Utopian Grammars of Human-Machine Interaction

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Abstract

In his essay in the inaugural issue of this journal, Alfred Nordmann suggests that we can speak of a language of mechanics and that machines – in which, according to Franz Reuleaux, movement is domesticated or civilized – can be conceived of as structures that enable the self-expression of things, or as elements of a grammar of things. He points out that the journal is dedicated to exploring interactions between the sphere of ideas (of which language is often seen as being part) and the sphere of technical practice, and to reflecting fundamentally on 'technology as language' and on 'language as technology'. In our article, we thus explore attempts to develop new grammars of human-machine interaction such as those created in literature as well as in engineering and labour studies in the early Soviet Union. We specifically discuss Alexei Gastev's thinking on labour, technology and poetry. We are interested in the utopian aspects of his grammar of things and bodies, and in the role of the body between technology and language. Given that the two are perhaps the two most common answers to the question of what makes us human and distinguishes us within or from the animal kingdom, experiments with the triangle of technology, language and human corporeality, such as those conducted by Gastev, deserve attention beyond the historical context.

Keywords: Alexei Gastev; Engineering and labour studies; Poetry; Human-machine interaction; Utopianism; Biomechanics; Avant-garde

Аннотация

В своем эссе в первом номере этого журнала Альфред Нордманн высказывает мысль, что мы можем говорить о языке механики и что машины, (в которых, согласно Францу Рёло, движение приручено или цивилизованно) могут быть поняты как структуры, делающие возможным самовыражение вещей, или как элементы грамматики вещей. Он подчеркивает, что журнал посвящен исследованию взаимодействия сферы идей (к которой зачастую относят язык) со сферой технической практики и фундаментальному переосмыслению "технологии как языка" и "языка как технологии". В соответствии с этой задачей, в статье исследуются попытки разработки новых грамматик взаимодействия человека и машины в литературе и в исследованиях труда и инженерии в ранние годы советского периода. В частности, мы обсуждаем идеи Алексея Гастева о труде, технологии и поэзии. Нас интересуют утопические аспекты его грамматики вещей и тел, а также роль, которую тело играет между технологией и языком. Технология и язык – пожалуй, наиболее частые ответы на вопрос о том, что делает нас людьми и отличает нас в животном царстве или от него, поэтому эксперименты в триаде технологий, языка и человеческой телесности, – такие как работы А.Гастева, – представляют собой не только исторический интерес.

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INTRODUCTION

In his essay in the inaugural issue of this journal, Alfred Nordmann writes that in the tradition of Western philosophy language belongs to the sphere of ideas, to the head and the mind, and not to the hand and the manipulation of matter, the sphere of technical practice. "This is what we tend to say: It is one thing to talk and think, to learn and write, to express ideas – and quite another thing to build and make, to construct and design, to create material devices" (Nordmann, 2020, p. 86). This journal *Technology and Language*, Nordmann continues, would however defy the tradition by exploring interactions between both spheres in a wide variety of fields and by providing space for fundamental reflection on "technology as language" and on "language as technology". He also suggests that we can speak of a language of mechanics and that machines – in which, according to Franz Reuleaux, movement is domesticated or civilized – can be conceived of as structures that enable the self-expression of things, or as elements of a grammar of things.

In our article, we aim to explore significant interactions across both spheres by looking at the attempts to develop new grammars of human-machine interaction that were undertaken in poetry and in engineering and labour studies in the early Soviet Union. We specifically discuss Alexei Gastev's thinking on labour, technology and poetry, and we are interested in the utopian aspects of a grammar of things and bodies, and in the role of the body in this grammar. Given that technology and language are perhaps the two most common answers to the question of what makes us human and distinguishes us within or from the animal kingdom, experiments with the triangle of technology, language and human corporeality, such as those conducted by Gastev, deserve attention beyond the historical context.

THE NEED FOR A NEW WORLD

In World War I, the bankruptcy of traditional culture under capitalist and imperialist conditions had become shockingly evident. The old world having been utterly destroyed, not only human bodies in their fragility – and the (now often mutilated) male human body in particular – but also traditional culture, and thus language, had become suspect or dubious. Obviously, a new world was needed, and both human bodies and words were increasingly seen as being deficient in comparison to modern technology. People were widely seen as having a moral duty to create communism or overcome capitalism in some other way, those movements fighting for this cause being lent moral legitimacy by the disaster of the Great War. For many, as well as for some who abhorred modern warfare, machines now had to be seen, for good or bad, as the measure of men. This overlapped with visions of a new relationship between humanity and nature instigated by modern science and technology that reveled in metaphors of a merger or union of humans with machines.

