Here, the photograph functions both as an object and image, occupying the social world as a cultural experience. Photographs, in this context, stimulate interactions that are sensuous (through their physicality), subjective (in how viewers interpret them), and spatial (creating dynamic experiences in a gallery setting). The relationship between substrate and scale, the positioning within the gallery, and the interplay of light in my work are all used to evoke associations with time, place, and memory.

The historical connection between photography and sculpture dates back to the inception of photography itself. Indeed, the interplay between these two artistic practices has been established since photography's early days. In its nascent stages,

sculptures and statues served as ideal subjects for the early camera technology due to their stationary nature, accommodating the prolonged exposure times required.[2] While the act of framing sculptures initially served a documentary purpose, the reproduction of these objects through photography also afforded the ability to dictate and regulate the viewer's formal and aesthetic interpretations of the sculptures.[3]

Although sculpture and photography are distinct terms and categories, the delineation between the two can become indistinct when photographs serve as creative substitutes for their original sculptural counterparts. This convergence underscores the intricate relationship between photography and sculpture, blurring the boundaries between image and object. Moreover, this relationship is further accentuated as photographs themselves evolve towards sculptural objects, thereby amplifying the dynamic interplay between the two artistic disciplines. *The Oscillating Wall* embodies a perspective on the materiality and three-dimensionality of photography that epitomizes an experimental approach towards the utilization of diverse materials and techniques. This results in the creation of intricate spatial photographic compositions, which I categorize as "Photosculpture".[4]

Acknowledging the interdisciplinary relationships in the study of the medium is imperative. While the connections between photography and painting or cinema have received ample scholarly attention, the intersection of sculpture and photography, particularly in the realm of three-dimensional photographic works, remains relatively underexplored. The principal aim of this essay is to address the noted deficiency and augment current discussions concerning photography as an expanded artistic practice. As a result, an ancillary objective is to elucidate and cultivate a comprehensive understanding of photosculpture.

The inherent duality between image and object is distinctly apparent in the photo-sculpture central to this essay. The artwork encapsulates both the visual imagery they depict and their physical manifestation as three-dimensional objects within space, thereby constituting fundamental components of their material existence. As will be contended, these dual facets contribute to the content of the artwork. By traversing the boundaries between visual and spatial qualities, the artwork emphasizes the significance of investigating both elements rather than privileging one over the other.

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[2] See, MoMA, "The Original Copy: Photography of Sculpture, 1939 to Today," August 1 – November 1, 2010, accessed April 6, 2025, http://www.moma.org/visit/calendar/exhibitions/970.

[3] Geraldine A. Johnson, *Sculpture and Photography: Envisioning the Third Dimension* (Cambridge University Press, 1998), 1–19.

[4] For a discussion on the definition, see, Robert Sobieszek, "Sculpture as the Sum of Its Profiles: François Willéme and Photosculpture in France 1859–1868", *The Art Bulletin* 62, no. 4 (December 1980): 617.

Figure 1. Sunyoung Park, *The Oscillating Wall*, 2023; 100cm x 240cm x 62cm, UV print on eight sheets of plywood, metallic materials, screw nails, installation view, http://www.sunyoung-park.com/The Oscillating Wall 2023.html.

Figure 2. Sunyoung Park, *The Oscillating Wall*, 2023; 100cm x 240cm x 62cm, UV print on eight sheets of plywood, metallic materials, screw nails, http://www.sunyoung-park.com/The Oscillating Wall 2023.html.

Figure 3. Sunyoung Park, The Oscillating Wall, 2023; 100cm x 240cm x 62cm, UV print on eight sheets of plywood, metallic materials, screw nails, http://www.sunyoung-park.com/The Oscillating Wall 2023.html

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BOOK REVIEW

ART+MEDIA

Dunja Mićunović

Unpacking the Factors that Shape Trust in the Social System – Jasna Milošević Đorđević, Milica Vdović, *Psychology of (Dis)trust in the Social System*, FMK, 2024.

https://doi.org/10.25038/am.v0i28.617

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Unpacking the Factors that Shape Trust in the Social System – Jasna Milošević Đorđević, Milica Vdović, *Psychology of (Dis)trust in the Social System,* FMK, 2024.

