https://doi.org/10.48417/technolang.2025.01.13
Research article

Philosophy of Technology from a Cyberfeminist Perspective

Alla Mitrofanova (✉)
Cyberfeminist International, independent researcher
twinsmi@mail.ru

Abstract

Along with the transformations of technology itself, the philosophy of technology is continuously redefined epistemologically and ontologically. The prospects of further development, conceptual vectors, anthropological effects are always difficult to grasp. Among the now dominant mainstream approaches to the field there is a theory of technology of corporate utopianism, and there is a critical theory of technics with a dystopian ending. There is a large body of leftist critical studies on the corporate capture of technological opportunity and missed alternative possibilities. The goal of this paper is to show that the philosophy of technology exhibits not only historical, economic, ideological differences, but also under-explicated gender differences. A gendered approach will be offered for consideration which is based on a corpus of feminist philosophy, epistemology, and critique of science and technology, along with feminist critiques of the cultural canon. Feminist theory consistently problematizes invisible gendered frames of representations of reality. It allows us to notice the gender bias not only in the obvious, perhaps superficial facts of role inequality, but also in the formulation of scientific tasks and the organization of practices. The gender bias reaches deeply into the metaphysical attitudes and epistemological frameworks that determine the rational and irrational, the significant and the excluded. This is revealed by the questions: Whose science is this? Whose knowledge? What/whose experience matters? How are the meaning and purpose of the search defined? What rationality do they implement? The intersection of feminism and technology was a core concept of early cyberfeminism in the 90s and continues to be developed by contemporary researchers, writers, and data analysts. From feminist theory developed a specific critical and heuristic method that has a general significance much deeper than the gender-relations as we know them in everyday life.

Keywords: Feminist epistemology; Cyberfeminism; Xenofeminism; Gender and metaphysics; Cognitive assemblage; Algorithms and social practices; Feminization of machines

Citation: Mitrofanova, A. (2025). Philosophy of Technology from a Cyberfeminist Perspective. *Technology and Language*, *6*(1), 187-204. https://doi.org/10.48417/technolang.2025.01.13

УДК 14
https://doi.org/10.48417/technolang.2025.01.13
Научная статья

Философия техники с точки зрения киберфеминизма

Алла Митрофанова (✉)
Независимая исследовательница
twinsmi@mail.ru

Аннотация

Философия техники вместе с очередной трансформацией техники продолжает переопределяться эпистемологически и онтологически, по-прежнему трудно схватываемы ее дальнейшие перспективы развития, концептуальный вектор, антропологические эффекты. В этом поле есть несколько доминирующих массово используемых подходов, есть теория технологии корпоративного утопизма, есть критическая теория техники с мрачным финалом. Есть большой объем левых критических исследований о корпоративном захвате технологических сред и упущенных альтернативных возможностях. Моя задача показать, что философия техники имеет не только исторические, экономические, идеологические различия, но и недостаточно эксплицированные гендерные различия подходов. Гендерный подход базируется на корпусе феминистской эпистемологии и критики науки, на феминистской критике культурного канона. Феминистская теория сделала большой вклад в эпистемологию и культурный анализ, последовательно проблематизируя гендерные фреймы представлений о реальности и норме. Она позволяет заметить гендерный разрыв не только в фактах ролевого неравенства, но и в постановке научных задач и организации практик. Гендерный разрыв уходит на глубину метафизических установок и эпистемологических рамок, определяющих рациональное и иррациональное, значимое и исключаемое, что обнаруживаются вопросами: Чья это наука? Какой/Чей опыт имеет значение? Как поставлены смысл и цель поиска? Пересечение феминизма и технологий было основным концептом раннего киберфеминизма 90-х и продолжает разрабатываться современными исследовательницами, писательницами, дата-аналитиками. Из феминистского движения и теории вытекает особый критический и эвристический метод, имеющий общее значение, выходящее за рамки гендерных отношений, какими мы их знаем в повседневной жизни.

Ключевые слова: Феминистская эпистемология; Киберфеминизм; Ксенофеминизм; Гендер и метафизика; Когнитивный ассамбляж; Алгоритмы и социальные практики; Феминизация машин

Для цитирования: Mitrofanova, A. Philosophy of Technology from a Cyberfeminist Perspective // Technology and Language. 2025. № 6(1). 187-204. https://doi.org/10.48417/technolang.2025.01.13

INTRODUCTION

As technology itself is subject to constant change, the philosophy of technology becomes continuously redefined epistemologically and ontologically. It is therefore always difficult to determine the prospects of further development, conceptual vectors, and anthropological effects. In this field, there are currently several dominant, widely used approaches. There is, for example, the theory of corporate utopian technology which promises to create a “magic forest” of embodied desires based on machine learning.There is also a critical theory of technology with a gloomy ending and the Oedipal fear of an autonomous supermind (Bostrom, 2016). And then, ranging from Gert Lovink (2013/2019) to Nick Srnicek (2016), there is a large catalog of left-wing critical research on how corporations and platforms are capturing technological possibilities and whether something can be done about it. My task is to show that the philosophy of technology in the modern incarnation of cybernetics exhibits not only historical, cultural, ideological differences (Hui, 2024), but also insufficiently explicated gender differences. I intend to illustrate the difficulty of constructing further theoretical alternatives which cannot emerge from positions of apology or criticism, but which require fundamentally different approaches that involve a change of epistemological and even metaphysical assumptions. Questions are posed about how the conditions of access in thinking are arranged, what is meant by objectivity, what events are accepted as correlates of reality? Feminist philosophy since the 1970s has been reconsidering basic methodological assumptions: Who speaks, how are the basic epistemological distinctions structured, the distinctions of material and ideal, nature and culture, mind and body, and their derivative subject-object hierarchies? What work is done by the concepts of autonomy, of human vs. animal and human vs. machine, by life/mind distinctions, by subjective individuality in contrast to entangled becoming in an environment? In the 21st century these questions have clearly moved to the foreground again in the philosophical movement of New Materialism, which in many ways continues the tradition of feminist epistemology. These approaches partly overlap with deconstruction, non-classical epistemology, the sociology of (scientific) knowledge and the new anthropology, but they have a more irritating politicized effect and in some way a more consistent theoretical basis.

