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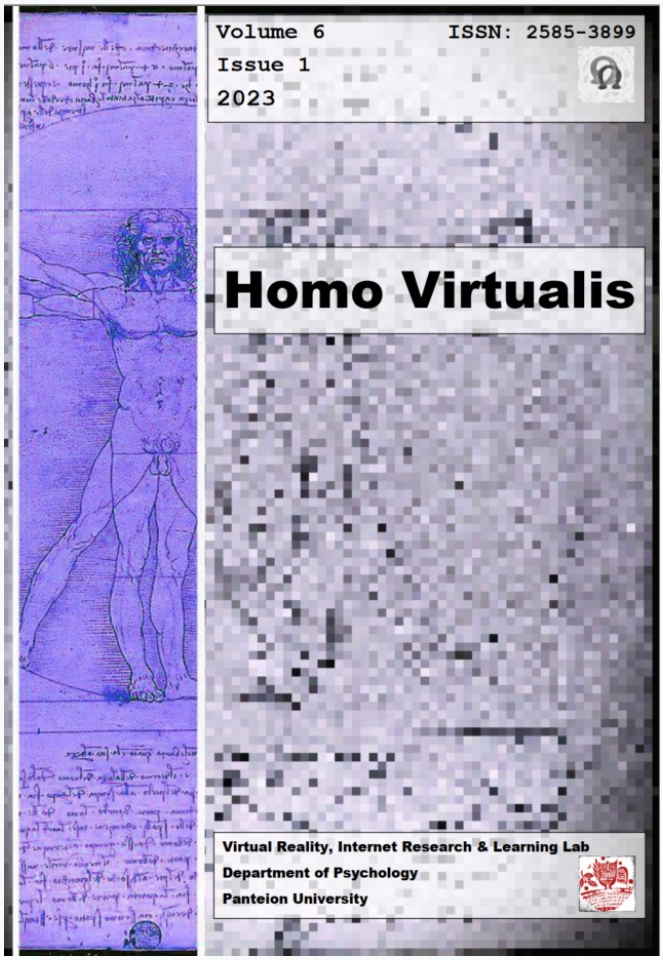

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The new technological condition: From actor-centered to data-driven and future-oriented technology

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Abstract: In the ongoing process of the dynamical transformation of the knowledge basis of our contemporary society, under conditions co-shaped by the emerging "data-driven" and "future-oriented" technologies, a new logic comes to the fore, which has to do with the triumphant rise of networks and other phenomena pertaining to an enormous technological complexity. This review article turns its analytic attention on the hidden order forming the dominant model of the network society, as well as on the fundamental disruptive changes brought with the rise of information and knowledge to a central economic factor. Then, it elaborates on the preceding models of the society of individuals and the society of organizations, which were integrated in the reshaping and remodeling processes of the network society. The conclusions concern the unprecedented disconnection between the consciousness of the individuals and the domain of human experience, as well as between the specialized knowledge and the life-worlds of the citizens.

Keywords: future-oriented technology, digital network culture, big data, internet, online platforms

Every society creates its world, inner and outer, and technique is neither instrument nor cause of this creation but dimension or, to use a topological metaphor, everywhere-dense part.
(Castoriadis 1982: 309)

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Introduction

In the ongoing process of the dynamical transformation of the knowledge basis of our contemporary society, under conditions co-shaped by the emerging data-driven technologies, a new logic comes to the fore, which has to do with the triumphant rise of *networks* (see Tsekeris 2016) and other phenomena pertaining to an enormous technological complexity (Weinberger 2019). Within the so-called *network society*,[3] the new data-based technologies do not follow in their development a uniform and linear trajectory. On the contrary, they are strongly characterized by the tendency to transgress boundaries through heterarchical connections, as well as to remove "old" or "received" hierarchical orders (Ladeur 2010: 152). The knowledge generated through "smart" or "advanced" algorithms and big data radically changes the conditions of communication and knowledge generation and, therefore, the structure of the public sphere as it was emerged since the eighteenth century (Vesting 2019: 35; Esposito 2017: 249).

Knowledge underlies an historical order that shapes its structure (Ladeur 2016: 89). However, every society needs "cognitive commons", that is, a stock of practical patterns, social rules and assumptions which lose their integration power in the transition to a new historical era, like the digital era, where it is noted a disruptive development of *both* technology *and* knowledge (Ladeur 2020:75). The present review article will be focused on the hidden order forming the dominant model of the network society, as well as on the fundamental disruptive changes brought with the rise of information and knowledge to a central economic factor. Then, it will be referred to the preceding models of *the society of individuals* and *the society of organizations*, which were integrated in the reshaping and remodeling processes of the network society.

