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Communist Cyberaesthetics: Theories of Computer Assisted Art and Criticism in Socialist Romania

STEFAN BAGHIU and CHRISTIAN FERENCZ-FLATZ

Introduction

> The electronic music concert, featuring Cristian and Florian Nanu, despite being anticipated as highly interesting, unfolded at the Operetta Theatre to an almost vacant hall. Acknowledged as pioneers in the realm of digital art and recipients of international accolades spanning over a decade, the Nanu brothers had only managed to secure 'tolerated' status on Radio Program III before '89. Presently, they find themselves entirely disregarded by the public. The concert, held with the innovative addition of computer-processed images, suffered from a lack of promotion. Regrettably, the Nanu brothers discovered that the Romanian audience only flocked to the 'praised tree'.[1]

This is how a brief review of a 1994 Romanian computer assisted art event reads. Four years after the collapse of the Communist regime, *Flacăra*,

Stefan Baghiu is Assistant Professor in Romanian Literature and Literary Theory at the Department of Romance Studies, Lucian Blaga University of Sibiu, and editorial secretary of *Transilvania*. Research for this article was funded by the EU's NextGenerationEU instrument through the National Recovery and Resilience Plan of Romania – Pillar III-C9-I8, managed by the Ministry of Research, Innovation and Digitalization, within the project entitled 'Theorizing (Sub)peripheries: Strategies of Synchronization in Southeast European Literary and Cultural Criticism (STRASYN)', contract no. 760247/28.12.2023, code CF 141/31.07.2023.

Christian Ferencz-Flatz teaches at the National University of Theatre and Film I. L. Caragiale, and is a senior researcher at the Babes Bolyai University of Cluj-Napoca. Research for this article was supported by the project, 'Philosophy in Late Socialist Europe: Theoretical Practices in the Face of Polycrisis', funded by European Union – NextgenerationEU and Romanian Government, under National Recovery and Resilience Plan for Romania, contract no. 760044//23.05.2023, cod PNRR-C9-I8-CF104/15.11.2022, through the Romanian Ministry of Research, Innovation and Digitalization, within Component 9, Investment I8.

[1] Lucia Ştefanovici, 'Fraţii Nanu, ieri toleraţi, azi ignoraţi', *Flacăra*, 4 May 1994, p. 15.

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one of the foremost magazines for cultural dissemination in the Socialist Republic of Romania, reflects on the prevailing state of contemporary digital and experimental art, highlighting a crucial distinction in relation to such projects: what Communism had 'tolerated', post-Communism 'ignored'. This observation gains significance when one considers the history of cybernetics and computer theory in the Romanian landscape, which exhibited remarkable potential in this regard. In 1938, Romanian scientist Ștefan Odobleja published *Psychologie Consonantiste* in Paris, a work later recognized as a major precursor to Norbert Wiener's cybernetics.[2] In 1957, Romania launched its first computer, CIFA-1, on which work had begun in 1953. The computer was not only the second one built in the Soviet Union and its satellite countries and the eighth in the world at the time,[3] but it also served as the prototype for subsequent computers in neighbouring countries. Victor Toma, who built the computer under the guidance of the prominent Romanian mathematician Grigore Moisil, later played a role in the team that contributed to 'the creation of VITOSHA, the first Bulgarian computer'.[4] This occurred during a period when, following Stalin's death, 'the typical work of Marxist philosophers of science turned into demonstrating the harmony between science and dialectical materialism by learning from and commenting upon rather than criticizing the achievements of modern science', with the '[a]ccusations of philosophical idealism which had been previously raised against such theories as relativistic cosmology or cybernetics [disappearing] from public discourse'.[5] During the 1960s and 1970s, Romania played a significant role

[2] See Charles François, 'Systemics and Cybernetics in a Historical Perspective', *Systems Research and Behavioral Science: The Official Journal of the International Federation for Systems Research* 16, 3, 1999, pp. 203–19. François names the four main forerunners in post-war cybernetics: Aleksandr Bogdanov's 1921 essay 'Tektology', 'which developed clearly cybernetic concepts'; Jan Christaan Smuts's 1926 *Holism and Evolution*; Walter Bradford Cannon who introduced the concept of 'homeostasis' in biology in 1932 (*The Wisdom of the Body*), and Ștefan Odobleja's *Psychologie Consonantiste* (1938), 'a first step leading to the birth of the lively Romanian school of cybernetics'. See also, Benjamin Peters, 'Normalizing Soviet Cybernetics', *Information & Culture*, 47, 2, 2012, pp. 145–75, doi:10.1353/lac.2012.0009. Peters describes Odobleja as 'the largely ignored Romanian whose pre-Second World War work prefaced cybernetic thought'. See also, Marin Vlada and Adrian Adăscăliței, 'Ștefan Odobleja: A Scientific Visionary, Precursor of Cybernetics and Artificial Intelligence', *On Virtual Learning*, Bucharest, 2017, pp. 44–53.

[3] See Marin Vlada (ed.), *Istoria informaticii românești. Apariție, dezvoltare și impact. Oameni, instituții, concepte, teorii și tehnologii*, vol. 5, Bucharest, 2021.

[4] Vasile Baltac and Horia Gligor, 'Some Key Aspects in the History of Computing in Romania', *IT STAR WS History of Computing Szeged*, 19 September 2014, pp. 1–32 (p. 2). See also, Victor Petrov, *Balkan Cyberia: Cold War Computing, Bulgarian Modernization, and the Information Age behind the Iron Curtain*, Cambridge, MA, 2023.

[5] Konstantin Ivanov, 'Science after Stalin: Forging a New Image of Soviet Science',

in global futurology, hosting the 1972 Third World Conference on Future Research, and by 1977, its state-sponsored centres for the study of the future, led by figures such as Mihai Botez and Mircea Malița, would bring together cybernetic and aesthetic research from both the Soviet Union and the West.[6] What has been discussed less, however, is the way in which this cybernetic thought has influenced and transformed the aesthetic theory of that era. While the general impact of importing cybernetic discourse into philosophy during the Cold War has gained more attention in recent years, most notably in Bernard D. Geoghegan's 2022 *Code: From Information Theory to French Theory*, which built on Céline Lafontaine's work,[7] where the author argues that the Marshall Plan's administrative *cyberspeak* permeated philosophical language from Jacques Lacan to Roland Barthes and Gilles Deleuze,[8] limited research has been conducted in the field of late socialist aesthetics from this standpoint.[9]

This article aims to explore the emergence of a cybernetic trend in philosophical aesthetics and art criticism in Communist Romania, which is both representative of debates taking place throughout the Eastern Bloc during that time, and stimulating when considering, in contrast, present-

Science in Context, 15, 2, 2002, pp. 317–38 (p. 329), doi:10.1017/S0269889702000467.

[6] 'Future studies were introduced in Romania as part of the import of Western methods and, in particular, management studies during the relative liberalization that followed Ceausescu's [*sic*] take over in 1966. This included an opening for both the Western policy sciences and the ongoing work on global simulation and modeling in the UN system. As a collaborative project with the UN and staffed by Western trained mathematicians, Ceausescu [*sic*] set up CEPECA, a new center for management techniques, the aim of which was to develop economic tools for developing societies and give them the tools with which to take the step from underdevelopment to development.' Jenny Anderson, *The Future of the World: Futurology, Futurists, and the Struggle for the Post-Cold War Imagination*, Oxford, 2018, p. 147.

[7] See Bernard Dionysius Geoghegan, 'From Information Theory to French Theory: Jakobson, Lévi-Strauss, and the Cybernetic Apparatus', *Critical Inquiry*, 38, 1, 2011, pp. 96–126, doi:10.1086/661645; Bernard Dionysius Geoghegan, *Code: From Information Theory to French Theory*, Durham, NC, 2022. See also, Céline Lafontaine, *L'Empire cybernétique. Des machines à penser à la pensée machine*, Paris, 2004, and Céline Lafontaine, 'The Cybernetic Matrix of "French Theory"', *Theory, Culture and Society*, 24, 5, 2007, pp. 27–46, doi:10.1177/0263276407084637.