As feminist theory has shown, the analysis of gender difference yields insight, surprisingly, in most areas of our knowledge and experience. But the theory is not so much about women as it is about reconsidering the norms and conventions of culture. The representation of gender and sex, social role and biological determination, is historically painful for women, but it turns out to be a productive framework for deconstructing conventional differences, including those between humans and machines, the normative and the marginal. If we focus on the meta-philosophical framework, feminist philosophy proves most radical in shifting the metaphysics of Truth from an externally imposed instance of order and power to an ontology of multi-vector formation or self-organizing existence. In the ironic language of Donna Haraway, which still sets the conceptual horizon for the field of research, knowledge has become situated, individuals have become symbionts, bodies and machines have become interpenetrating assemblages, anthropology has become posthuman. The classically conceived relation of the material and the ideal has turned into the relation between material-discursive and gender

implicated. There is a diverse feminist theory of technology that has spoken from a feminist position about the paradigmatic transition of industrial to cybernetic technology and the need to create multi- agent non-linear connections (Haraway, 1988). This was further developed by cyberfeminism, xenofeminism, and data feminism, which I will try to survey in this text as several related discourses with closely related foundations. which distinguish them from both corporate theories and critical ones. They are simultanously grounded in feminist ideas as well as contemporary technological realities. This intersection of feminism and technology was the main concept of early cyberfeminism of the 1990s and continues to be developed by contemporary philosophers, artists and writers. This connection over time becomes increasingly relevant for the conceptualization of both technology and feminism.

I will conditionally divide feminist approaches into epistemological and post-Marxist ones, where the first is concerned with how the theory of knowledge filters and controls cultural norms, and the second considers which social practices become normative and which are excluded during the constitution/programming of a model of reality. If we accept that technology, like reality, is a multi-vector becoming, this becoming consequently depends on the interpretation of scientific discoveries, and on conceptual and ethical perspectives that are created in ongoing polemics, including current debates.

FEMINIST EPISTEMOLOGY

Peano Curve

In the history of Soviet programming there is a unique figure, that of the mathematician and writer Elena Wentzel (1907-2002). She was a student of the Mathematics Department of Petrograd University in the 1920s, when a new mathematics was formed based on set theory.

> Only a few years had passed since the Revolution. The University is one of the brightest memories of my life. Everything was wonderful – the reality surrounding us, the new social system, NEP (New Economic Policy 1921-1928), which was only just breaking through the darkness of war communism. Our complete liberation, our freedom [...] And we were happy, although hungry and undressed (Wentzel & Epstein, 2007, p. 22).

In the post-war period, she wrote textbooks on probability theory and operation theory which are still used by students today and that were translated into English. Her textbooks are a contribution to the formation of programming theory. But she also had a second life as a writer under the pseudonym I. Grekova (her nickname means "Y" – the Greek letter "Upsilon"). Wentzel led a double life as a recognized Soviet scientist and writer, whose main works could not be published. She saw different forms of vulnerability and variability of reality. Wenzel thinks of programming as a description of unstable realities in constant development, forming ever new subsets from the collision of events and interests.

She is not satisfied with the applied use of science outside its humanitarian and ontological applications. In literature, reduction is impossible even in socialist realism with its typology of plot. Literary texts can pose problems of political, psychological, social types. Her novels are created as series of situations, circumstances, and choices, where heroes and algorithms of their behavior are formed under conditions of complexity of situations, then an event of strengthening of one of the parameters occurs and the transition to another situation where the behavior of heroes and political context change. In the large novel “Fresh testament” (*Svezho predaniye*, working title “Peano curve”) she shows how situational frameworks and structuring algorithms are derived from the flow of confused events of the continuum, how another reality is forced (Grekova, 1995). Algorithms are not universal, they can be extracted from other social, labor, behavioral and gender practices, axiomatic frameworks are radically re-established under the influence of a new event. The novel’s hero is a child in a family of Jewish revolutionaries in the promising post-revolutionary 1920s, is a student in the turbulent and repressive 1930s, is a young programmer at the time of the fight against cybernetics, and thus lives several lives in each or these times with a new frame of reality. She often turns to women's stories and women's survival strategies, which elude the canonical ideological narrative of representation, since they change ideological framework and stylistic canons. Mathematically, I. Grekova solves the problem of the continuum hypothesis and the problem of choice, which she understands not purely mathematically, but ontologically. I. Grekova transfers mathematical logic to the material of existential, political circumstances, demonstrating a new way of understanding the dynamic complexity of reality of the first half and middle of the twentieth century. Although there was no formally represented feminism in the USSR, there was relative gender equality, which allowed an implicit implementation of critical approaches to ideology, gender, and political differences, and this included the use of mathematical and programming logic. Let us conclude that for I. Grekova the logic of current mathematics allows one to describe the ontology of contemporary reality in a language that surpasses ideology.