In what ways are some individual factors connected to social (dis)trust? The book *Psychology of (Dis)trust in the Social System* by Jasna Milošević Đorđević and Milica Vdović, published by the Faculty of Media and Communications in Belgrade, Serbia, provides insight into the predictors and role of (dis)trust in the social system. The analysis is based on findings from fourteen nationally representative empirical studies conducted over the course of seven years (2016–2022), while also emphasizing the limitations of the research. The analysis is enriched with examples of both good and bad practices implemented in the system, as well as data visual representations.

The degree of (dis)trust in 15 to 17 institutions and organizations was most often examined. Overall, the degree of trust in the social system in Serbia remained at an average (medium) level throughout the examined period. Serbian citizens have the most trust in the Serbian Army, the Serbian Orthodox Church, the Serbian Academy of Arts and Sciences, the education system, and healthcare, while they have the least trust in trade unions, the media, and political parties, followed by government agencies and the National Assembly of the Republic of Serbia. Interestingly, the degree of trust in the social system was higher during the coronavirus pandemic than in the period preceding it.

The results show that most of the examined sociodemographic variables were not significant correlates of trust, except for: *education* (the more educated individuals have less trust in the social system), *financial situation* (less wealthy individuals have less trust in the social system), and *age* (younger individuals have less trust in the social system). The data also revealed that *ideologies* and *social identities* have a positive relationship with and significance for predicting trust in the social system – those with stronger social identities, and those with a penchant for right-wing political ideologies and traditional values, have greater trust in the social system. The association and predictive power of the *beliefs* and *attitudes* are significant, but the directions of their predictions differ: a negative correlation and prediction (higher scores on these variables are linked to lower trust in the social system) exist with most of the examined beliefs and attitudes: political cynicism, perception of political anomie, conspiratorial mentality, belief in conspiracy theories, and perception of high corruption. However,

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a greater *perception of a just world* and *social justice* leads to greater trust in the social system. *Abilities* (scientific knowledge, media literacy) did not have significant associative or predictive power when it came to (dis)trust in the social system. Finally, the last measured group of indicators (from the category of psychological mechanisms of system justification) showed that *the tendency to confirm the system*, *conflict ethos*, and *orientation toward social dominance* all have a positive association with and positively predict trust in the social system.

Of all the measured behaviors, *electoral participation* is the most strongly and consistently associated with trust in the social system. Electoral participation is higher among people with confidence in the system, while abstainers have no confidence in the social system. During the pandemic, the association between (dis)trust in the social system and compliance with recommended health behaviors to prevent the spread of the coronavirus, including vaccination, was empirically confirmed. However, trust in the social system has less strong, positive connection – it encourages pro-environmental behaviors, while simultaneously increasing social distance.

Authors also stress the importance of various social factors that contribute to the development of institutions – such as *social inequalities*, *the type of political organization of the state* (democratic vs. authoritarian societies), and *the presence of corruption*. Since these factors play a crucial role in shaping (dis)trust, there is significant room for Serbia to improve in order to become a stable, modern, socially responsible country with minimal unresolved corruption issues. The authors transparently acknowledge some of the limitations of their studies: restricted number of psychological and sociodemographic variables; lack of measures for *interpersonal trust toward those closest to an individual*, *the effectiveness of the institutions*, *political party affiliation or membership*. The instruments they used were based on self-statements and self-assessments, and the method was correlational, which limits their ability to draw conclusions about the presence and impact of (dis)trust on the behavior of Serbian citizens.