Knowledge generation: From the society of individuals to the society of organizations

Since the eighteenth century, the modern public sphere has institutionalized social networks of relations and communication in urban cities which did not dispose of a center and a unity (Vesting 2019: 37). In the *society of the individuals*, the knowledge infrastructure is embedded in the reliability of general rules of experience within the life-world, as well as in the readiness to self-observation in the "mirror of the others" (Ladeur 2010: 158). This "mirror" embodies a common sense in the framework of a new

[3] Famously, in 1996, the Spanish sociologist Manuel Castells suggested that we live in a speedy "network society", in which information (that is, the key commodity) flows across time and space between loosely connected individuals and groups of people: "[…] dominant functions and processes in the information age are increasingly organized around networks. Networks constitute the new social morphology of our societies, and the diffusion of networking logic substantially modifies the operation and outcomes in processes of production, experience, power, and culture. While the networking form of social organization has existed in other times and spaces, the new information technology paradigm provides the material basis for its pervasive expansion throughout the entire social structure" (Castells 1996: 469).

cultural order of a commercial society through the self-observation of experience (Ladeur 2021b: 52), social rules, institutions and their change (Ladeur 2014: 20).

Knowledge is conceived primarily by the means of self-observation of the experiences of the subjects in the life-world (Ladeur, 2021: 52), in which it is generated and distributed as *practical experience* between the individuals (Ladeur, 2016: 91), institutionalized as actors. There is a stable relationship between the practical knowledge and the reflection knowledge (Ladeur 2016: 91), whereby the practical knowledge is always based on existing action patterns and previous experiences to which can be referred. Next to the individual of the liberal "society of individuals" and the state, there are action fields that offer many options and generate spontaneous and explicit social rules (Ladeur, 2014: 25). That is why the emergence of the public sphere has been regarded as a sphere of formation of an open self and its aesthetic experience (Ladeur 2014: 27).

This fact refers to a specific infrastructure of subjectivity, that is, the kind of individualism connected with an increase of imagination, openness for technical and economic innovations, new forms of social cooperation, and expressions of a new type of social self-organization of experience-formation (Vesting 2019: 39). The knowledge is not limited to the distribution of experience through the individuals; it changes not only objectively, but also structurally through the emergence of knowledge-producing organizations, which bring forth more complex forms of experiments that enable the change of the epistemic constitution of the society (Ladeur 2021a: 166).

Already since the late nineteenth century and the rise of a mass culture, one can observe the development of a group pluralistic order characterized by conflicting interests and a diversity of values and worldviews. From the '50s until the '80s, it prevails a model of social groups and formal organizations (political parties, social associations, churches, trade unions, big publishing companies, broadcasting corporations) that contribute with their political ideas, strategies, demands, topics, and so on, to the public opinion-formation and pre-structure their object, the "common thing". This public sphere of organizations and groups, which is based on unity, prepares the formation of decision alternatives (further elaborated by the parties) and, in this way, enables the state decision-making.

Meanwhile, the position of these big representative groups and organizations had weakened. This fact had negative effects on the epistemic function of group pluralism, as well as on the self-perception of the individuals in the public sphere, and finally on the factual impact of representation. The public sphere of the society changes when the representation through the institutions and their form-building power towards the individuals lessens, given that the individuals are also involved in a public process and bring new ideas, reflections, etc. This process of the political system is on the wane (Ladeur 2021a: 129).

Nowadays, in the fragmented public sphere, one can witness totally new forms of appearance that do not follow the organization pattern of group pluralism and its epistemic function. The appearance of groups in the public sphere goes beyond the political form of representation; their public participation is mainly characterized by phenomena of *self-portrayal*, an immediate presentation of life styles and identities, which do not aim at a representative common cause. In the progressively liquified political process (Vesting 2019: 43), the pluralistic order loses its value, which was focused on a common understanding with the other side, and instead it prevails the ideal of the experience of authenticity in place of the confrontation with oneself and the others (Ladeur 2021a: 131).

There is no room for reflexivity and understanding in the process of this cultural evolution (Richard 2011). In the contemporary society of data-based or AI-based technologies, the function of the group pluralistic pre-forming of ideas, information, reflections, and so on, for the political decision-making recedes. Instead, knowledge is bound to cross-organization *floating epistemic communities* that can be hardly connected with the political system and its demands. Nowadays, the major part of the information dissemination in the economy, culture, state and the public sphere occurs mainly over the very large online search engines (VLOSE), like Google, as well as over the social media, which carry out a powerful content-related processing of information and data by means of self-learning algorithms (Groys 2012: 25).