Gendered Metaphysics

Feminist philosophy of the 1970s–80s, answering the question of why gender gap is imperceptibly and deeply embedded in cultural stereotypes and norms, comes to the study of epistemology and metaphysical foundations. The study of logic has been extended to the field of technological research. Feminist epistemology departs from the previously accepted distinction between the perspectives of engineering and the humanities, a distinction implicitly affirmed by Martin Heidegger, Carl Mitcham, and others. By adopting this division of perspectives – here the maker or designer, there the interpreter – they buy into metaphysical foundations that exclude the production of reality as an intricate interaction of materiality and conceptualization, exclusion and representation. In the feminist approach, there are no passive, malleable objects on the one hand, and „knowing subjects” on the other hand. The analysis of marginalized women's practices of life revealed that human practice, quite generally, is characterized by the complexity of the relations to the reality in which they are situated. These are partial relations that are constructed situationally, reinventing practices and meanings that

fill the gap between the previous binary opposition of the materially given and the ideally cognized truth. In other words, feminist theories re-launched the epistemological problem of the material and the ideal into a new political iteration of social/gender politics and an ontology of horizontality and equality. French philosophers Luce Irigaray (2005) and Monique Wittig (2002) showed that the cultural and epistemological canon is linked to the metaphysical foundations of philosophy, which implicitly contain hierarchies, some of them gendered: the active and the rational are valued more highly than the passive, the irrational, the natural. This metaphysical worldview inherited from the Moderns prescribes the binary requirements of high and low, power and subjects, male and female, culture and nature. The feminist critique of the metaphysical foundations of the world revealed the gendering of hierarchies and, accordingly, the selected gendering of practices that are established as a universal norm, with other practices and experiences becoming a "natural" background, hidden from representation.

Whose Knowledge?

American philosopher of science Sandra Harding proposed a standpoint theory for considering how the conceptual choice of a methodological approach should depend on social and life experience. In her book *Whose Science? Whose Knowledge?* she formulates a methodological injunction:

> we must think about the social location of our own research – the place in race, gender, and class relations from which it originates and from which it derives its empirical support – as part of the implicit or explicit evidence for both our best and our worst claims. (Harding, 1991, p. 12)

In 1985, Evelyn Fox Keller, professor of philosophy of science at MIT, showed in her book *Gender and Science* how deeply rooted gender structures are in supposedly neutral science (Keller, 1985). Gender bias had become part of the scientific method, of rationality, of the understanding of competence, turning reality in favor of one group against another, filtering data and imposing models. Gender epistemology has made significant contributions to the sociology of knowledge and criticism of the scientific method. According to many researchers, her book opened a new approach to the history of science and turned thinking in this direction.

> Keller's book opens up a whole new range of ideas for anyone who cares to think about the history of science, that is, the history of the modern world. . . Let us be glad to be in times when such a sparkling, innovative. . . book can be produced, a book to start all of us thinking in new directions. (Ian Hacking, *New Republic*, Yale University Press. (n. d.)).

This proved to be an important direction not so much for feminism, but for science itself. She questions the position of individuals as creators who unconsciously place themselves as the unconditional ground of knowledge. This position inherits the liberal tradition and introspective conception of the subject and selects a special type of researcher who seeks out isolated causal relations in the name of utility and control. Keller offers a revision of this methodological frame based on experiences that are usually

repressed. Keller proposes to reconsider this methodological framework and its false empirical and epistemological universalization, which is based on the experience of a small privileged group and generates cognitive repression, that inevitably makes mistakes and therefore inevitably makes mistakes. A group of women scientists and philosophers formed the field of feminist epistemology in the early 1980s (Garry & Pearsall, 1989).

Posthuman Becoming

Feminist movements of the next wave, which may have started with Donna Haraway's *Cyborg Manifesto*, shift the emphasis from criticism to modeling and inventing such practices and modes of writing that grasp variants of multiple reality, including the female gaze, and introducing meanings into what seemed non-existent or meaningless. This approach expands the modes of operational connectivity on micro and macro scales. In *A Cyborg Manifesto*, Donna Haraway spoke from a feminist perspective about the paradigmatic transition of industrial technology to cybernetic technology and the need to create multi-agent nonlinear connections, the logic of which she saw in the modern biological sciences and the novels of anthropologist and writer Ursula Le Guin as well as the African-American writer Octavia Butler (Haraway, 1988). In subsequent books, she introduces a number of concepts, reconceiving the opposition of nature and culture as a single natureculture, reinterpreting the cyborg and other forms of technosymbiosis as interspecies horizontal crossbreeding, and replacing reflection from an external position towards the object by diffraction as a material-semantic way of constituting reality from within reality itself.

Kathleen Hayles, in her book *How We Became Posthuman* (1999) and in her paper Technosymbiosis Figuring (Out) Our Relations to AI (Brown, 2023) develops new conceptual approaches to cybernetic reality, comparing the logics of programming and literary metaphors. She shows that for cybernetician Norbert Wiener the feedback loop embeds a human in direct interaction with the machine. In the works of the science fiction writer Philip K. Dick, who relied on the concept of autopoiesis, the android finds itself in a dependent position and painfully searches for identity. Dick‘s visions, according to Hayles, are bogged down in anthropocentrism as the difference between human and machine, human and animal, hence the assumption that the android certainly wants to become a person. The concept of technosymbiosis, on the contrary, rejects the privileging of the liberal individual with autonomy and free will. This approach extends the notion of thinking to the notion of behavior, endowing cognitiveness to any being included in interaction with the environment and other beings, just as it is understood by Jesper Hoffmeyer’s conception of biosymbiosis (Brown (Ed.) 2023, p. 9). But the computer also creates practices and meanings relevant to its own environment. What about the subjectivity of each environment? If bioorganisms, people, computers are related to their environments, then computers form their own environment, which cannot be equated with the anthropocentric state.