In the second half of the 1920s, Walter Benjamin argued that humans "can be in ecstatic contact with the cosmos only communally" and that it is "the dangerous error of modern men to regard this experience as unimportant and avoidable" (Benjamin,

1928/1978, p. 93). It is not, he wrote, and its hour strikes again and again, as was "made terribly clear by the last war", which he characterized as "an attempt at a new and unprecedented commingling with the cosmic powers" (Benjamin, 1928/1978, p. 93). Benjamin continued: "Human multitudes, gases, electrical forces were hurled into the open country, high frequency currents coursed through the landscape new constellations rose in the sky, aerial space and ocean depths thundered with propellers, and everywhere sacrificial shafts were dug in Mother Earth. This immense wooing of the cosmos was enacted for the first time on a planetary scale, that is, in the spirit of technology. But because the lust for profit of the ruling class sought satisfaction through it, technology betrayed man and turned the bridal bed into a blood bath" (Benjamin, 1928/1978, p. 93).

The notion that the mastery of nature is the purpose of all technology is criticized by Benjamin as imperialist ideology. He asks: "who would trust a cane wielder who proclaimed the mastery of children by adults to be the purpose of education? Is not education above all the indispensable ordering of the relationship between generations and therefore mastery, if we are to use this term, of that relationship and not of children?". And he argues that "likewise technology is not the mastery of nature but of the relation between nature and man" (Benjamin, 1928/1978, p. 93). In Benjamin's view, humankind as a species is just beginning its evolution and modern technology is playing a key role in it: "In technology a *physis* is being organized through which mankind's contact with the cosmos takes a new and different form from that which it had in nations and families" (Benjamin, 1928/1978, p. 93; *italics in the original*). Humanity is developing a kind of new, collective body for interacting with the cosmos.

Figure 1. Konstantin Yuon, 'People' (1923)

For Benjamin, the "revolts" after World War I, as he called them, were "the first attempt of mankind to bring the new body under its control" (Benjamin, 1928/1978, p. 94). He emphasized that "the power of the proletariat is the measure of its convalescence", adding: "If it is not gripped to the very marrow by the discipline of this power, no pacifist polemics will save it. Living substance conquers the frenzy of destruction only in the ecstasy of procreation" (Benjamin, 1928/1978, p. 94).

Alexei Gastev's literary and scientific projects were remarkable elements of most important such attempt undertaken in those years: the Russian Revolution and the early phase of the Soviet Union. His projects took place at the intersections of language, modern technology and the human body, aiming to create a new, all-encompassing discipline. Gastev was one of the few prominent Bolsheviks to have experience in the high-tech jobs and professions of his time, having been employed (in France and Russia) for example as a factory worker and as a tram driver. One remarkable aspect of his political activism was his often considerable sympathy for anarcho-syndicalist approaches. Highly unusually, he was also a famous poet who became the key figure in Soviet Taylorism – as head of the Central Institute of Labour in Moscow, which he founded with the support of Vladimir Lenin and Leon Trotsky in 1921.

In *On the Tendencies of Proletarian Culture* (1919), also known as 'Gastev's manifesto', he argued that the new proletariat, with its unprecedented psychology, would eventually also have to develop a new artistic style (for the following, see Gastev, 1919, p. 45). Specifically, new artists of the word would no longer have to solve the problem the futurists had set themselves – namely word-creation ('slovotvorcestvo') – but a much higher one: the proletariat would thus not reform the word itself grammatically; rather it would venture, so to speak, into the technicization of the word ('texnizacija slova'). Already, the word taken in its everyday expression is no longer sufficient for the productive goals of the proletariat; and it is highly questionable, Gastev emphasizes, that it will suffice for such subtle and new creativity as in proletarian art. He wrote: "We do not prejudge the form of the technicalization of the word, but it is clear that sound will not only be amplified but gradually separate itself from its living carrier – the human being. Here we are very close to a truly new kind of combined art, where purely human manifestations (…) will recede into the background" and we are heading "for an unprecedentedly objective manifestation of things (…) that knows nothing of the intimate or lyrical" (Gastev, 1919, p. 45).

We have translated носителя as 'carrier' rather than as 'host' or 'medium' because we had in mind such definitions of the 'word' as being the smallest independent, acoustically and orthographically isolable 'carrier of meaning' in a sentence and because we wanted to avoid both biological connotations and misunderstandings concerning the term 'medium'. Human beings are the native speakers of (any) language, one could say, but now, with the technicization of the word, there will be other speakers or, perhaps more precisely, one new speaker: a new entity that will be at once technicized humanity and humanized technology.