The beginning of the book is marked by the main findings of the study, followed by an overview of the political and broader social context during the years of analysis in both Serbia and the world. After the first chapter, the theoretical framework is presented, where the authors explore the definition of trust from various theoretical perspectives. The authors also describe individual characteristics of (dis) trust, followed by an exploration of different forms of socially responsible behavior. In the methodological section, the data collection method is detailed, along with an overview of the instruments and statistical indicators used. The analysis and interpretation follow the methodological part, first showing descriptive indicators of general (dis)trust in the system, followed by individual indicators, and then the distribution of psychological predictors of (dis)trust, as well as past, current, and future behaviors. This is followed by correlation and regression analyses (model testing), which first present the sociodemographic correlates of (dis)trust, and then the psychological correlates. The predictors are analyzed in the same order. In the final section of the

results, correlation analysis is used to examine the relationship between (dis)trust and significant past, current, and future social behaviors. The final considerations offer a multidisciplinary interpretation of the analyzed data within the specific time and social context of Serbia. The authors briefly summarize the most significant findings, the importance of the research goal, study limitations, and recommendations for future empirical research, along with potential social strategies for increasing trust in the social system. The book closes with appendices, which include all the instruments used in the research, as well as a list of graphs and tables.

The systematic, theoretical, and empirical analysis of trust in the social system in Serbia over a long period of time makes this study relevant to both the academic community and the broader social public.

BIOGRAPHIES

ART+MEDIA

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Predrag Krstić

Jacques Laroche

Dunja Mićunović

Ilija Milosavljević

Nikola Mlađenović

Hans-Georg Moeller

Jelena Novaković

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Slobodan Penezić

Jelena Sladojević Matić

Bojan Blagojević, (Niš, 1980). Assistant professor at the Department of Philosophy, Faculty of Philosophy, University of Niš. Main fields of interest: Ethics, Existential Philosophy, Metaphilosophy.

Published articles include: "Kapitalistički realizam i depresivna ontologija" (https://doi.org/10.46630/gsoc.29.2022); "We have no Future: Teaching Philosophy to Narratosceptic Students" (https://doi.org/10.46630/gped.2.2020.06); "MacIntyre's Critique of Kierkegaard Revisited" (https://doi.org/10.22190/FUPSPH2001017B); "Aestheticism and Decontextualization" (https://doi.org/10.46630/jkk.2020); "Marx on the Need for Art: Art between Political Economy and Self-Determination" (https://doi.org/10.31664/zu.2019.104.06); "Crisis, Identity and the End of Modernity: When Critical Theory Met Existentialism" (https://doi.org/10.25038/am.v0i16.250), etc.

Maryam Hassan, Cairo, an Associate Professor at the Faculty of Applied Arts, 6th October University. She earned her Ph.D. in Applied Arts (Cinema) from Helwan University, with the dissertation "The Role of Modern Technologies in the Quality of 3D Cinematic Image Production to Develop Cinematic Language" (2011–2015). She also holds a master's degree in (Photography and Cinema) and a Graduate Diploma in Art Therapy. She focuses on the history of images, their role in visual culture and identity, and their social and psychological impact. She has held several solo exhibitions in Egypt and Europe. She has received numerous awards in photography and participated in international exhibitions, including the Sarajevo International Festival, the Revolution Festival in Tunisia, and the Mediterranean Youth Biennale. She also won prizes in various art salons such as the Nile Salon and the Youth Salon and was awarded a grant from the Cultural Resource Foundation in Brussels.

Uroš Krčadinac (b. 1984) is a digital artist, software engineer, author and educator. His transdisciplinary practice includes programming, writing, animation and mapmaking. He holds a PhD in Informatics from the University in Belgrade. Krčadinac published his research papers in the M21 IEEE journals, while he exhibited his artworks at solo and group exhibitions, festivals and conferences in Serbia and abroad. As an educator and public lecturer, he designed and held 100+ public lectures, forums and workshops. He is a co-author of one infographic travel novel. He currently works as an Associate Professor of Digital Art at the Department of Digital Art, Faculty of Media and Communications in Belgrade. He also works as a research associate at the AI Lab, FON, University of Belgrade, and as a visiting professor at the Department of New Media Art at the Academy of Arts in Novi Sad. Email: uros@krcadinac.com. Web: krcadinac.com