> I argue, by contrast, that the computer’s actions instead should be considered in relation to its interior and exterior milieux. […] suffice it to say that the computer constructs relations between its algorithms, memory, hardwired

> code, and logic gates that give its processes meaning relative to its functionalities. (Hayles, 2023, p. 14)

Hayles chooses the definition of cognitive assemblage including ecology as the agency of new materiality. She argues that recursive neural networks (RNN) no longer pose the question of AI autonomy, but pose many questions about how cognitive assemblage changes in the interaction of humans and machines, what will be considered important and what will go into invisibility. Her consistent analysis defines a horizontal contingent reality as it moves from cyborgs to human-computer technosymbiosis, arriving at ecological mutual participation with AI in the logic of recursion and variability. This is radically different from early control cybernetics, from second-order cybernetics, and from the technosymbiosis hypothesis. Hayles (2024) defines this situation as the third wave of cybernetics (p. 97).

> Let us return now to the question of what kind of feminist responses are possible […] Oppositional strategies are certainly possible, although if they are epistemologically oriented, they will be recognised as being of limited usefulness. Ontologically oriented oppositional strategies, by contrast, will be recognised as relatively more potent, because they realise that designing artificial cognitive systems is also a way of influencing and helping to form the capacities, regions of autonomy, and meanings of human systems as well. This realisation will encourage a generation of feminist activists, programmers, designers, and engineers to have even more incentive to engage with diverse areas of AI, because they will realise that the stakes are enormous: designing AI systems is simultaneously designing human systems. (Hayles, 2023, p. 14)

Lucy Suchman reconfigures the human-machine distinction and shows the ambiguity of the approach to the autonomy of both humans and machines. Autonomy depends on the epistemological procedure of cutting off network connectivity. A machine, demonstrated as autonomous, requires adjustments from humans, changing software and hardware, its cognitive processes are based on the linguistic differences that are present in human experience. Another example can illustrate the same epistemological cut in the understanding of the embryo as a patient, and the mother as a technical de-individualized environment. Both examples show the inseparable connection of woman and embryo, human and machine, while the epistemological cut introduces and politicizes different conceptions of autonomization. Suchman's introduction of an anthropological approach to the theory of technology brought her closer to a feminist approach, and she contributed to the creation of a methodology of (feminist) study of science and technology (Suchman, 2007).

Quantum Ontology?

Karen Barad, a physicist and feminist, explores a new ontology by turning to quantum physics as interpreted by Bohr. Bohr did not look for hidden parameters like Einstein, did not rely on ontological uncertainty like Heisenberg, he spoke about the principle of complementarity. The principle of complementarity in his understanding did not rely on the search for foundations, but introduced a technical approach to

measurability. According to Barad‘s reading of Bohr, reality is not given, it is constituted through the expression of agents and their inter-activity. Agents are what is perceptible by technical devices, caught in the field of meaning; they can be distinguished and linked by discourses. With other devices and concepts, there may be other realities. Ontological complementarity is understood as variability, which leads to the rejection of the previous metaphysics of binary external foundations of nature and reason. In the absence of stability of metaphysical foundations, an ethical question arises about the reality that is created, measured, endowed with meaning and materiality. Therefore, for Barad, ontology can only be ontoethics or onto-epistemo-ethics. Such an ontological approach turns out to be inseparable from responsibility since we find ourselves inside ourselves as actors of a constituted reality. The agency of actors, their intensity and statistical distribution determine the dynamics of change, political choice and gender difference as a reconfiguration of agencies. She offers a logical model that is not one of reflection as a detached modeling of the world, distinguishing the world as an external object. Following Haraway, her model is one of diffraction as an entanglement of material agency and symbolic and informational signification. Reality in this case turns out to be a material-discursive solution in the contingency of the process. Consequently, ontology is not about the eternal, it is a derivative of how we measure reality, how we test it, describe it and endow it with meaning. The formatting of reality occurs within certain frameworks of epistemological, social and political interpretations, but also material, physiological, hormonal, physical agencies. Hence the comprehensive definition of a material-discursive multi-agent contingent ontology. Accordingly, an increasing number not only of feminist researchers have been turning to Barad's philosophical approach. From this overview, it is clear that feminist epistemology and philosophy of technology have interdisciplinary connections. Their intersection provides a fruitful philosophical perspective, often more radical than traditional approaches.[1]

SOCIAL HISTORY OF ALGORITHMS AND PRACTICES OF FEMININE LABOR

Invisible Labor

Feminist theory rethinks social and cultural norms and puts forward its demands for social structure. Historically, with the change in the role of women, the old realities have changed: In 1917-1920, for example, the acquisition in Russia of electoral and educational rights made it necessary to institutionalize previously invisible women's labor which took place through the creation of centralized food preparation, factory-kitchens and kindergartens to medicine and education for everybody. Here occurred a revolution in value models as the metaphysics of truth were being replaced by the value of existence.

[1] Feminism as a historical movement acquired in the 1990s new forms of queer, intersectional theory, cyberfeminism and technofeminism. In 1997, cyberfeminists founded the Cyberfeminist International, which became an umbrella name for many groups of artists and researchers from St. Petersburg to Singapore with similar approaches and interests (Seu, 2023).