What we do *not* want to allude to here with the notion of 'carrier', however, is the image of the human body being the carrier of the mind, for example in the sense of a substrate that embodies individual information patterns, as in one favourite idea of current transhumanism. It appears to us that, at least when it comes to understanding Gastev's utopian grammar of human-machine interaction, it is more appropriate to start with a

conception of language that understands it as originally material and in essence practical: as the element of thought itself – the element of thought's living expression – that has a sensuous nature (as Karl Marx described in the *Paris Manuscripts* as being a key aspect of the 'natural science of man'), or as in the following quote from the (formerly) canonical version of *The German Ideology*: "From the start the 'spirit' is afflicted with the curse of being 'burdened' with matter, which here makes its appearance in the form of agitated layers of air, sounds, in short, of language. Language is as old as consciousness, language is practical consciousness that exists also for other men, and for that reason alone it really exists for me personally as well; language, like consciousness, only arises from the need, the necessity, of intercourse with other men. Where there exists a relationship, it exists for me (…)" (Marx & Engels, 1845, Ch. 1, 'Feuerbach').

Figure 2. Alexei Gastev (book illustration by Zinovii Tolkachev, published 1923)

If we conceive of technology – like Benjamin did – as a kind of mastery of the relationship between nature and humankind, and of language – like the young Marx did – as being the practical, material means by which human beings relate to each other, any technicization of the word must have a direct impact on social relations; which in our context would then need to be understood by means of a new 'natural science of man' that included humanity's technical artefacts, and at the same time as an artistic engineering project.

Gastev's last literary work, the cycle of poems *Pachka orderov* (*A Packet of Orders*), published in 1921, may be regarded as an attempt to create the new proletarian artistic style that he foresaw as being necessary: "[w]ords and ideas would come to have precise, technical meanings devoid of nuance and emotional connotations, so that they could be plugged in and unplugged as needed" (Johansson, 1980, p. 70). Poetry would become an "action", a "performance of a man-machine" (Vaingurt, 2008, p. 229), language a technology.

LANGUAGE AS TECHNOLOGY

The move from his earlier poetry, such as in *Poetry of the Worker's Blow* (1918) that made Gastev famous as a poet, to *A Packet of Orders* can be deemed a radicalization of his creative destruction of language. The former, despite being – according to one of his contemporaries – "unprecedented" in its "pathos of industrialism" (Pertsov, 1927) and despite its innovative combining of poetry and prose, was quite straightforward at the level of denotation. The semiotic space is comprised of readily comprehensible elements: bodies, machines, objects and actions (of which death is the ultimate yet mundane act) moving from the historical "before" into the "after" that is under construction. The viewpoints were clearly stated: the worker poet himself, a female worker, the collective subject ("We"), and finally, the super-subject of a generalized Worker, for which "I" was used merely as a metonymy. The catastrophic optimism of "Poetry of the Worker's Blow" was in line with what Gastev considered to be crucial to the worldview of the proletariat. "The new industrial proletariat," he wrote in 1919, "its psychology, its culture, are above all characterized by industry itself (…). The entire life of modern industry is imbued with movement, catastrophe, at the same time framed by organization and strict regularity. Catastrophe and dynamics, constrained by a grandiose rhythm, are the basic, illuminating moments of proletarian psychology" (Gastev, 1919, p. 44). The *Poetry of the Worker's Blow* was published in several editions over the next few years and, performed on stage, served as the source for the syncretic art of Proletcult.

In *A Packet of Orders*, Gastev focused on the second principle he ascribed to the proletarian worldview: organization. The work is composed almost exclusively of nominal sentences and imperatives, its temporality being reduced to a short circuit. The 'orders' aimed to restructure reality, mobilizing its different layers: the mechanical, chemical, physiological, demographic, urban and industrial processes were activated, split into procedures, regulated ('normalized') and arranged into comprehensive machinery. Its new morphology was described in terms such as "brain-machines", "cine-eyes", "electro-nerves", and "artery-pumps".

For Gastev, 'normalization' (development and application of norms and standards) was a defining characteristic not only of the labour regime of the working class, having its fullest expression in Taylorism, but of its whole existence, including "aesthetical, intellectual and sexual demands" (Gastev, 1919, p. 43). In particular, normalization of language, its objectivization or objectification, of which *A Packet of Orders* itself was a pilot experiment, would pave the way for the internationalization of language – the prospects of which were widely debated at that time in view of a coming world revolution: Gastev wrote: "The mechanization not only of gestures, not only of labor-production methods, but the mechanization of everyday thinking, combined with extreme

objectivism, strikingly normalizes the psychology of the proletariat. Even though there is no international language yet, there are international gestures, there are international psychological formulas possessed by millions. It is precisely this trait that gives proletarian psychology its striking anonymity, allowing it to qualify the individual proletarian unit as A, B, C or as 325,075 and 0, etc. … as if there were no longer a million heads, there is one world head. In the future, this tendency will imperceptibly create the impossibility of individual thinking, translating into an objective psychology of an entire class (…)" (Gastev, 1919, p. 44).