Predrag Krstić (1964) is the research associate at the Institute for Philosophy and Social Theory, University of Belgrade, and PhD Professor at the Faculty of Media and Communications, Singidunum University, Belgrade. He graduated from the Faculty of Philosophy, University of Belgrade, where he also obtained his PhD in

Philosophy. He had been employed as a professor of philosophy in secondary schools for thirteen years. Fields of his proficiency include critical theory, modern theory of the subject, philosophical anthropology, philosophy of Enlightenment and philosophy of education. Fields of his current professional interest includes contemporary philosophical, social, anthropological and educational theory, aesthetics, literary criticism, radical textual practices and popular culture studies. In addition to seventeen books and numerous articles, monographic studies and editorial contributions in academic publications, he is also the author of one novel and two books of poetry.

Jacques Laroche (b. 1980) is a political activist, technologist, writer and educator who holds a Bachelors in Computer Science and a Minor in English. In New York, NY he was involved in the Occupy movement and worked with the activist collective Strike Debt to struggle against, educate about and abolish unjust debts. Later, in Miami, FL he worked with various local organizations, grass-roots initiatives and activists at the onset of the Black Lives Matter movement. In addition to activism, Jacques uses his technological and philosophical training to explore the intersection of science, politics and society. He has written on, been interviewed about and discussed these topics in various forums and publications around the world.

Dunja Mićunović is a third-year undergraduate psychology student at the Faculty of Media and Communications, Singidunum University. She is passionate about writing, whether it's a research paper, journal article, or a poem. Since high school, Dunja has written research papers on various psychology topics, from alcoholism in adolescents, to people's perception of AI. Right now, she is a member and a student researcher at the Psychology Research Lab of the Faculty of Media and Communications. Simultaneously, Dunja is doing internships in different areas of psychology, and she is undergoing several courses and training in order to broaden her horizons. She hopes to continue her master studies in forensic psychology, as well as to become a constructivist psychotherapist. In her free time, she loves to volunteer at the Center for Positive Youth Development (CEPORA), read mystery novels, or spend time with her loved ones.

Ilija Milosavljević was born on May 8, 1992, in Ćuprija, Serbia. He earned his PhD in Communicology at the Faculty of Philosophy, University of Niš, in 2024, where he also obtained a Master's degree in Communication Studies and a Bachelor's degree in Journalism. Since 2019, he has been employed as a research assistant, and in 2022, he was promoted to the position of research associate at the same faculty. He is the author of around twenty papers in the fields of media literacy, digital media audiences, and new media. In addition, he works as a contributing journalist for the local television station RTV Kanal M in Paraćin.

Nikola Mlađenović holds a PhD in Cultural and Media Studies awarded by the Faculty of Political Sciences at the University of Belgrade (Serbia). Currently, he is an Assistant Professor at the Faculty of Sport, Union – Nikola Tesla University (Belgrade), and a guest lecturer at the UDG Montenegro (ASU Cintana Alliance network). His work is focused on the examination of the relationship between social theory and cybernetics, on the one hand, and media culture, on the other hand. He is concerned with political significance and social engagement within media system and popular culture. His last contribution examines the Russia–United States culture war within Serbian media system in a paper titled "Russian roulette: Serbian pop culture and global soft-power conflict" (Northern Lights: Film & Media Studies Yearbook). Currently, he is working on the influence of cybernetics in James Cameron's science fiction films (upcoming book edited by Mark Fryers and Marcus Harmes).

Hans-Georg Moeller is a Professor at the Department of Philosophy and Religious Studies at the University of Macau. He authored numerous books including *You and Your Profile: Identity after Authenticity*, *Genuine Pretending: On the Philosophy of the Zhuangzi* (both with Paul D'Ambrosio), *The Moral Fool: A Case for Amorality,* and *The Radical Luhmann* (all with Columbia University Press). He is content creator of the YouTube philosophy channels *Carefree Wandering* and *Philosophy in Motion*.