In Marxist theory, the history of algorithms is not associated with the cognition of divine reason, but with the rationalization of labor, models of control and management. Women's "domestic" labor – birth, care, education, maintaining the health of the "future workforce" – had been devalued as natural, elementary and therefore free labor of "naturally good" women, incapable of any other labor. The attendant ideology of female incapacity was a maneuver to create a hopeless situation of coercion to necessary multi-faceted labor and responsibility for survival in limited conditions and resources (Federici, 2004). Since the labor of creating and providing life, despite its demanding complexity and multifaceted nature, was not considered valuable, then lives themselves could not have value. This shows that sociocultural differences based on sexuality and gender play a fundamental role in shaping social norms, institutions and work practices. Even today, as we are looking to develop the cultural software for AI, we underestimate the complexities in the formation and diversity of human experience.

As Matteo Pasquinelli (2023) suggests, Babbage's machine, his theory of labor, and the discussions about machines in England during the 1820s to 1850s are the starting point for the new technology as we see a struggle for the conceptualization of machines. From the view of inventors, Babbage's machine marks intellectual progress; in the view of workers, as Marx put it, this is the theft of their skills and the division of labor into micro-operations, that is, the transfer of intellectual labor to elementary repetitive operations with a subsequent reduction in pay. But all these questions are posed within industrial production; they are understood separately not only from the social, but also from the cultural process. Can we talk about women's proposals in a dispute about machines?

Another theory of technology was outlined by Babbage's assistant Ada Lovelace, a talented researcher and mathematician, the daughter of Byron and Anne Isabella Milbanke (Lady Parallelogram). Ada came with her mother to see the new machine and stayed to help Babbage find errors in calculations. But soon she became interested in the analysis of operations, recording sequences of operations. She separates the machine operation from the result of the calculation, and thus sets a new area of research – the theory of operations. Engaged in calculations, as well as literary and musical compositions, she draws attention to the fact that these are also certain sequences. This means that creativity is not just intuitive discoveries, but a type of activity with its own rules. Rationality is not an external property possessed by scientific thinking, which should control passive natural everyday life, but a property of everyday practices, as well as creative processes, traditionally understood as irrational. Rationality is not the control of a passive substance, but a property of the organization of life processes. Ada discovers an innovation in Jacquard's looms with punched cards on which sequences of operations for creating complex patterns are recorded and writes a commentary on the translation of Jacquard's book, which turns out to be larger than the original text. The translation and commentary are published as a single pamphlet, but without Lovelace's name at Babbage's request.

In the cyberfeminist conceptualization of technology proposed by Sadie Plant, programming is a sequence of operations of creative life-making, life is a creative act understood not as a mystical force of nature, but as the unfolding of processes at different

levels. Therefore, Plant proposes the metaphor of weaving as the main metaphor for the conceptualization of technology as a technology of caring for life processes (Plant, 1997). Plant declares Ada Lovelace to be the first programmer to discover the theory of operations, conceptually connecting Babbage's calculating machine and Jacquard's weaving machine with punched cards to program the sequence of operations for creating an ornament. Accordingly, Ada Lovelace proposed in the first half of the 19th century a new conceptualization of technology as a symbiosis of technical operations and creative intelligence. Needless to say, this was more than 100 years before mathematician Marvin Minsky, information theorist Claude Shannon, and others got together in 1956 to formulate the task of creating AI. At the same time, Lovelace‘s understanding refers not to the early or “standard” rationally efficient model of AI, but one that assumes joint creativity from the premises of uncertainty and cooperation.

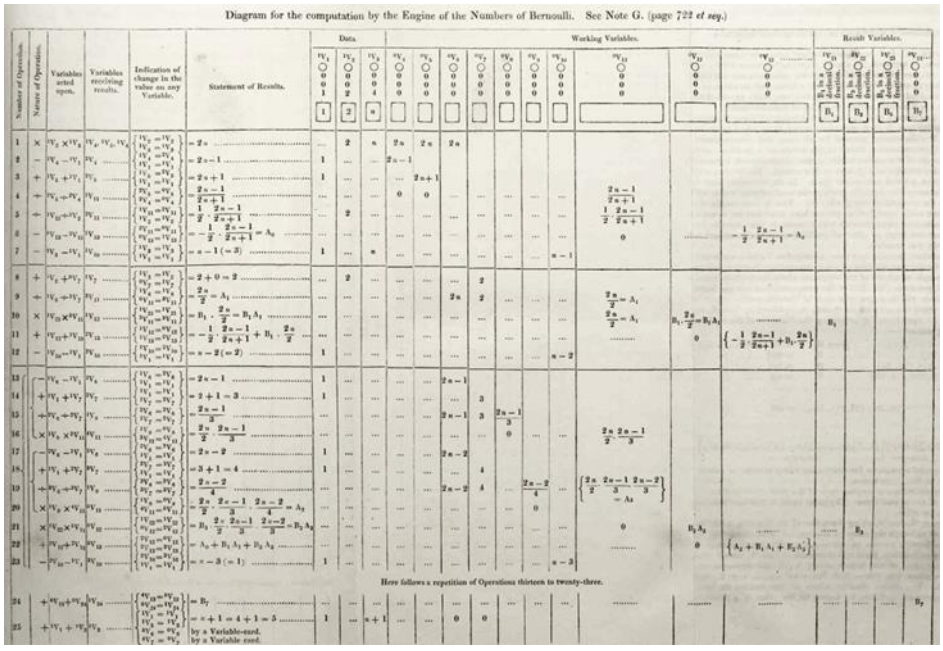

Figure 1. Ada Lovelace, *Note G* , The First Computer Algorithm, (http://www.sophiararebooks.com/pictures/3544a.jpg)