[8] Marcin J. Schroeder, 'Towards Cyber-Phenomenology: Aesthetics and Natural Computing in Multi-Level Information Systems', *Recent Advances in Natural Computing: Selected Results from the IWNC 7 Symposium*, Tokyo, 2015.

[9] However, one should see the work of David Crowley in respect to cybernetics and environmental aesthetics under socialism and Andres Kurg's work on cybernetics and architecture. See David Crowley, 'Architecture and the Image of the Future in the People's Republic of Poland', *The Journal of Architecture*, 14, 1, 2009, pp. 67–84, doi:10.1080/13602360802705056, and Andres Kurg, 'Feedback Environment: Rethinking Art and Design Practices in Tallinn During the Early 1970s', *Kunstiteaduslikke Uurimusi*, 20, 2011, pp. 26–50.

day developments concerning the impact of artificial intelligence on art and art theory. In this regard, it is important to add a brief terminological remark from the outset: throughout these considerations, the notions of 'cybernetic', 'computer assisted', 'informational' and 'mathematical' aesthetics are used by and large as equivalents. Of course, the terms themselves do not rigorously overlap, with 'mathematical' approaches to aesthetics obviously designating a far larger spectrum of approaches, as we will show in the following when discussing the interdisciplinary profile of socialist Romanian cybernetic aesthetics. For the moment, it suffices to say that in this context cybernetic aesthetics counted as one of the most visible and prolific directions, which advocated the convergence of aesthetics and mathemathics in post-Stalinist Eastern Europe, notably championed by theorists and scholars such as Ștefan Odobleja, Solomon Marcus and Edmund Nicolau. As such, it served, as we will point out in the following, as a crucial lens for rethinking the meaning and scope of art in the age of computers and for exploring new ways of artistic creation and reception with the tools put forth by cybernetics. We start out by situating the question of cybernetics within the local political and ideological field of the Eastern Bloc, with its original rejection and subsequent embrace of the field. After quickly tracing the presence within the larger domain of theoretical philosophy at the time, we zoom in on the original developments that cybernetics engenders in the field of philosophical aesthetics in particular, focusing especially on two main authors, whose work is discussed in critical detail: Victor Ernst Maşek and Radu Bagdasar.

Cybernetics, philosophy and ideology

The emergence of cybernetics has consistently been linked to the early stages of the Cold War, and the military objective of 'control and communication in the animal and the machine' has remained a contentious issue since the concept's inception in Soviet Bloc debates. In 1948, in Romania — recently brought into the Soviet Union's sphere of influence — cybernetics was introduced as a 'science of capital' through the translation of an article by Il′ia Ehrenburg titled 'Americanism', where cybernetics was disparaged as a capitalist science.[10] However, after its rehabilitation in the late 1950s, cybernetics began to serve as the primary unifying factor between scientific discourse and humanistic discourse. While in the

[10] David Crowley, 'The Art of Cybernetic Communism', in Christina Lodder, Maria Kokkori, and Maria Mileeva (eds), *Utopian Reality: Reconstructing Culture in Revolutionary Russia and Beyond*, Leiden, 2013, pp. 219–38 (p. 219).

Soviet Union, '[t]he application of the cybernetic approach to the economy, linguistics, philosophy, and art history was an expression of the hope that cybernetization would purify these disciplines from political content',[11] in Romania, cybernetics gained prominence as a cosmopolitan science within an increasingly nationalistic context. De-politicization was not necessarily the explicit aim of Romanian aestheticians who hybridized their approaches by incorporating cybernetics, although it inevitably evolved into an apolitical discipline. The primary goal was to maintain an advantage in terms of theoretical updating in an era when translations from Western philosophy were becoming increasingly problematic. Furthermore, philosophers and critics who employed cybernetic methods in the analysis of art often believed that since cybernetics can bring out 'the possibility of a universal method of problem solving as soon as it manages to formulate those problems in the right language',[12] the same would also apply for aesthetics.

Since the early 1960s cybernetics had increasingly become an obsessive buzzword in the Soviet space, gaining more and more traction as the one keyword to define all future developments of the planned economy.[13] The XXII Congress of the Soviet Communist Party overtly stipulated that the following two decades would witness a substantial automation of socialist production. In Socialist Romania, the significance of this move was synthesized as follows:

> The next 20 years will imply a complex and massive automation of production, gradually introducing automated sectors and plant units. This will necessitate the accelerated introduction of the most advanced system of automated command. A wide scale adoption of cybernetics, of electronic machines for calculus and command in production, in scientific research, in the practice of projecting and constructing, in the calculations of planning, in the fields of evidence, statistics and administration.[14]

[11] Egle Rindzeviciute, 'Purification and Hybridisation of Soviet Cybernetics: The Politics of Scientific Governance in an Authoritarian Regime', *Archiv für Sozialgeschichte*, 50, 2010, pp. 298–309 (p. 308).

[12] Slava Gerovitch, *From Newspeak to Cyberspeak: A History of Soviet Cybernetics*, Cambridge, MA, 2002, p. 1.

[13] According to Egle Rindzevicitude, 'even the US described the Soviet Union in the 1960s as a "computopia" or "technotopia": a regime which both invested unrealistic hopes into the economic and social effects of the development of techno-sciences and at the same time built structural obstacles to the realisation of these hopes'. Rindzeviciute, 'Purification and Hybridisation of Soviet Cybernetics', p. 290.

[14] D. Dumitrescu, 'Direcțiile principale ale progresului tehnic în construcția desfășurată a comunismului', *Cercetări Filozofice*, 3, 1962, pp. 551–64 (p. 559).

Only a few years later, Romania adopted a similar stance during Nicolae Ceaușescu's rise to power. In June 1966, at the plenary of the Central Committee of the Romanian Communist Party, Ceaușescu called for an accelerated computerization of the entire Communist economic system. In his view:

> the growing magnitude and complexity of our economy urgently demands the introduction of a strict economic evidence, an improvement of the economic information system and the large-scale use of electronic technologies in projection work, in the programming of production, in transportation and other economic activities.[15]

The Communist press avidly reported these developments throughout the Communist period in various tones and from varying perspectives. While the journal *Știință și tehnică* (Science and Technique), which specialized in popularizing recent advancements in science and technology, provided detailed technical analysis of the uses of cybernetics in contemporary society,[16] the youth magazine *Scânteia tineretului* (The Spark of Youth) often ridiculed the excitement about technological innovations and their potential to transform social life. Frequently, cultural journals walked a thin line between documenting local research into the multifarious possibilities of cybernetic research and sheer propaganda.

The strong connections between cybernetics and state politics are, of course, evident: being the science that could guarantee a Soviet *technotopy*, it had to be protected at the highest level from any intrusion. As described in the late 1980s by Stuart A. Umpleby, the former president of the American Society for Cybernetics, the cybernetic dialogue at the end of the Cold War was strictly determined by politics.[17] This connection is tellingly illustrated in the Romanian context by an article in the cultural journal *Contemporanul* from the 1980s, which broadly addresses cybernetics

[15] Vincențiu Dumitru, 'Cibernetica în slujba economiei', *Lupta de clasă*, 9, 1966, pp. 58–66 (p. 59).

[16] The model was also tributary to the USSR's policy of accomodating Western science in its own realm. The early 1960s can be read as a period in which 'the Soviet Union dramatically increased the activities of the publishing house *Mir* for the translation of foreign scientific books and established the Institute of Scientific-Technological Information (INION) with the task of reviewing and abstracting world scientific literature'. Ivanov, 'Science after Stalin', p. 324.