As often discussed, these contours of the future have been mirrored in a diametrically opposed manner of interpretation in the visions of Yevgenj Zamyatin (*We*, 1924) and of subsequent authors of dystopias. However, disagreements within Proletcult also deserve attention in this context. Probablythe most serious accusation in Marxist circles – that of abstract thinking – was immediately made by Alexander Bogdanov (1919). Gastev (1919) had characterized Bogdanov's preoccupation with continuities in the social system as "Eastern conservatism" (p. 35). According to Bogdanov, Gastev misinterpreted the mobilization and centralization of modern industry (including of the non-proletarian unskilled workforce) that took place during the First World War, falsely regarding it as progressive. The organization of the working class itself and the world around it should not be reduced to the principle of subordination, however. From this perspective, Gastev's idea of total normalization appears to be a fetishization of machinery and the result of a thirst for authority. In Bogdanov's view moreover, Gastev appeared on a theoretical level to be unable to distinguish between norming ('normalization'), regulation and organization, the latter not being able to be subjected to mechanization because organizational creativity requires the individual skills along with collectively accumulated experience, linking a human organizer to the inherited culture. Likewise, proletarian art, including "poetic consciousness", will not be created from scratch, according to Bogdanov, but will sublate the legacy of "the feudal and bourgeois worlds" (Bogdanov, 1923). Similarly, Bogdanov was sceptical about the possibility of an invented international language. He argued that internationalization of language is an objective historical process, most obvious in technological terminology (which Gastev in fact used extensively in *A Packet of Orders*), the historical task of the proletariat being "to establish objectively which language is historically destined for this role, and to help it to play" this role (Bogdanov, 1925, p. 331). Bogdanov believed that optimizing English orthography could be a useful step in this direction.

Apart from the 'normalization' and 'objectification' of language as suggested by Gastev, and Bogdanov's idea of English being promoted and adjusted as a transitional stage, the Futurist project of a global linguistic revolution deserves attention in our context: 'Zaum'. Just a few years before the October revolution, expressiveness of exclamation, immediacy of "proto-sounds", dismembered morphology and arbitrary semantics were prescribed by them as elements of a language of "high-speed modernity" (Kruchenykh & Khlebnikov, 1913). At the same time, the phonetic experiments, such as the completely undecipherable "Dyr bul shchyl" by Alexei Kruchenykh, which is reminiscent of a spell or incantation, linked modernity to the archaic syncretism of folklore. In 1921, Kruchenykh wrote that 'Zaum', although national in origin and initial character, might give birth to a global poetic language – evolving organically, "unlike Esperanto". Word as an action, gaining a universal character – that was the common

ground for Gastev's alliance with futurists, especially with Velimir Khlebnikov, whom he described as a genius who found ways leading to the "engineering of a word" and the "mathematizing of an image" (Gastev, 1926).

A particularly marked common feature of Gastev's and Futurist poetry is the disappearance of a subjective perspective. The collective actor – who was "growing out of iron" in Gastev's earlier works that were cited by Bogdanov as an example of the emerging proletarian "poetic consciousness" – was later anonymized in *A Packet of Orders* and became the self-addressing subject and the object of ordering at the same time. The Futurist fascinations with new ontology, especially with the recently discovered spacetime, and with pre-modern animist and magical thinking, also helped to blur the subject-object opposition. Accordingly, the 'concept vs. perception' and 'theory vs. practice' dichotomies were to be overcome by artistic action (Vygovskii, 2019) and the borders between art and reality removed: "when a society overcomes the social antagonism (…), the profession of an artist starts disappearing gradually, giving space to an engineer – be it an engineer in production or an engineer of social interactions" (Zhilyaev, 2015, p. 26). Gastev's poems were quoted and literally enacted in Arseny Avraamov's *Symphony of Factory Whistles*, performed by an orchestra with industrial, transport and military sirens, horns, cannons and guns. And Gastev himself turned his attention to creating the Central Institute of Labour, which he called his major work of art, as well as to organizing the League of Time and to participating in the Committee on Standardization. In Gastev's version of "scientific organization of labour", the self-observation of the man-machine interaction – the second-order observation (Velminskii, 2010) – implies the need to incorporate the outer perspective, that which is exterior to both the machine and the action (Saimiddinov, 2019).