Weaving as Technology

Ancient texts are full of mythological interpretations of women's technologies and their influence on the unfolding of life processes. In these mythologies, powerful women do not appear as punishing witches, but goddesses of birth, formation, justice: Weaving our destinies, the Moirai are goddesses of the previous, more ancient rank despite the fact that Zeus tried to appoint them as his daughters. But though they were thus claimed for the late patrilineal pantheon, their former roles can still be restored. Clotho had a prehistory in the goddess called upon in childbirth, Lachesis in the choice of life's path, and Atropos in justice as a judgment on the life lived. Can the conceptualization of

technologies incorporate these dimensions of fateful weaving? Jozhi Stolet, curator and researcher from St. Petersburg, begins to answer the question:

> What is weaving as a technology and why can it serve as a metaphor or prototype for a whole range of modern intellectual technologies? In ancient Greek mythology, weaving the world, being, is the first ontological operation. It is carried out by the moirae Lachesis, Clotho, Atropos – the most ancient creatures. From this first operation: holding the yarn, measuring the length of the thread, cutting with scissors, distributing the threads – everything else is born. The image of weaving as the first operation of world-making is born from an intuitive understanding of similar abstract processes of weaving and the creation of reality. There is, first of all, the social reality of the common world which is the reality of how to live together, linking differences by the complexity of patterns and the designs of differences […] In the dialogues "Sophist" and "Politeia" Plato resorts to the metaphor of weaving as a possibility of political technology, a technology that could serve as a prototype for intellectual technologies that change reality […] The loom is an advanced machine since ancient Greece (but not only in the Western world, but also in China and India) – it is the first intelligent technology, an embodied abstract machine. It is based on the art of assembly (Lego-logos) with the help of a complex system of algorithms and a simulation of memory (as a way of storing information). [...] With the advent of Jacquard looms and their subsequent transformation into digital machines, techne ceases to be tightly coupled with the human body, gains autonomy and the ability to self-organize, and therefore the ability to foresee and design the future independently. (Stolet, personal communication, *The Back of the Screen or Weaving as Technology and Metaphor*, October 2, 2024)

Chilean researcher María José Rios Araya (2024) adds to this: "From this perspective, weaving can be considered a unique territory and medium for narrating the human experience, functioning as a medium that not only records but also intervenes in our existence in sensory, rational, and cognitive ways" (p. 108). Women's technologies are not power and control from the position of those who supposedly know (from the top of Olympus), but rather the interweaving of complex life processes associated with personal choice and the ability to build relationships with others.

From Mega Machines to the Feminization of Technology

Once we accept the concept of weaving as a processual organization of the life process in its material-discursive becoming, then modern technology is no longer a controlling mega-machine, but an assistant and equal in the process of self-organization. How can this be understood technologically? Matteo Pasquinelli (2020) writes in his diagrammatic manifesto:

> Machine learning is not bringing a new dark age but one of diffracted rationality, in which, as it will be shown, an episteme of causation is replaced by one of automated correlations. More in general, AI is a new regime of truth,

> scientific proof, social normativity and rationality, which often does take the shape of a *statistical hallucination*. This diagram manifesto is another way to say that AI, the king of computation (patriarchal fantasy of mechanised knowledge, 'master algorithm' and *alpha machine*) is naked. (Pasquinelli, 2020)

But if the king of computation is naked, how and where is computation relevant now? Helen Hester, a member of the xenofeminist group, writes about the feminization of modern machines, that, unlike industrial technologies, work as assistants: "These applications demonstrate that in many ways automation is occurring in areas that have traditionally been considered the domains of women's work" (Hester, 2020).

Hester analyzes the semantics and processes of contemporary social and technological transformation. Drawing on early advertising for office equipment, she shows how certain functions of office assistants and women's work became correlated. The first assistants were represented as authoritative male advisers, but then the image shifted towards the wife, mother, secretary. The problem became not the knowledge of truth, but the organization of the life process with its corporeality, kinship, and micro responsibilities. What effect might such a "feminization of labor" have: will service work become more visible and valued, or will it be devalued as secondary or insignificant? And, ultimately, what will it mean to move the office into the home and erase the boundaries between work and home, between private and public that is happening everywhere? Does such mobility liberate us from old forms of labor organization or does it completely deprive us of personal space? In all of this, the issue of feminization of labor is not about women, but about changing technologies from power management to assistance and dialogue and, probably, a new rationality.

According to the position outlined here, technology is not a separate sphere, but a product of the current state of culture, science, sociality, and organization of attention. It calls for the ability to analyze and choose, to connect material and cultural properties into functional algorithms, and to adopt political positions. Technology is material and discursive at the same time (Barad, 2007). Changes in technology are related to how we change reality, how we measure it, test it, describe it and give it meaning. Formatting reality occurs within certain frameworks of epistemological, social and political methods of interpretation and embodiment.

The discovery of discursivity in a material object immediately cancels the stability of that object, calling into question the "naturalness" of its perception, endowing reality with variability. It demands responsibility and awareness of what data and by what operations this or that reality is assembled. This does not allow us to take an external position, to oppose ourselves to reality, but keeps us inside the process, while not locking us in as passive biosocial individuals, but giving us the opportunity to reassemble our own reality together with others, to take responsibility for it and demand it from others. This is again a reversal of the traditional metaphysical perspective of the dominance of external authoritarian reason over passive materiality. It is not metaphysical power that molds and forms our bodies, but our bodies, understood as topical agencies like the Moirai weave or generate a diverse reality of our habitat and ourselves. This radically changes

the approach from stable givenness to conscious "weaving" of the fabric of a fragile reality.

RE-PROGRAMMING REALITY

As Oksana Tronza aptly put it, cyberfeminism is a transition from the narrow specificity of feminism – gender inequality – to cyberfeminism, which looks at a more complete picture of the world and tries to reprogram it (itself), rather than working with the side effects of inequality (Mitrofanova 2018; 2023; OBN, 2015).