[17] Stuart A. Umpleby, 'American and Soviet Discussions of the Foundations of Cybernetics and General Systems Theory', *Cybernetics and Systems*, 18, 2, 1987, pp. 177–93, doi:10.1080/01969728708902135.

and its role for social and economic development. After reviewing all the benefits that cybernetics can bring to the various sectors of the socialist economy — from industrial production and the management of energy resources to agriculture, transportation and telecommunications — the article concludes by recounting the following:

> In honour, esteem and gratitude of the constant preoccupation with the new science, the fourth International Congress for Cybernetics and Systems in Amsterdam in 1978 unanimously decided to award the first memorial gold medal 'Norbert Wiener' to the President of Socialist Romania, comrade Nicolae Ceaușescu, a prominent personality of international life, in view of his remarkable militant activity, consequently devoted to establishing a new political and economic world order, to the fulfilment of the aspirations of all people, regardless of their social regime, to peace and collaboration in the interest of progress and human civilization.[18]

In fact, the medal was not awarded in Amsterdam, but several months after the congress, upon a visit of its president to Romania, and it primarily came as recognition of some important early Romanian contributions to the field (especially from mathematician Ștefan Odobleja), which shortly predated Norbert Wiener. But all of this was completely discarded in favour of the fictitious political merit of the local Communist leadership. What this tellingly illustrates is how public discourses on cybernetics during socialist times were constantly overwrought with ideological implications even while they seemed only to render neutral technical matters. This is also evident in the proceedings of the final International Congress of Aesthetics in 1972, held in Bucharest, which opens with a dedication to Nicolae Ceaușescu and his unwavering efforts to promote the new scientific field.[19]

Nowhere was this ideological over-determination more clearly visible than in the local philosophical field. The philosophical reception of cybernetics, which began in the late 1950s, shows a clear and constant development up to the late 1980s leading to an increasingly technical, but paradoxically no less ideological interpretation of the subject matter. The

[18] Moise Altăr, 'Cibernetica în slujba progresului economico-social al țării', *Contemporanul*, 45, 1985, pp. 6–7.

[19] 'The works of the VIIth International Congress of Aesthetics have been held under the High Patronage of His Excellency Mr. NICOLAE CEAUȘESCU President of the Socialist Republic of Romania.' See *Actes du VIIe congrès international d'esthétique / Proceedings of the VIIth International Congress of Aesthetics*, vol. 1, Bucharest, 1976.

process could be best described in brief as a naturalization of ideology. In this regard, early responses to the matter were particularly keen on stressing not only the usefulness that cybernetics had for a socialist system, despite being first developed in a Capitalist context, but more so the fact that socialism and cybernetics were indeed predestined for one another. Two points in particular supported this thesis.

First of all, socialist philosophers in Romania saw cybernetics as the ultimate proof that allowed once and for all a way to resolve the historic controversy between idealism and materialism clearly in favour of materialism. Thus, in their reconstruction of the matter, cybernetics undoubtedly proved that the natural sciences and their materialistic perspective of the world could ultimately also arrive at technically reproducing the process of thought itself. As Clara Dan, one of the young researchers at the Bucharest Institute for Philosophy argued in 1960:

> The construction of complex machines, which partially imitate the functioning of the human brain, allows controlling processes of knowledge. Therefore, numerous vain and sterile idealist philosophical speculations regarding the irreducibility of the subject to the object and the isolation of the subject from the totality of nature in which he is engaged, find themselves confronted with material and palpable evidence attesting to their falsity. Thus, cybernetics offers crushing experimental evidence against subjectivism.[20]

While cybernetics could thus by no means count as a discovery of socialist science, it nonetheless played into the hands of materialist dialectics, such that ultimately no other philosophy was seen as able to suitably come to terms with it. In extensively analysing the special issue on cybernetics of a Swiss philosophical journal, Dan consequently mocks the helplessness of idealist patterns of thought when confronted with such topics, which can only be philosophically synthesized in a Marxist-Leninist perspective.

Secondly, the predestined match between cybernetics and socialism concerned not only the philosophical support that the former offered for materialism, but also its potential social consequences, which could only be properly addressed within a socialist system. This point was laid out most explicitly in an article by the East German Philosopher Georg Klaus, translated into Romanian in the philosophical journal, *Cercetări filozofice*,

[20] Clara Dan, answer to a dossier on science and philosophy, *Cercetări Filzofice*, 5, 1960, pp. 125–40.

which found numerous echoes over the following years. According to Klaus, who also pointed at the important materialistic underpinnings of cybernetics, the automation of industrial production was bound to lead to unavoidable upheaval since it necessarily entailed massive unemployment and social hardships. In his view, such consequences were impossible to tackle within a capitalist system, since the entire range of solutions that may be considered to counter them — reducing working hours while maintaining salaries, reducing prices, investing in technical education, reducing the threshold for retirement, introducing forms of planned economy, etc. — could ultimately only result in putting an end to capitalism itself. He argued, therefore, that:

> the complete automation of all routine physical and intellectual work, that has become possible with the great electronic machines, can only be accomplished without catastrophic effects within a socialist order, which eliminates the technical alienation of man.[21]

Thus, both in its philosophical presuppositions and in its social consequences, cybernetics was appropriated by Marxist-Leninist philosophers and reshaped into a prime ideological issue. Consequently, even a technically-minded cybernetician like Edmund Nicolau could explicitly argue for researchers in the field to familiarize themselves with the basics of Marxist-Leninist philosophy to further their own work.[22]

These ideological accents that characterized the early discussions of the 1950s and '60s began to pale, however, with the subsequent, increasingly technically-applied treatment of cybernetics found in the philosophical journals of the 1970s and '80s. While these discussions ranged between sheer matters of technical detail, picked up mainly from Western philosophical debates, and more fantastic, futurological arguments, which attempted to depict the socialist world in view of foreseeable technological advancements, both directions ultimately avoided any explicit ideological pathos. Western theorists were quoted without any concern for the ideological divides between East and West, while musings about a technologically more advanced future were careful, when depicting the developments of the following decades, to avoid all implicit criticism of the given society here and now. While several utopian projects

[21] Georg Klaus, 'Despre problemele filozofice și sociale ale ciberneticii', *Cercetări Filozofice*, 1, 1958, pp. 29–46 (p. 43).

[22] Edmund Nicolau, answer to a dossier on science and philosophy, *Cercetări Filzofice*, 5, 1960, pp. 125–40.

developed during state socialism that harboured a subversive criticism of existing socialism — in response to, for instance, growing ecological concerns (see the work of Harich, Bahro and Havemann in the GDR)[23] — Romanian projections concerning automation and cybernetics hailed the revolutionary potentials of those technologies, but did so in ways that ultimately made sure they implied no societal change whatsoever.

Nevertheless, one might argue that the topic was in its prevalent later guise in the intellectual debates of the Communist period still not entirely cleansed of its ideological underpinnings, despite the neutral tone adopted in its assessment, much like the case of the philosophical understanding of 'science' in general during that time. While 'science' was initially appropriated in stark Marxist-Leninist terms during the 1950s and 1960s, in arguments intended to demonstrate the superiority of dialectical materialism as a scientific method, the term consequently and gradually acquired an ideological inflection even when it came to be used neutrally, say for discussing the work of hard scientists in the Soviet sphere. 'Scientificity' thus eventually became a value that drew on its ideological legitimacy under state socialism even when discourses concerning it — not just in philosophy, but also in the cultural press, in technical journals, or even in educational films and TV programmes — became bland, neutral and apparently hard to differentiate from corresponding discourses in the West.[24] What the Marxist-Leninist doctrine initially borrowed in calling itself 'scientific' became ideological conformity in science, even when it no longer showed any visible ideological ties. The same process also occurred, we might argue, in a perhaps less conspicuous manner in the case of cybernetics, which was first assimilated by Marxist-Leninist philosophers who defended its compatibility with socialism, only to then retain a certain socialist flavour, an air of ideological legitimacy which lingered on even when it came to be used in a sheer technical and procedural perspective.