Jelena Novaković was born in 1985 in Belgrade. She graduated from the Faculty of Applied Arts in Belgrade and completed an international MA at the University of Arts in Belgrade and University of Lyon 2, within the UNESCO Chair for Cultural Policy and Management. She has worked across the fields of visual arts, cultural mediation, and design. Jelena is a research associate at the Institute for Philosophy and Social Theory at the University of Belgrade where she is a member of the Digital Society. Her research interests include digital art and new media and the influence of emerging technologies on contemporary art. Currently, she is pursuing doctoral studies in Digital Arts at the University of Arts in Belgrade.

Sunyoung Park, a visual artist and lecturer at SungShin Women's University in Seoul, began her artistic journey with sculpture, studying at SangMyung University in Seoul and later at Kunstakademie Düsseldorf in Germany. However, it was during her exchange program at the École nationale supérieure des beaux-arts de Paris in 2011 that she developed a keen interest in photography. Fascinated by the interplay between two-dimensional and three-dimensional forms within the realm of photography, Park pursues doctoral studies, dedicating her research to exploring this intersection.

Slobodan Penezić holds a PhD in Cultural and Media Studies awarded by the Faculty of Political Sciences at the University of Belgrade (Serbia). Currently, he is a Research Associate at Institute of Social Sciences (Belgrade) and Associate Professor at the Faculty of Sport, Union – Nikola Tesla University (Belgrade), where he is also

a Head of the Department of Journalism. His work is mainly focused on the studies of Journalism, Media Philosophy and Business, Social History of Sport and Mediatization of Sport, and Public Relations. He is a recipient of a special award from the Association of Journalists of Serbia for contributions to the history of print and journalism, theoretical works on journalism, and published works, and the award of the U.S. Department of State and Voice of America for winners of a competition for the best young media professionals from Southeast Europe.

Jelena Sladojević Matić, born in 1971, Jungian analyst and psychotherapist, psychologist, associate professor at the Faculty of Media and Communications. Lecturer in master's studies in the field of psychotherapy and human resources, as well as at the Department of psychology – undergraduate studies, on subjects: Basics of psychotherapy and counseling, Psychotherapeutic process and relations in psychotherapy, Introduction to analytical (Jungian) psychotherapy, HR consulting and organizational counseling; Organizational coaching; Mental hygiene in work organizations. She completed her undergraduate, master's and doctoral studies at the Faculty of Philosophy, University of Belgrade. Master's degree in 2003 on the topic "Cognitive and Emotional Components of Addiction". PhD obtained in 2011, topic "The Concept of the Shadow and its Significance in Analytical Therapeutic and Diagnostic Work". Individual member and supervisor of the World Association for Analytical Psychology – International Association for Analytical – Jungian Psychology. She has been working as a psychotherapist and supervisor in private practice since 2001.

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Bloch, *The Spirit of Utopia*, 23.

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Max Horkheimer and Teodor W. Adorno, *Dialectic of Enlightenment. Philosophical Fragments* (Stanford University Press, 2002), 15.

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Gueorgi Kossinets and Duncan J. Watts, "Origins of Homophily in an Evolving Social Network," *American Journal of Sociology* 115 (2009): 411, https://doi.org/10.1086/599247.

Kossinets and Watts, "Origins of Homophily," 439.

Thesis and dissertation:

Mihwa Choi, "Contesting *Imaginaires* in Death Rituals during the Northern Song Dynasty" (Ph.D. diss., University of Chicago, 2008).

Choi, "Contesting *Imaginaires*."

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Italic is used in 1) work title (books, compositions, paintings, sculptures, etchings, installations, photography); when citing translated and original work title in brackets: “The Hand of Fate” (*Die Glückliche Hand*); 2) emphasizing specific word, concept, syntagm, or sentence: *heterotopy*; 3) using words from foreign language; 4) using figures of speech and stylistic devices: *silence* of consciousness. For *releasing* a concept from essentialism or tradition please use single opening and closing quotation marks: ‘being in the world’.

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