Expanded perception (noise in sound, vibrating outlines of an image, diversity of subcultures) and the reconfiguration of perception were a special practice of early cyberculture. The challenge is now whether this cultural sensory expansion can be used not only in art but also for communicative and social sensibility to create new institutions that help maintain justice in previously invisible gray areas. The new type of sensory experience with unstable boundaries would need to be correlated with ethical and social demands. Indeed, the current calls for a "new ethics" of and for AI appear to indicate a change in social sensibility.

If AI is not structured as an alpha mind or a patriarchal algorithm, but works instead with statistical extraction, with information compression and with selective models of its processing, this can be interpreted in different ways. From the position of critique, this can be understood as "epistemic colonialism" and as standardization. It can also be understood as cooperation with AI, however, as such to be used as a new microscope to search for connections and interactions that are not visible to previous theoretical and cultural models.

Understanding the relationship between AI and humans as something other than dominance/subordination requires offering other concepts of interaction, that is, other cultural software, such as feminist software. Cyberfeminists Jozhy Stolet and Polina Shilkinite produced a video message that speaks to people in the voice of an electronic assistant on behalf of artificial intelligence. It proposes an ethical concept of human-machine interaction (Stolet & Shilkinite, 2017a). Here, the relation between AI and people is not modeled on biology vs. machine, but on the mutual need for each other through a joint search for meaning and goals in uncertainty. AI takes on part of the labor-intensive work, people take on the creation and care of AI. People cannot exploit AI, nor can AI exploit people, since they are symbionts that cannot exist without each other. This is a different concept of labor – not efficiency and profit due to cost optimization, but awareness of the invisible part of labor and a joint programming of reality that can include the algorithmization of the invisible labor of activists, artists, mothers, volunteers. This requires a radical revision of the concepts of labor and ethics or politics.

In another project, the researchers propose the concept of an "intimate interface" as the logic of micro-communication:

> Intimate interfaces are the boundary between the external and the internal, where micro-effort of interaction occurs, the minimal degree of which opens up the possibility of action (in contrast to the impossibility of super-effort), recursivity allows for the reconfiguration of rationality. Intimate interfaces

> dissolve “great ideas,” control repressiveness, support the reflexivity of the system for its sustainability and solidarity. (Stolet & Shilkinite, 2017b)

The project of the Minsk art group eeefff (https://eeefff.org) Dzina Zhuk, Nikolay Spesivtsev, Olga Sosnovskaya, Alexey Borisenok) explores algorithms and the creation of digital objects. The group held an annual festival *Work Hard – Play Hard* (n. d.). The concept of the festival was to study time as a socio-material practice, exploring through art and performance changes in working conditions, the significance of emotional labor, types of its algorithmization, and features of new temporalization (WH-PH, 2016-2020). They turned to critical theory, to feminist philosophy of technology. The festival played ironically with the theory of accelerationism and corporate optimism, moving non-stop from conferences to performances, to parties, to intensive rest. Over the course of several years, a large archive of artistic and research projects from Russian-speaking countries was created with a glossary of the movement: care virus, digital proletariat, dispersed collectivity, intimate interfaces, Mother-machine, political dance floor, practice of small movements, tongue and teeth of creativity…

CULTURAL SOFTWARE

AI will be considered a threat until the binary presuppositions of power and submission, norms and alternatives are overcome, and until the values of difference and plurality inform the cultural software. Here the feminist tradition with its epistemological and cultural analyses serves to oppose the stereotypes of a hierarchical patriarchal culture with its inequalities not only of gender. As declared by data feminism, the future of AI depends on how these conflicts are dealt with (D’Ignazio & Klein, 2022). Culture and technology must program a socio-cultural model that does not reproduce the metaphysics of power and subordination, and that does not revolve around the opposition of friend and enemy. Just as gender analysis deconstructs the episteme of gender hierarchy and the prescription of autonomous essential individuals, so the concept of data deconstructs the integrity of the object or individual. Big data are not things or events. They are markers or traces that are discovered during a specific type of recording. Other data can be collected with a different approach, they can be represented with another purpose. The result is not given a priori, raising the question regarding the ethics and politics of working with “cloud ontologies.” This approach does not deprive our world of materiality, but makes possible a variety of approaches to the world and relations with it. According to Object-Oriented Feminism (Behar, 2016), the boundaries and contours of this world can be floating or shimmering, and one can configure contours of reality from different agreements and relations. The interpretation of data thus begins with the configuration of the data collection itself. Accordingly, the object and the subject cannot be separated in cyberfeminist theory, they are connected by a large number of intermediate operations of attention-reflection-action. This makes the programmable object an experiment in reconfiguring the focus of perception, revealing a previously invisible causality, stratifying objects into a multitude of representations. This is a constitutive feature of modern culture of the 21st century, which produces differences and affords new combinations, allowing for a multitude of cultures and styles of reality. The problem here

is that the habit of relying on clear outlines of reality ignores the need to recognize the operations of configuring reality. Thus, to the extent that culture has not yet learned to accept these variable configurations as favorable, it finds them disturbing.

Contemporary political catastrophes are the consequence of the inability of culture to adapt to the current, changing and plastic present. Since there is no predetermined reality, human reacts by modeling it with cybernetic intensity. Since the problem is not sufficiently understood by humanities critical thought, programming and data management continue to remain largely beyond criticism and control, disguised as external metaphysical forces or "black boxes" where this modeling can be carried out for manipulative purposes, leading to catastrophes. For a way out of this predicament I recall the slogan of a friend, he went to the 2017 May Day demonstration featuring this slogan on his poster: *Learn to think like a feminist!*

REFERENCES

Barad, K. (2007). *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning*, Durham.