It is precisely this loose ideological halo that determined the omnipresence of the topic in the philosophical debates of the 1970s, in writings by authors normally associated with a strong notion of *philosophia perennis*. This was the case most ostensibly with Constantin Noica, probably the single most important Romanian philosopher during this time and head of the so-called Păltiniș school, who in 1982 decided to

[23] See A. Amberger, 'Post-Growth Utopias from the GDR: The Ecosocialist Alternatives of SED Critics Wolfgang Harich, Rudolf Bahro, and Robert Havemann from the 1970s', *Contradictions*, 5, 2, 2021, pp. 15–29, doi: 10.46957/con.2021.2.2.

[24] See also, Adela Hîncu and Viktor Karády (eds), *Social Sciences in the 'Other Europe' since 1945*, Budapest, 2018.

publish his own 'notes on cybernetics', written twenty years earlier in 1962, in response to a collected volume of Soviet and Western contributions. While his reflections were perhaps strikingly disconnected from the vivid ideological debates surrounding the term in the 1960s, they were nonetheless a perfect fit for the 1980s, when the implicit ideological legitimacy of the topic also supported reflections which seemed otherwise to be completely devoid of any political intentions as long as they did not run explicitly against the ideological grain. Such oppositional intentions were obviously alien to Noica, whose followers during those years saw themselves as championing a form of ideologically neutral 'resistance by culture'. As such, Noica's reflections simply aimed at highlighting the philosophical importance of cybernetics in general. In this regard, Noica was careful to hint at a possible ideological reading of the term from the very beginning without discarding it altogether:

> But does cybernetics have a philosophical perspective? One might say from the onset: it either has its own philosophical vision, or it can be inscribed indirectly, as an extraordinary force of production, in a prior philosophical system. In this regard, it is telling that cybernetics was initially met with reservations by Eastern philosophers, until finally someone like Victor Mikhailovich Glushkov stated that cybernetics 'was predestined for our socialist order'.[25]

Interestingly, for a philosopher of culture like Noica, who constantly sided with humanist values and continental philosophical traditions against contemporary versions of neo-positivism and scientism, cybernetics was by no means met with scepticism or condescension. Instead, Noica pleaded for speculatively expanding the scope of cybernetics from the sphere of mere 'civilization' — i.e., economics and society — where it was currently deployed efficiently, bringing about substantial improvement to the sphere of 'culture' itself, where in his view it could find some similarly relevant tasks to fulfil by helping advance Communist culture and philosophy. Interestingly, this cultural employment of cybernetics, as advocated by Noica, was indeed developed during the 1970s in the field of philosophical aesthetics, and this is precisely the main topic we will pursue in the following section.

[25] Constantin Noica, 'Însemnări filozofice în legătură cu cibernetica', *Revista de filozofie*, 6, 1982, pp. 540–43 (p. 540).

Socialist aesthetics and cybernetics

In a synthesis published in 1956 in the first issue of the newly founded philosophical journal, *Cercetări filozofice*, under the title, 'Contemporary Tasks in Philosophy' — a text signed by the editorial collective of the journal — the entire field of aesthetics was remarkably absent. The discipline was only mentioned in passing in a statement which briefly concluded that '[t]he study of aesthetic matters was completely missing from the works of the Institute for Philosophy. It is only in the plan for the year 1956 that the first writings in this regard began to appear'.[26] This in itself broadly corresponded to the 'aesthetic turn' which also took place after Stalin's death in several other countries of the Socialist Bloc.[27] In Socialist Romania it was slightly predated by Alexandru Băleanu, a philosopher affiliated with the Bucharest Institute for Philosophy, whose 1954 paper, 'On the Objective Nature of the Laws of Art', had already sketched out the main directions that Romanian philosophers interested in aesthetics would explore in the following years. The title clearly showed the two main intentions of his reflection. On the one hand, Băleanu attacked a subjectivist understanding of art as the expression of its creator, which was dominant in pre-socialist times in local aesthetics. In so doing, he parted ways with both an idealist understanding of art as spirit transposed into matter and with its existentialist interpretation as a manifestation of freedom against all forms of causal determinism.[28] In contrast to such conceptions, the early aesthetic writings of Romanian socialist philosophers primarily sought to tie art to objective reality, regarding its capacity to reflect said reality as the main criterion for its evaluation. The main consequence of this, in the view of Romanian state socialist philosophers, was the fact that, due to its scientific grounding in dialectical materialism, aesthetics was now finally capable of attaining the rank of an objective science proper.[29] In brief, early socialist aesthetics was objectivist in two main respects: primarily in that it upheld the primacy of the object over the subject, and secondly in that it came with the claim of being objectively scientific. It was precisely the latter that encouraged Romanian aestheticians frequently to scold art critics for their lack of rigour when discussing art in cultural journals, considering that they ultimately supported a subjectivist view of aesthetics by the very

[26] See *Cercetări filozofice*, 14, 1956.

[27] See also, Yulia Karpova, *Comradely Objects: Design and Material Culture in Soviet Russia, 1960s–80s*, Manchester, 2020, pp. 24–64.

[28] Alexandru Băleanu, 'Despre natura obiectivă a legilor artei', *Cercetări filozofice*, 5, 1954, pp. 149–74 (p. 149).

[29] Ibid., p. 173.

fact that they allowed their critical activity to be guided exclusively by the caprices of their own taste.

Understandably, this line of reasoning found its main epistemological grounding in Lenin's theory of reflection. According to Lenin, material reality existed independently from human consciousness, whereas the latter could only attain knowledge by 'reflecting' material reality. While Lenin himself first developed this theory in speaking about philosophy and science, his stance applied to all conscious efforts to appropriate material reality, including art. As a consequence, during the 1950s the theory served as the primary thesis of socialist aesthetics throughout the Eastern Bloc, finding its most influential elaboration in Georg Lukács's 1954 article, 'Kunst und objektive Wahrheit', the main arguments of which resonate throughout Socialist Romanian aesthetic writings of the period. Conceived as such, Lenin's theory directly served as justification for imposing socialist realism as the only accepted artistic direction that was capable of truthfully and objectively reflecting material reality, in contrast to all forms of modernism in both literature and the visual arts. Consequently, authors like Joyce, Proust and Kafka were fiercely criticized as mere diversions, or as ideological expressions of a bourgeois world in decline. Băleanu's aforementioned article is particularly representative of its time in the way it connects all these dots:

> Historical materialism teaches us that social existence determines social consciousness. In light of this theory, we must analyse art as a form of social consciousness. The main content of knowledge and of human thought in general is reality. If the material side, the external conditions, existence and other similar phenomena are called content, then the ideal side, consciousness and other such forms can be called form. The relationship between art and reality as a relation between subject and object is therefore a relationship between form and content. Within this relationship, content is the primary and determinant factor.[30]

These main tenets of socialist aesthetics were soon to be complicated both by more nuanced attempts to delineate socialist realism from critical realism or naturalism, and the subtle shift in focus throughout the Socialist Bloc that came after Stalin's death with the revision of initially canonic authors like Plekhanov and the relativization of some of their key dogmas. Thus, Băleanu's virulent antisubjectivism from 1954 soon gives way to ever

[30] Ibid., p. 150.

more elaborate discussions concerning the various functions of subjectivity in art towards the end of the 1950s.[31] Similarly, the Marxist-Leninist thesis of art as a form of social consciousness reflecting material reality also became increasingly diluted, as it is now, for instance, associated with ancient conceptions of art as *mimesis* in general.[32] At the same time, the 'objective laws of art' addressed by Băleanu slowly refocused into a discussion of the 'objectivity of aesthetic value',[33] strongly resembling the neutral terminology of neo-Kantian aesthetics of value.