Writing about *A Packet of Orders,* Julia Vaingurt explains that the "mechanistic rhythm of the poems, their technical and austere language, and their form of industrial and military orders are all consistent with Gastev's experimental usage of words as a technical medium for creating a new world", adding that "the result of his experiments approaches the Futurists' idea of the universal language closer than their own creations ever did" (Vaingurt, 2008, p. 229). She argues that in Zamyatin's bleak but humorous parody of Gastev and Proletcult in *We*, the bodily aspect of hand-writing, in connection with sexual desires, is – exemplified by "D", the main protagonist, an engineer increasingly sceptical of the regime – the key to understanding the instability and fragility of the OneState's (un)emotional regime: "Zamyatin has his OneState commit a crucial mistake: in directing that propaganda be composed, it does not disseminate the proper instruments for doing so. In so essential a realm as writing, the life of OneState citizens is unmediated by advanced technology. It is not surprising, then, that the act of writing brings D closer to his body – with all its wants, pains, and disrepairs – and hence closer to his self. The human body is an imperfect machine, and hand-writing its blemished product and reflection: as if in a mirror, D sees himself in his writing, noticing all his shortcomings. D has been trained to see his body as a well-functioning machine, but in his diary-keeping he constantly stumbles upon signs of illness and infection" (Vaingurt, 2013, pp. 93-94).

Language is unruly, especially when it is a non-mechanized bodily activity. Intimate feelings, such as passionate love, are alien to the OneState, and when they intrude into it, "they wreak havoc on its icy harmony" (Vaingurt, 2008, p. 215).

TECHNOLOGY AS LANGUAGE

However, Gastev's ideal world is not without passion, as Vaingurt also rightly points out. In several of his writings, he emphatically announced that everyone will be part of a harmonious collective, and, as Vaingurt writes: "Gastev's language here plays the role of the stimulant; it invokes desire for an absent, future man, for an abstraction. A live body has been substituted by a sign, a symbol of a unified being. And technology plays a fundamental role in the achievement of this transformation. Gastev exclaims, 'This beautiful, this marvelous thing can be created by the modern force of machinism!' Machinism here means the modeling of man upon the machine (…)" (Vaingurt, 2008, pp. 215-216). In many respects such emphatic declamations are reminiscent not only of the Cosmist tradition, which Vaingurt and others have discussed as an important context framing Gastev's thought, but also of Western proto- or early transhumanism (Coenen 2014a, 2014b, 2019), such as Winwood Reade's (1872) early visions of a future god-like (post)humanity and Desmond Bernal's (1929) scenario of a total technicization of humanity and, ultimately, of all life in a (post)human conquest of the entire universe.

For Gastev, the body lies, according to Vaingurt's analysis, somewhere on the border between the natural and the cultural; he deems it an embryonic machine. In order to improve the body according to the model of the machine, language needs to be as strictly and cautiously regulated as all other bodily activity: "Gastev does not tire of repeating the necessity of limiting the waste of time and energy on empty talk – 'The most complex thought can be laid out in five minutes' – and so just as he wishes to restrict and regulate the flow of food and air through the body, so too does he wish to restrict the free flow of language" (Vaingurt, 2008, pp. 223-224). Gastev wants to turn poetry into an instrument of 'sharp verbal impact', as he calls it.

Everything in *A Packet of Orders*, including the preface, is designed as and for a technicization of language; words emphatically appear as nothing but technical artefacts or means, and the old language in its diversity, complicatedness and verbosity needs to be replaced with radically novel techno-human communication (Johansson, 1983, pp. 154-155):

> Ордер 05
> Панихида на кладбище планет.
> Рев в катакомбах миров.
> Миллионы, в люки будущего.
> Миллиарды, крепче орудия.
> Каторга ума.
> Кандалы сердца.
> Инженерьте обывателей.
> Загнать им геометрию в шею.
> Логарифмы им в жесты.
> Опакостить их романтику.
> Тонны негодования.
> Нормализация слова от полюса к полюсу.
> Фразы по десятеричной системе.
> Котельное предприятие речей.
> Уничтожить словесность.

Огортанить туннели.
Заставить говорить их.
Небо – красное для возбуждения.
Шестерни – сверхскорость.
Мозгомашины – погрузка.
Киноглаза – установка.
Электронервы – работа.
Артерионасосы, качайте.

Order 05
Requiem at the graveyards of the planets.
Roar in the catacombs of the worlds.
Millions, into the hatches of future.
Billions, hold the guns tight.
Drudgery of mind.
Shackles of heart.
Engineer the everymen.
Beat geometry into their necks.
Logarithms into their gestures.
Profane their romance.
Tons of indignation.
Pole-to-pole word normalization.
Phrases in the decimal system.
Boiler-house of speeches.
To destroy literature.
To larynx the tunnels.
To make them speak.
The sky is red for excitement.
The gears – superspeed.
Brain-machines – loading.
Cine-eyes – installation.
Electro-nerves – work.
Artery-pumps, start. (Gastev, 1921/2010, translation by authors)