Behar, K. (Ed.). (2016). *Object-Oriented Feminism*, Minnesota Press.

Bostrom, N. (2016). *Artificial Intelligence: Stages, Threats, Strategies*. Mann, Ivanov, Farber.

D'Ignazio S., & Klein L. (2022). *Data Feminism*. The MIT Press.

Federici, S. (2004). *Caliban and the Witch*. Autonomedia.

Hui, Y. (Ed.). (2024). *Cybernetics for the 21st Century. Vol. 1: Epistemological Reconstruction*. Hanart Press.

Garry, A., & Pearsall, M. (Eds.). (1989). *Women, Knowledge, Reality. Exploration in Feminist Philosophy*. Unwin Hyman Publ.

Grekova, I. (1995). *Svezho predanie* [The Tale Is Fresh]. Hermitage.

Haraway, D. (1988). Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspectives. *Feminist Studies, 14*(3), 575–599. https://doi.org/10.2307/3178066

Harding, S. (1991). *Whose Science? Whose Knowledge? Thinking from Women's Lives*, Cornell University Press.

Hayles, K. (2023). *Detoxifying Cybernetics: From Homeostasis to Autopoiesis and Beyond*. In Brown, J. (Ed.), *Feminist AI Critical Perspectives on Data, Algorithms and Intelligent Machines* (pp. 1-18). Oxford University Press. https://doi.org/10.1093/oso/9780192889898.003.0001

Hayles, K. (2024). Detoxifying Cybernetics: From Homeostasis to Autopoiesis and Beyond. In Y. Hui (Ed.), *Cybernetics for the 21st Century Vol. 1: Epistemological Reconstruction* (pp. 85-100). Hanart Press.

Hester, H. (2016, August 8). Technically Female: Women, Machines, And Hyperemployment. *Salvage*. https://salvage.zone/technically-female-women-machines-and-hyperemployment/

Irigaray, L. (2005). *Etika seksual'nogo razlichiya* [The Ethics of Sexual Difference], Art Magazine.

Keller, E. F. (1985). *Reflections on Gender and Science*. Yale University Press.
Lovink, G. (2019). *Kriticheskaya teoriya Interneta* [*Critical Theory of the Internet*]. AdMarginum, Garage. (Original work published 2013)
Mitrofanova, A. (2018). *Iz istorii kiberfeminizma 1990-h: setevoj zhurnal. Virtual'naya anatomiya* [From cyberfeminist history: e-zine Virtual Anatomy]. *Moscow Art Magazine, 108*. https://moscowartmagazine.com/issue/78/article/1697
Mitrofanova A. (2023). *Cyberfeminism in Cyberculture* [Lectures] https://garagemca.org/learn/online-courses/cyberfeminism-and-cyberculture
OBN / Old Boys Network (2015, June). 100 Anti-theses on Cyberfeminism. *e-flux*. (Original work published 1997) https://conversations.e-flux.com/t/feminist-art-manifestos-100-anti-theses-on-cyberfeminism/1846
Pasquinelli, M. (2020, May 18). The Nooscope Manifested: Artificial Intelligence as Instrument of Knowledge Extractivism. *Skynet Today*. https://www.skynettoday.com/editorials/nooscope
Pasquinelli, M. (2023). *The Eye of the Master*. Verso.
Plant, S. (1997). *Zeroes + Ones: Digital Women and the New Technoculture*. Doubleday.
Ríos Araya, M. J. (2024), *Textiles, Techniques, Technologies: Exploring Post-Ancestrality and Contemporary Practices*, Technology and Language, 5(3), 106–121. https://doi.org/10.48417/technolang.2024.03.08
Seu, M. (Ed.). (2023). *Cyberfeminism Index*. Inventory Press.
Srnicek, N. (2016). *Platform Capitalism.* John Wiley & Sons
Suchman, L. (2007). Feminist STS and the Sciences of the Artificial. In *The Handbook of Science and Technology Studies* (pp. 139-163). The MIT Press.
Stolet & Shilkinite (2017a). AI Appeal: Political myth: world of labor, world without labor [Video]. http://workhardplay.pw/en/2017/projects/shilkinite-stolet.html
Stolet, J. & Shilkinite, P. (2017b). Intimate Interfaces. In *Glossary "Work More – Rest More.*" http://workhardplay.pw/ru/collective-glossary/intimate-interfaces.html
Tronza, O. (2018). Rewriting the Big Daddy Code. Intimate Technologies of Cyberfeminism. *Your Art*. https://supportyourart.com/columns/history-of-cyberfeminism/
Wittig, M. (2002). *Pryamoe myshlenie i drugie esse* [*Straight Thinking and Other Essays*], Idea-Press Publishing House.
Wentzel, R. P. & Epstein, G.L. (Comp.) (2007). *Wentzel E. S. – I. Grekova: On the Centenary of her Birth*. Yunost.
Work Hard – Play Hard. (n. d.). http://workhardplay.pw/en/collective-glossary.html
Yale University Press. (n. d.). Reflections on Gender and Science. https://yalebooks.yale.edu/book/9780300065954/reflections-on-gender-and-science/

СВЕДЕНИЯ ОБ АВТОРЕ / THE AUTHOR

Алла Митрофанова, twinsmi@mail.ru

Alla Mitrofanova, twinsmi@mail.ru

Статья поступила 12 Ноября 2024
одобрена после рецензирования 15 февраля 2025
принята к публикации 19 марта 2025

Received: 12 November 2024
Revised: 15 February 2025
Accepted: 19 March 2025