However, regardless of this gradual dismantling of the ideological underpinnings of Socialist Romanian aesthetics, one may argue that the main vectors of these early aesthetic reflections remained influential over subsequent decades. This is evident, for instance, in the peculiar treatment of the relationship between artistic and non-artistic beauty. As is well known, this topic originally drew from a long tradition in aesthetic theory, especially in classical debates about 'natural beauty'. While *das Naturschöne* played a central role in the aesthetic reflection of the eighteenth century, philosophers after Hegel had increasingly tended to reduce the field of aesthetic theory to the sphere of art. Socialist Romanian aestheticians rejected this narrow understanding of aesthetics, which marginalized natural beauty in favour of art, and they challenged the qualitative separation that bourgeois aestheticians after Hegel had established between artistic and natural beauty to the detriment of the latter. However, their main objective in doing so was not simply to dignify the experience of beautiful landscapes *per se*, that is natural beauty in the classical understanding of the term, but rather to prevent a too profound dissociation between art and social reality. Thus, they argued, since authentic art, as part of the human effort to appropriate objective reality, was to be seen as a reflection of the latter, the appreciation of art itself could not be completely severed from the appreciation of reality, so that artistic beauty ultimately needed to be seen in communication with

[31] Already in 1958, Romanian aestheticians distinguished three main functions that subjectivity was required to perform in aesthetic reception: first of all, the subject from the onset played a central role in conceiving the work of art as a reflection of objective reality; secondly, the subject also entered into play with the involvement of fiction and imagination in art; and finally subjectivity was also implied in the artwork's appeal to the emotional dimension of its receiver. See M. Cernea, 'În legătură cu problema contradicției fundamentale a perioadei de trecere de la capitalism la socialism', *Cercetări filozofice*, 5, 1958, pp. 53–72.

[32] Gr. Smeu, 'Cercetări sovietice în domeniul esteticii marxist-leniniste', *Cercetări filozofice*, 1, 1959, pp. 179–81.

[33] See Marcel Breazu, 'Despre obiectivitatea valorii estetice', *Cercetări filozofice*, 5, 6, 1958, pp. 29–48.

the aesthetic valences of reality itself, both social and natural. Despite the subsequent demise of Stalinist aesthetics, ample consideration of the 'aesthetics of everyday life' set in during the 1960s in Socialist Romanian aesthetics, prolonging themes that were inherently rooted in those initial positions.[34] Similarly, early Marxist-Leninist arguments for the objectivity of art and the scientific character of aesthetics, which rose to prominence in the Stalinist period having their main ideological point of anchorage in the theory of reflection, were appropriated and echoed in the late 1960s by the new trend of 'computer-based' or 'cybernetic' aesthetics, which drew a great deal of its legitimacy in the socialist world from these tacit continuities.

The notion itself of 'computer-based aesthetics' comprises two distinct and complementary aspects: on the one hand, it refers to a theoretical method for studying art with the new tools of cybernetic processing; on the other, it designates a new type of artistic practice, which was at the time creatively deployed in several arts both within the socialist and the capitalist context in ways that posed specific difficulties to philosophical aesthetics. In other words, the notion of 'cybernetic aesthetics' brings together two main sets of questions: it asks about how cybernetics can enrich our theoretical understanding of art, and it inquires into how cybernetics can help to expand the field of art by contributing to the birth of new artistic genres. The two questions are, as will be shown next, closely interrelated in the discussions unfolding within the local field of philosophical aesthetics.

Cyberaesthetic theory and cyberart

In terms of the interest in using cybernetics as a research tool in aesthetics, Romanian scholars in the field mainly followed in the footsteps of West German researchers from the Stuttgart school like Max Bense or Helmar Frank. The method these authors developed during the 1950s rests upon four theoretical assumptions, which define a specific interdisciplinary approach combining psychology, semiotics and mathematics with cybernetic processing in order to finally turn aesthetics into a rigorous science. Thus, according to Frank, informational aesthetics sees itself first and foremost as a form of applied mathematics and, as such, is primarily interested in working out the quantifiable aspects of art: the frequency of certain words or expressions in poetry, or certain reoccurring patterns or proportions within visual works of art. Secondly, this approach characterizes the

[34] See Christian Ferencz-Flatz, 'Estetica vieții cotidiene în filozofia RSR', *Transilvania*, 11–12, 2021, pp. 1–11.

work of art originally as a composition of signs, that is, a message, which requires the employment of a semiotic method for its interpretation. Thirdly, the artistic message should as such be considered in conjunction with the findings of informational psychology that require experimental research into how human subjects generally process information. Finally, informational aesthetics puts all of these aspects together with the tools of cybernetics to allow for a truly scientific and measurable aesthetic judgment. Based on these aspects, Frank distinguishes between a purely descriptive computer-based aesthetics, which involves the first two of the aforementioned aspects, and an explanatory computer-based aesthetics, which primarily focuses on informational psychology, whereas his entire program should ultimately result not only in establishing aesthetics as an exact science proper but also in automating the task of art criticism itself by delegating it to computers.[35] Despite some promising experiments in the field, however, this project remained a mere desideratum for the Stuttgart aestheticians. Moreover, their conception came with some serious limitations from the outset, insofar as it dispensed itself from all qualitative and phenomenological questions concerning the definition of art, and by plainly training an algorithm with what was most commonly considered to be art at the present time, thus only reproducing accepted aesthetic judgments or at best rendering them more exact.

These concerns were also echoed in the Romanian theoretical field. They came to the fore vividly during a debate that took place in 1966 between Adrian Marino, the most prominent literary theorist of the period, and computer scientist Titus Priboi, following the publication of an article by Marino in the cultural magazine, *Contemporanul*. Marino advanced two ideas inspired by Helmar Frank and Abraham Moles.[36] On the one hand, he posited that cybernetics held the potential to eliminate the 'subjective character' inherent in the interpretation and evaluation of literary criticism:

> For as long as there have been critics and literary criticism, one of the most serious accusations leveled at this activity has been and undoubtedly is that of 'subjectivity'. To which the literary critic replies that 'subjectivity' is its very condition; that this 'subjectivity' is neither chaos nor caprice; that it

[35] Helmar Frank, *Kybernetik und Philosophie. Materialien und Grundriss zu einer Philosophie der Kybernetik*, Berlin, 1966.

[36] Romanian aesthetician and literary theorist Adrian Marino cites Helmar Frank, 'Sur un "théoréme" d'esthétique informationnelle', *Revue d'esthétique*, 11, 3–4, 1958, pp. 62–66, and Abraham Moles, *Theorie de l'information et perception esthétique*, Paris, 1959.

> implies a concept of art, historical training, aesthetic education, etc. (all 'objective' elements), that the judgment of taste tends towards a pseudo-universality, in the sense of the Kantian categorical imperative, etc. In a way, cybernetics could put an end to this controversy by providing an objective basis for value judgement, when it would not simply eliminate, by a succedaneum, the operational efficiency in the field of literary criticism.[37]

However, Marino argues that this stage could never be attained since the subjective side of perception is ineffable and purely human. On the other hand, he suggests, following Moles's lead, that cybernetics could provide 'the possibility of confronting the literary work with its own algorithm (i.e., its own set of aesthetic rules)'. Marino elaborates on this 'internal algorithm' of the artwork in conjunction with the notion of variation, initiating a broader discussion on 'permutational art' — an exhaustive exploration of the combinatorics of poetics. Despite expressing fascination with the novel insights that can come out of the intersection of theory and cybernetics, Marino nonetheless categorizes them as mere 'hypotheses' that, in his view, ultimately lead to the same outcomes as any other subjective operation.[38]

Significantly, the second main aspect under scrutiny in these discussions, namely, the question of using cybernetics as a means for creating art, already exceeds these limitations to some extent, as it brings about novel aesthetic objects that are hardly accounted for by our established aesthetic judgments. According to Victor Ernest Maşek, the single most important Romanian author engaging in these issues during the 1960s and '70s, it makes all the difference in the world whether computers are simply used as helpful instruments by artists, in which case they are no more than a violin or a typewriter for a traditional artist, or whether they actually

[37] Adrian Marino, 'Cibernetica şi critica literară', *Contemporanul*, 17, 1966, p. 3.