Gastev's biomechanics, which he developed with his team at the Central Institute of Labour, are also characterized by Vaingurt as being a relatively successful attempt to help create a universal language – relatively successful as compared to the Futurists. The tasks of poetry and of practical labour studies are two sides of the same coin: "In essence the former task is part of the latter one, since language is a form of bodily technology and is subject to the mechanics of the organism as a whole. If the body works like a machine, the language that it produces to communicate its needs also responds to the machine-like rhythm" (Vaingurt, 2008, p. 225). The leading Futurist Sergei Tret'iakov (1923/2011) wrote in 1923 that from the cultural point of view the Soviet New Economic Policy was "the smelting of the primordial pathos of the first years of the revolution into a trained practical effort that will succeed not by dint of emotions and flights of the imagination, but because of organization and self-control" (p. 344). This anti-utopian wording is similar to some of Gastev's writing from the same time (Sochor, 1988). Tret'iakov

(1923/2011) added that "if the maximal program of the futurists is the integration of art and life, the conscious reorganization of language according to the new forms of life, and the struggle for the emotional training of the producer-consumer's psyche, then the minimal program of futurist-speech-producers is to place their linguistic mastery at the service of the practical tasks of the day" (p. 344). Here again the programmatic difference to Gastev appears to be small. So how can biomechanical practices be deemed a universal language?
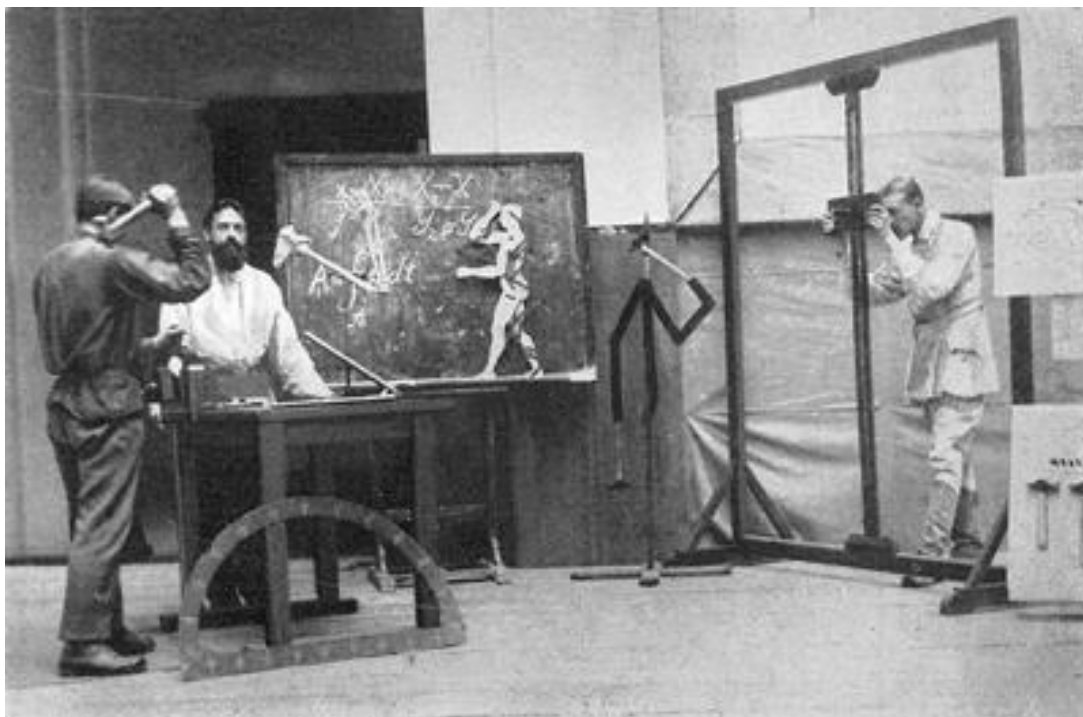

Figure 3. Central Institute of Labour (CIT) laboratory, 1923 <in: R. Fülöp-Miller (1926). *Geist und Gesicht des Bolschewismus*. Amalthea>

In his manifesto of 1919, Gastev had expressed the expectation that in 'mechanized collectivism' the movements in human-machine interactions will increasingly resemble the movements of things without any traces of human peculiarities. The "iron mechanics" of the collective and the increasingly 'engineerist' mindset of the masses will thus transform the proletariat into an unprecedented social automaton. If Gastev was much concerned at the same time "for the fate of the individual worker" (see also Ings, 2018) and had "his own clear-cut individuality", how could he think that this was a desirable future, asks Johansson (1983) and writes: "Gastev's experiences during the war and revolution and the precarious situation of industry seem to have convinced him that the best solution for the future was a rational, productive world that functioned like an efficient machine. In that world the workers' collective must be brought into harmony with technology and thus be mechanized" (pp. 68-69). The movements in increasingly highly complex human-machine interaction that is modelled after machines will function like a globally synchronized universal language, supported by a technologized version of human natural language. The proletarians are the machines' breathing, their impulse, as Gastev put it in *The Factory Whistles* (1913). If history is inscribed in the body, Gastev's

project can be seen as a radical attempt to obliterate the history of oppression by deleting the inscription, to create, so to speak, a new body language from scratch.

Despite all its glorifying of the mechanization of humanity, his project was arguably more humanistic than digital capitalism today, or at least than that practiced by such companies as *Amazon* (Coenen, 2019). Moreover, it was obviously highly relevant to Soviet Taylorism and had significant real-world impact, in particular on work organization and art (Bailes, 1977; Stites, 1989; Vaingurt, 2013). Nevertheless, it may also have been utopian in the everyday understanding of the term (which corresponds with its etymology): Gastev's vision may simply have been unrealistic. Nikolai Bernstein, who joined him at the Central Institute of Labour in 1922 and worked with him for three years, appears to have realized there that human bodily movements are never so uniform as to be fully mechanizable (Ings, 2018). Like human language, human bodies may also be too unruly to be suitable for a full-fledged merger of humanity with technology.

CONCLUDING REMARKS

If the unruly nature of both human bodies and language means that Gastev's hope to fully technicize human language and corporeality was in fact vain, one might argue that the critique is valid that his (and similar early Soviet) techno-utopian thinking amounted to magical thinking and to a large-scale but futile attempt to re-enchant the world through technology. In any case, however, some of his ideas appear more relevant today than they were during his lifetime. When he predicts, for example, that machines will direct or manage humans, this is a much more reasonable idea now, in our age of so-called 'intelligent' machines, than it was in the 1920s. Moreover, his notion of the human body being the best machine and his emphasis on further qualifying it supported tangible practical improvements.

Going back to our introductory remarks concerning Benjamin and Marx, we can conclude that Gastev's project was clearly a conceptual and practical attempt to improve mastery over the relationship between humanity and nature, including human nature and society. If, in Nordmann's (2020) words, "[t]echnology is our way of relating to things" and "how we organize or pattern the material world" and thus "akin to language, because language is our way of relating to people" and "how we organize or pattern social interactions" (p. 87), then the new human-machine collective that Gastev imagined and tried to experiment with, makes uses of this similarity and aims to dissolve remaining differences. Humans may become conceived of as things but this may also be seen as a necessary consequence of the further technicization of our societies.

When it comes to the visions of overcoming the boundaries between art and engineering, one is reminded of Bernal (1929): "The art of the future will, because of the very opportunities and materials it will have at its command, need an infinitely stronger formative impulse than it does now. The cardinal tendency of progress is the replacement of an indifferent chance environment by a deliberately created one. As time goes on, the acceptance, the appreciation, even the understanding of nature, will be less and less needed. In its place will come the need to determine the desirable form of the humanly-controlled universe which is nothing more nor less than art" (pp. 78-79). Paraphrasing Nordmann (2020), one could say then that there will be a grammar of human-machine interaction for socio-mechanical artist engineers; and "our symbolically and

technologically constituted info-techno-sphere" (p. 90) may in the future indeed be best conceived of as Benjamin's new *physis* for humanity, from which will follow, perhaps similarly as in Ernst Bloch's 'Allianztechnik' (Nordmann, 2007), new relationships with non-human nature and, perhaps even more so, within increasingly technicized human societies.

If the human body is seen as a machine and thus as technology, and language can be understood as technology (and vice versa), a universal language of human-machine interaction may not remain a utopian project forever. Of course, the question of how such language-technology will be designed remains unanswered, as does the question of what future mastery over the relationship between humanity and non-human nature, and between human beings in highly technologized societies, will look like.

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REFERENCES

Bailes, K. E. (1977). Alexei Gastev and the Soviet Controversy over Taylorism. *Soviet Studies*, *29*(3), 373–394.

Benjamin, W. (1978). To the Planetarium. In *Reflections: Essays, Aphorisms, Autobiographical Writings* (pp. 92-94). Harcourt Brace Jovanovich. (Original work published 1928) http://cscs.res.in/irps/inter-asia-cultural-studies-summer-school-2018/all-readings/benjamin-walter-reflections

Bernal, J. D. (1929). *The World, the Flesh and the Devil. An Enquiry into the Future of the Three Enemies of the Rational Soul*. Kegan Paul, Trench, Trubner & Co.

Bogdanov, A. (1919). O tendentciiakh proletarskoi kultury (Otvet A. Gastevu) [On the Tendencies of Proletarian Culture (Reply to A. Gastev)]. *Proletarskaia kultura*, *9/10*, 46–52.

Bogdanov, A. (1923). Proletarian Poetry. *The Labour Monthly*, *4*(6), 357–362.

Bogdanov, A. (1925). *O proletarskoi kulture (1904-1924)* [About proletarian culture (1904-1924)]. Kniga.