[38] 'Always keeping within the realm of hypothesis, there is no doubt that through this combinatoric game we obtain a large number of potential works, from which we can select and retain the most successful; that of all the variants one will be optimal; that by reintroducing into the machine the elements of this variant, we create a doublet, a remake, perhaps more successful than the literary work itself […] that — finally — from this comparison we can determine whether or not an author is approaching his own "ideal", which would be a real contribution to the accuracy and effectiveness of the critical act. […] Cybernetics would be an important step forward, making it possible to compare the work of art with its own perfect, virtual, intrinsic image. This would make it possible to determine precisely the degree to which a piece of writing is close to or deviates from its own ideal internal norm, with the result that the critical verdict would be more accurately nuanced and motivated. It is no less true that provided with such cyber-glasses, even the most minimal critical risks becoming perceptive…' Marino, 'Cibernetica şi critica literară', p. 3.

perform the creative work themselves, albeit following a pre-designed algorithm or program. In his dissertation, published in 1972 under the title *Artă și matematică* (Arts and Mathematics), Mașek extensively follows contemporary artists working with computers both within and outside the Eastern Bloc. In this regard, he mainly refers to automated graphics, and specifically to works referenced in American journals like *Computers and Automation*, but also to local artists like Șerban Epure — a Romanian designer and painter who specialized in cybernetics[39] — as well as to experiments in musical composition using computer algorithms, as can be found in the works of Romanian musician and composer Aurel Stroe — who did substantial work on mathematical models for generating compositions[40] — or to computer-based literature, especially in the form of autopoems.[41]

In fact, however, the two directions of cybernetic art and cybernetic research in aesthetics are hard to keep apart in Romanian studies as their treatment in the local philosophical debates show. On the contrary, the conflation of aesthetic theory and artistic practice seems to be one of the points that most keenly interested Romanian authors preoccupied with cybernetic aesthetics during this period. In this regard, they noted that the main use of computational aesthetics was not just in arriving at precise and perhaps even automated value judgments with regard to existing works of art, but also in producing artistic possibilities implicit in the established cannon. Thus, several authors consider the possibility dormant in this new technique — once we have exhaustingly analysed the stylistic algorithm of artists like Rembrandt, Klee or Bach — of completing the works they have painted or composed with those that were only implicit in their 'program',

[39] See Jacques Lonchamp, 'Art et ordinateur au Sigma de Bordeaux', *Le Monde*, 30 November 1973; Bruce Wands, *Art of the Digital Age*, London, 2006. More references can be found in the online presentation of Șerban Epure made for artEXIT: <https://artexit.ro/serban-epure/>.

[40] See Valentinei Sandu-Dediu, 'Aurel Stroe, compozitorul care a cunoscut toate tradițiile muzicale', *Infinitezimal*, 1, 2013 <https://infinitezimal.ro/functii-et-grafice/aurel-stroe-compozitorul-care-a-cunoscut-toate-traditiile-muzicale>.

[41] However, these artists have never been integrated into the Romanian discussion on post-war neo-avant-garde or postmodern tendencies. Notably, with a single exception being the citation of a French article by Ion Manolescu, the most significant contribution to the understanding of local postmodernism fails to mention cybernetics or cyberartists. See Mircea Cărtărescu, *Postmodernismul românesc*, Bucharest, 1999. Furthermore, the most recent investigation into Romanian postmodern theory and conceptual evolution does not engage with cybernetics, as no author has ever juxtaposed postmodern theory with cybernetics in any instance. See Robert Cincu, *Postmodernismul în teoria literară românească*, Cluj-Napoca, 2022.

but which they contingently failed to realize. Thus, Socialist Romanian authors claimed, absorbed in their culturally conservative utopian dreams, computers could help us complete high culture by adding the potential works of great masters to their current corpus of works. On the other hand, artists actually working with computers in their artistic production were themselves, as explicitly pointed out by socialist aesthetic theorists, already engaged in a work of structural analysis and theorizing. For one, they delegated to the computer and thus became mere spectators of their own work. Moreover, in programming, they developed an algorithm of their own art, which equated to identifying its theoretical formula, not to speak of how art created by computers generally revolutionized our understanding of what art is and can be. As a consequence, theoretical inquiries and practical experiments played into one another constantly in this field, attesting, in the view of authors like Maşek, to how traditional distinctions between author, audience and critic or theorist have gradually been socially uprooted within this new context.

Critical perspectives

In considering these matters, Socialist Romanian theorists assume an oddly ambivalent position. On the one hand, they are obviously enthusiastic about this new potential and much of their writing goes into dissipating unfounded fears and criticism around them. Thus, they argue, theorists attached to an idealist view of art especially have expressed fears that cybernetic aesthetics both in its theoretical and practical version completely eliminated the intuitive and non-rational element of art for the sake of pure calculus and reason.[42] This reductive aspect of the procedure is instead either bluntly challenged by socialist thinkers or deemed to be overcompensated by its gains. Radu Bagdasar, who was the most active Romanian author of the time attempting to come to grips with the advent of cybernetics in the field of literary theory, saw eight major consequences, which derive from these developments that were entirely reshaping the contemporary situation of art: 1) the artistic act gains in essence, in the development of an algorithm — essentially, the actual creation no longer leads to solely one work of art, but a broad range of possible artworks; 2) the fact that artists need also to be engineers or computer scientists makes possible a broad synthesis of competencies and professions which can help overcome the limitations of some of these established distinctions

[42] See Bagdasar's contribution to Victor Ernest Maşek (ed.), *Arta viitorului*, Bucharest, 1979.

and categories; 3) aesthetics, which was once a mere philosophy of art, thus becomes an experimental science proper; 4) computer-based art leaves behind the classical opposition between the original and its reproduction, which implies both 5) that art becomes more universally accessible (the democratization of art) and 6) that artists and theorists or audiences stop being firmly separated categories, becoming instead mutually convertible positions; 7) such a proliferation of art eventually benefits a growing aestheticization of the outside world and leads to 8) the gradual convergence between art and praxis. Sketched in brief, these points make clear the extent of the attraction of cybernetic aesthetics for Eastern European philosophers in that it did not derive solely from its novelty as an emerging artistic trend, but rather also responded to deeper social and political concerns, which were particularly urgent for them.

At the same time, however, local theorists were not unequivocally in favour of these developments, as can be seen from at least two major reservations Mașek expresses in his works. First of all, in his view, computer aesthetics was by no means set to simply replace Marxist-Leninist philosophical aesthetics. Mașek himself makes it ostensibly clear in his early dissertation that he does not see computer-based aesthetics as an alternative, but rather as a complement to philosophical aesthetics. Therefore, in his view, 'an exhaustive analysis of the artistic phenomenon does not stop at the data thus acquired — however important — but only arrives at including the data in an encompassing philosophical conception and putting it in the perspective of a well-defined aesthetic and social ideal'.[43] Certainly, this note may be seen as nothing but an opportunistic concession made to the local dominant ideology. Ion Ianoși — a young scholar at the time, who was to become one of the top authors in Romanian aesthetics until the end of the socialist period — is quick to comment, in his otherwise quite positive review of the book, that Mașek's position regarding the relationship between philosophical and computer aesthetics does not sound particularly convincing since it does not engage in an in-depth philosophical, and that is, Marxist discussion of the new methodologies and their findings.[44] For Mașek himself, however, the main merit of these methods resides precisely in the fact that they can enrich philosophical interpretation with new data, which 'will break the vicious circle of reflections of reflections, allowing theory to finally advance again

[43] Victor Ernest Maşek, 'Arta sub semnul luciditătii', *Revista de filozofie*, 3, 1972, pp. 419–23 (p. 420).

[44] Ion Ianoși, 'Estetica informațională și estetica filozofică', *Revista de filozofie*, 3, 1973, pp. 325–29 (p. 327).

and make progress'.[45] Secondly, and more significantly even, for Mașek, cybernetic art itself still could not actually count as art proper. This is not because of any idealist concerns for the dignity of man, which he disdains, but simply because cybernetic art in his view still lacks certain distinctive typological features of artworks: a communicative intention which defines them as informative signs, their function as the self-expression of a creative subject, a certain depth of meaning, etc. In lacking these qualities — which are, significantly, implicitly related to questions of subjectivity even though Mașek does not specifically emphasize this point — the works of computer artists appear as tautological and purely decorative, and they can as such ultimately only count as para-artistic phenomena, not as art proper. As such, however, they are by no means irrelevant, but instead they play a crucial role in everyday aesthetics. In other words, they can serve the purpose of aesthetically enriching our lived environment and thus offer a sort of visual or aural therapy against alienation, in that they contribute to an increasingly friendly and intimate relationship with the surrounding world of objects.[46] These strong points of criticism need to be relativized in at least two main regards, however. For one, they are obviously determined by the very limited scope of existing technologies in the 1970s and, even if Mașek also suggests their applicability for every possible further development that could only fall short of bringing forth a form of artificial consciousness, one can certainly wonder how such arguments played out in relation to contemporary computer-generated imagery, poetry and music. Moreover, if ever the point made emphatically by Walter Benjamin with regard to photography and film was valid — that it is not so much a matter of determining whether they can still count as art according to our established aesthetic views, but rather of accounting for the ways our aesthetic precepts have decidedly shifted with the advent of photography and film — it also needs to be stressed with regard to computer generated media. Thus, here as well the superficial question of whether these products can still count as art should cede way to a more profound reflection on the shifts of function that they engender within the field of artistic practices, and the works of the Romanian theorists discussed in this article are of value primarily insofar as they abound in fruitful suggestions to that extent.

One such suggestion concerns what was seen at the time as one of the main challenges for critics and theorists of art at present: 'the management

[45] Victor Ernest Mașek, 'Informația estetică sau măsurarea inefabilului', *Revista de filozofie*, 6, 1972, pp. 749–54 (p. 763).

[46] Mașek, 'Informația estetică sau măsurarea inefabilului', pp. 760–62.

of artistic material.' The era of artistic overproduction, brought about by the democratization of the principles of artistic production — frequently described as the grounding premise of postmodernism — resulted in Eastern Europe in an unwavering quest for rationalization. In Radu Bagdasar's works in particular, these questions prompt interesting practical applications. In his 1982 *Critică și cibernetică* (Criticism and Cybernetics), Bagdasar attempts to overcome some of the difficulties 'currently faced by literary sciences — a deluge of information, hypotheses, theories, and methodological approaches', which 'create the sense that an individual, no matter how brilliant, would lack the time and energy to assimilate, critically filter, and construct the grand synthesis from this mountain of knowledge'.[47] Bagdasar argues for an 'organizational and instrumental reform of research', which he sees as a revisitation of the reader-text response theory. Hermeneutics, reading theories, literary sociology must be mathematized — Bagdasar seems to suggest — when a subjective 'control' over the data is no longer possible. He thus lays the foundations for a structuralist *cybernetic criticism*, in which 'the entirety of the individual's past cultural baggage participates in the shaping of interpretation'.[48] In such writings, Bagdasar appears to anticipate the performences of contemporary AI driven chatbots, capable of guiding and providing 'all the informational baggage necessary for a plausible interpreter of the text'. Moreover, he imagines 'methods of automatic text de-embedding', which the critic can employ without compromising on the 'final decision' on the work of art.[49] Far from reducing man to a 'stupid mechanism', the collaboration between man and machine would thus minimize the presence of the human automatisms which frequently shape our interpretations. This is by no means an idealization of the machine, for in Bagdasar's view the machine does not act as a substitute, either for human creativity or for human reception, but instead serves primarily as a tool to eliminate vague interpretations and commonplaces. The computer's primary aim as an aid for the critic is to eradicate self-explanatory redundances, and this is what *cybercriticism* ultimately amounts to. However, the uses of computers in literary theory are far more diverse in his view. Concerning *readers*, Bagdasar advocates a radical cybernetic sociology and psychology, where every piece of data gathered from individuals engaging with the arts is fed into an extensive computing background for analysis. He even proposes a specific type of survey using mathematical formulas for

[47] Radu Bagdasar, *Critică și cibernetică*, Bucharest, 1982, p. 77.
[48] Ibid., p. 80.
[49] Ibid., p. 82.

calculating 'expected' and 'realized probabilities' in the construction of characters in plays by the classical Romanian dramatist, I. L. Caragiale.[50] Similar suggestions are also put forth with regard to *style*. In this respect, Bagdasar turns to the theories of Lubomír Doležel, for whom style appears 'as a probabilistic concept — the bundle of tendencies in the selection of elements of external or internal reality and their assemblage'.[51] Following Doležel, but also Romanian researchers like Pius Servien and Solomon Marcus,[52] Bagdasar refocuses the entire discussion of style as a matter of 'variants' and 'pseudovariants' to be discerned on probabilistic grounds.[53] Such reflections are in no way unique. In his efforts to unite systems theory and general cybernetics with the theory of literacy, Bagdasar draws on the theses of Romanian cybernetician Edmond Nicolau in his 1971 'Language: A Cybernetical Approach'.[54] Similarly, the issue of the convergence between literary criticism, aesthetics and cybernetics was also earlier addressed by one of the most influential literary theorists of the period. As already mentioned, in a 1966 article in *Contemporanul* (The Contemporary), Adrian Marino explored the extent to which cybernetics could lead to a new aesthetics, suggesting that:

> [by l]eaving fully untouched human responsibility over value judgment, the 'machine' is capable of offering, for documentary purposes, a series of precisely identified aesthetic elements. For instance, it can 'analyse' a work of art in the sense of uncovering the stylistic procedures used through a 'statistical' characterization. From a quantity of literary works, several 'rules' are extracted, whose repertoire equates with a certain 'style.' Through such a 'norm' of style, the classification of literary works becomes not only possible but also perfectly objective, which, in principle, would constitute an increase in knowledge which is by no means negligible.[55]

During the 1970s, these questions irradiated into a sprawling field of research that slowly lost its edge towards the end of the 1980s but which is fascinating to rediscover in light of present-day developments.

Secondly, Maşek ultimately suggests — by further developing a comparison between a surrealist poem and a computer-generated autopoem, which average readers fail to correctly identify and easily

[50] Ibid., pp. 126–30.
[51] Ibid., p. 143.
[52] See Solomon Marcus, *Artă şi ştiinţă*, Bucharest, 1986, p. 79.
[53] Ibid.
[54] Edmond Nicolau, *Recherches sur la Philosophie de sciences*, Bucharest, 1971.
[55] Marino, 'Cibernetica şi critica literară', p. 3.

confuse — that certain contemporary artistic directions of the avantgarde (Pop- and Op-Art, but also surrealism, among others) would similarly fail to count as art proper, a verdict that Ianoși in his review enthusiastically supports. While Mașek finally shies away from fully endorsing this claim, which he only proposes dubitatively, it is nonetheless indicative of the position of cybernetic aesthetics within the field of Eastern European philosophy at the time, where its innovative aspects are themselves at all times tacitly integrated within an ideological framework and imbued with presuppositions of socialist aesthetics even when they appear to concern purely neutral technical matters. In this case in particular, the ambivalence of the trend is easily discernible. On the one hand, the cybernetic approach perpetuates the polemical stance towards the artistic avant-gardes and their theoretical proponents after the relative loosening of the canonical status of socialist realism, in that it collaterally also serves the purpose of isolating the experiments of the avant-garde as non-art. On the other, the hype it generates also feeds into a larger acceptance of experimental works of modern art, while at the same time it is nurtured by a tacit engagement with post-structuralism and postmodernism, which were still largely avoided in public debates of the time due both to their incompatibility with the Marxist-Leninist perspective and the speculative approach they seemingly endorsed.