Coenen, C. (2014a). Transhumanism and its Genesis: the Shaping of Human Enhancement Discourse by Visions of the Future. *Humana Mente*, *26*, 35–58.

Coenen, C. (2014b): Transhumanism in Emerging Technoscience as a Challenge for the Humanities and Technology Assessment. *Teorija in praksa*, *51*(5), 754–771.

Coenen, C. (2019). Die Mensch-Maschine als Utopie [The man-machine as utopia]. In K. Liggieri, & O. Müller (Eds.), *Mensch-Maschine-Interaktion* (pp. 71–80). Metzler.

Gastev, A. (1919). O tendentciiakh proletarskoi kultury [On the Tendencies of Proletarian Culture]. *Proletarskaia kultura*, *9/10*, 35–45.

Gastev, A. (1926). *Planovye predposylki* [Planned prerequisites]. NK RKI SSSR.

Gastev, A. (2010). *Pachka Orderov* [A Packet of Orders]. http://az.lib.ru/g/gastew_a_k/text_0005.shtml (Original work published 1921)

Ings, S. (2018). *Stalin and the Scientists: A History of Triumph and Tragedy, 1905–1953*. Grove / Atlantic.

Johansson, K. (1983). *Aleksej Gastev: Proletarian Bard of the Machine Age*. (Document No. S-106 91) [Doctoral dissertation, University of Stockholm, Stockholm].

Kruchenykh, A., & Khlebnikov, V. (1913). *Slovo kak takovoe* [The word itself]. Eyy.

Marx, K., & Engels, F. (1845). *The German Ideology*. Marxist Internet Archive. https://www.marxists.org/archive/marx/works/1845/german-ideology/

Nordmann, A. (2007). Renaissance der Allianztechnik? Neue Technologien für alte Utopien [Renaissance of alliance technology? New technologies for old utopias]. In B. Sitter-Liver (Ed.), *Utopie heute: Zur aktuellen Bedeutung, Funktion und Kritik des utopischen Denkens und Vorstellens. Vol. 1.* (pp. 261–278). Academic Press Fribourg.

Nordmann, A. (2020). The Grammar of Things. *Technology and Language*, *1*(1), 85–90. https://doi.org/10.48417/technolang.2020.01.18

Pertsov, V. (1927). Sovremenniki (Gastev, Hlebnikov) [Contemporaries (Gastev, Khlebnikov)]. *Novyj Lef*, *8-9*, 75–83.

Reade, W. W. (1872). *The Martyrdom of Man*. Trübner & Co.

Saimiddinov A. (2019). Vopros ob avtomatizatcii v kontekste teorii nauchnoi organizatcii truda Alekseia Gasteva [The question of automation in the context of the theory of the scientific organizing work of Alexei Gastev]. *Filosofiia i kultura*, *8*, 38–45.

Sochor, Z. A. (1988). *Revolution and Culture. The Bogdanov-Lenin Controversy*. Cornell University Press.

Stites, R. (1989). *Revolutionary Dreams. Utopian Vision and Experimental Life in the Russian Revolution*. Oxford University Press.

Tret'iakov, S. (2011). From Where to Where? Futurism's Perspectives. In M. F. del Junco (Ed.), *Aleksandr Deineka (1899–1969). An Avant-Garde for the Proletariat (Catalogue)* (pp. 341–345). Fundación Juan March (Original work published 1923). https://monoskop.org/images/6/6d/Aleksandr_Deineka_1899-1969_An_Avant-Garde_for_the_Proletariat_2011.pdf

Vaingurt, J. (2008). Poetry of Labor and Labor of Poetry: The Universal Language of Alexei Gastev's Biomechanics. *The Russian Review*, *67*, 209–229.

Vaingurt, J. (2013). *Wonderlands of the Avant-Garde: Technology and the Arts in Russia of the 1920s*. Northwestern University Press.

Velminskii, V. (2010). Videnie verstaka. Poeziia udara molotkom kak sredstvo "ustanovki" izobretatelstva [A vision of a workbench. Poetry of Hammering as a Means of "Setting" Invention]. *Logos*, *1*(74), 173–192.

Vygovskii, I. (2019). Zalit stranu vospriiatiem – sovetskaia esteticheskaia mysl 20-kh godov [Filling the country with perception – Soviet aesthetic thought of the 20s]. *Revoliutciia i evoliutciia: modeli razvitiia v nauke, kulture, obshchestve*, *1*, 259–260. https://doi.org/10.24411/9999-036A-2019-00094

Zhilyaev, A. (2015). Avangardnaia muzeolojiia. K istorii odnogo pilotazhnogo eksperimenta [Avant-garde museology. To the history of one pilot experiment]. In A. Zhilyaev (Ed.), *Avangardnaia muzeolojiia* (pp. 15–45). V-A-C.