Conclusions

In view of its manifold ambivalences, the topic of cyberaesthetics in Socialist Eastern Europe is difficult to assess. Aside from the technical and contextual limitations that affected the general scope of these theories, one major shortcoming of these endeavours stands out. Primarily, what Mașek or Bagdasar sacrifice in their theoretical approach is the capacity to comprehend the process that Herbert Marcuse famously referred to as the desublimation inherent in artistic thought within capitalist societies.[56] Instead of serving as a tool for relativization, operating as a new rationalizing and totalizing formula, cybernetics turned into a comprehensive indexing machine for the 'artistic formula'. As mentioned earlier, this led to the notion that 'computers could help us complete high culture by adding the inferable works of great masters to their current corpus of works'. The overarching goal of cybernetic aesthetics, at this juncture, appears paradoxically non-dialectical. Rather than to introduce new inquiries into the capacity of information technology to relativize binary oppositions

[56] Herbert Marcuse, *One Dimensional Man*, vol. 1, Boston, MA, 1964.

such as art vs. non-art or lowbrow vs. highbrow and neglect an exploration of the potential for a phenomenological reanalysis of artistic reception, their theories gravitate towards a complete mathematization of aesthetics. To put it in their own terms: their main flaw was that they never seriously attempted to integrate their own new operative take on aesthetics with the larger perspectives of a philosophical aesthetics, as they themselves demanded.

What they gain, however, is a robust and fertile pragmatism in their approach. For, in their case, it is precisely the avoidance of any relativist pitfalls and the steadfast commitment to the mathematization of aesthetics that shows its use in yielding practical formulas rather than speculative ones. And it is precisely in this regard that our article has focused on three main points that make the authors affiliated with this direction still relevant for our consideration today.

First of all, we have analysed the way cybernetics shifted the guiding perspectives of art theory and aesthetics during this period, by among other things challenging the prevailing subjective model of art as the expression of a creator. Emphasizing the mathematization of stylistics and reader-text response theory, cybernetic aesthetics envisioned both the creation and reception of art as algebraic operations situated at the crossroads of statistics and probability calculus. This stance put forth a form of anti-idealism, which is also revelatory for contemporary positivist directions within the digital humanities, particularly in fields focused on quantitative or statistical research. This shift in perspective became increasingly apparent in the works of Victor Ernst Maşek, a key figure in Romanian cybernetic aesthetics, and in the writings of the mathematician Solomon Marcus, particularly towards the latter part of the 1970s. While these authors never explicitly rejected the notion that humans are central to artistic decisions or that art is intended for human audiences, their approach problematized these grounding aesthetic concepts, thus also marking a first contemporary instance of doubt concerning the feasibility of a humanist aesthetic. The recognition that cybernetic aesthetics is not an alternative but rather a tool for philosophical aesthetics led Maşek to realize that, if cybernetic art itself cannot be considered proper art, then the least cybernetic aesthetics can do is to scrutinize computer assisted human 'intention' and artistic 'realization'. In their turn, the texts of Radu Bagdasar, a literary critic whose works in the 1980s anticipate various trends in contemporary digital humanities, revealed a discernible strive towards reconciling humanism with mathematics. Aside from suggesting a growing

attraction towards the over-rationalization of aesthetics, cyberaesthetics served Bagdasar as the foundation for a comprehensive legitimation of interdisciplinarity. The very notion that a critic or theorist must adopt the role of an 'engineer' partially fulfilled the technicist aspirations of structuralism, positioning art theory as a proper scientific discipline.

Secondly, we have shown how cybernetics effectively reopened one of the foundational debates of Communist regimes in the Soviet Union and its satellite cultures in Eastern Europe — namely, the discussion regarding the freedom of artistic creation. While the period spanning 1918 to 1934 in the Soviet Union witnessed 'unusually fertile [discussions] as far as artistic creativity was concerned',[57] the advent of socialist realism mandated by The First Congress of Soviet Writers in 1934 aimed to purge literature and art of any perceived reactionary remnants. However, the late 1950s marked a reassessment of these attempts at ideological purification, coinciding with the revival of discussions on creativity and creative freedom inspired by post-World War One European modernism. Rekindled in the era of the first computers, these modernist discussions can be regarded as pivotal moments in the emergence of socialist postmodernism, even though this characterization was never formally acknowledged. This amalgamation, exemplified by figures such as Victor Ernst Maşek and Radu Bagdasar, introduced a novel hybrid aesthetic perspective which is fundamental for contemporary studies, breaking away from the singular narrative which existed in the early days of postmodernist culture — that of postmodernism as consumer society reflected in art.[58]

Thirdly, we were able to determine the importance of cybernetic aesthetics within its own state socialist context needs by highlighting its significant relationship to Marxist-Leninist philosophy. As has often been noted, the absence of a consistent discussion on art in the writings of Marx, Engels or Lenin has been a serious hindrance to the development of aesthetics during Communism.[59] In developing within this framework,

[57] Edward M. Swiderski, 'The Object and Methods of Soviet Aesthetics', in *The Philosophical Foundations of Soviet Aesthetics*, *Sovietica*, 42, 1979, p. 3, doi:10.1007/978-94-009-9434-8_1.

[58] For more on Soviet postmodern trends, see Thomas Lahusen and Gene Kuperman (eds), *Late Soviet Culture: From Perestroika to Novostroika*, Durham, NC, 1993, and Mikhail Epstein, Alexander Genis, and Slobodanka Vladiv-Glover, *Russian Postmodernism: New Perspectives on Post-Soviet Culture*, trans. Slobodanka Vladiv-Glover, New York, 2016. For general discussions on late Socialist Romania, see Ștefan Baghiu, Ovio Olaru and Andrei Terian (eds), *Beyond the Iron Curtain: Revisiting the Literary System of Communist Romania*, Berlin, 2021.

[59] 'Most of Marx's and Engels' scattered remarks on aesthetic matters are directed

local cyberaesthetics was bound to employ Lenin's theory of reflection as an investigative tool for understanding artistic practices, positing that material reality exists independently of human consciousness, with the latter gaining knowledge by 'reflecting' material reality. As a consequence, and following the transformation of cybernetics from an initial adversary to an ally, the task of Soviet and East European cyberneticians and aestheticians increasingly demonstrated the intrinsic compatibility between socialism and cybernetics, which essentially contributed to the originality of these reflections.

to issues related to the history of art or specific (mostly literary) works of art. A few of their statements, however, appear to be concerned with objective aesthetic properties or qualities inherent in material things as well as with "laws of beauty" holding good for nature and human affairs alike. Hence, several possibilities for aesthetics are present in the writings of Marx and Engels: aesthetics could be either 1) a theory of art or 2) a theory of beauty (in nature or art or in both, as in the tradition), or 3) both a theory of art and a theory of beauty (it being a matter for further consideration whether and how the two are related). Not surprisingly, since the beginning of the present discussions on aesthetic questions in the Soviet Union, Soviet writers have singled out one or the other of these characterizations and berated proponents of the remaining possibilities as basically anti-Marxist-Leninist in orientation.' Swiderski, 'The Object and Methods of Soviet Aesthetics', p. 3.