The new order of digital knowledge in the network society

The technological and cultural change of the system of information technologies

With the rise of the network society, we experience *the transition to "data-driven or future-oriented" technologies* (Hansen 2014: 4), which are not lied in their complexity for a particular purpose. Instead, they develop a radically *decentered structure* where the reference point is not the individual, but a self-changing knot in a highly heterarchical and heterogenous network architecture (Ladeur 2021a: 30). It is noteworthy that, in the communication system of the digital society, thinking spaces and "horizons of meaning" are generated only in the networks of technologies within which they can be operated; the thinking of the individual *cannot produce social meaning anymore* (Ladeur 2021a: 31; Esposito 2017: 249).

As information in the digital environment "becomes completely assimilated in a vast network of media assemblages", individuals are being transformed in subjects who apprehend patterns to assemblages that create dispersed subjectivities (Hayles 2012: 223). In the digital network culture, a logic of relations and viral proliferation of information emerges, according to which new "relational subjects" are co-constructed and co-evolve, who are based on the observation of labile experimental configurations and reconfigurations of relations (Ladeur 2021a: 31). But while in the bourgeois era the individuals had observed themselves in the others and the others in themselves, the

relational self (Ess 2010) of the digital network culture is inclined to erase the others and atomistically focus only on itself. As the subject does not ever cease to be a "réseau des notions" (De Libera 2007: 7), which has been developed and changed in a complex historical process and, consequently, always internalized an openness for new things, it is only logical that this openness corresponds to the vast complexity of the digital environment beyond of permanent and generalized forms.

In the contemporary, oscillating and heterarchical *society of networks*, the new subject is transformed into a volatile "hybrid project" (White 2008) that goes along with the operation with different possibilities, with fragmentations, and with weak elements of an unstable relation to itself. It is thus arising a "cult of singularities" marked by the *singularization of an emphatic self-view of the individual* (Reckwitz 2019). The conception of the "singular" is based on the idea that the individual, unlike in former cultural eras, cannot be subsumed under a universal order as a "particular" which was already characterized by universality. Objective norms and standards have no value for the "singular" (Le Goff 2006), for whom diversity constitutes an own value that questions the social bindings. Notwithstanding, the "general" and the generation of knowledge cannot be sidestepped; instead, it would be productive, if singularities could contribute to "the formation of a liquefied form of common interest" (Ladeur 2020).

Networks of big data beyond human experience

The development of data-driven digital technologies evokes multiply disruptive effects and their complexity requires strategic foresight and complex thinking given that, in the network society, the knowledge relations are extremely fragmented (Pildes 2019). *Data-based technologies*[4] spread within heterarchical networks in which it emerges a new logic of relations and a viral proliferation of information. The inconceivably enormous dynamics of *data revolution*[5] takes place over new hybrid systems, pertaining to a mixture of private and public elements (Kettemann 2022: 2) and resulting from the capacity for massive storage, processing, filtering, configuration and reconfiguration of data under conditions of interoperability. In the digital networks landscape, previous stable separations and distinctions, such as the differentiation between transmission technology and content, access service and processing or management of data streams, are dissolving and organize themselves in new configurations (Ladeur 2021a: 109; Berry 2016).

[4] In computer science, data base is defined as a structural connection of data. There are different types of data, hierarchical, network, relational, or object-oriented, according to the different models they use to organize data. It is a new way to structure our experience of the world (Manovich 1998). Databases must parse information according to the logical categories that order and list the different data elements (Hayles 2012: 178). Interestingly, Hayles emphasizes that "whereas database allows large amounts of information to be sorted, catalogued, and queried, narrative models say how minds think and how the world works, projects in which temporality and inference play complex roles" (Hayles 2012: 179).

[5] See indicatively Mayer-Schönberger & Cukier 2013; Tsekeris et al. 2018.

The different levels in the network architecture are not clear any more. This new development is observed in the virtual platforms whose function is the digital and data-based processing of different and highly personalized contents and services. Big companies (tech giants), such as Google/Alphabet and Facebook/Meta, represent a medial form of communications of third parties (Ladeur 2021a: 116), whose function is to disaggregate communications in components and re-aggregate new forms according to algorithmized procedures of artificial/mechanical intelligence. These companies could be described as "floating network subjects" (Wieviorka 2012: 5). In this setting, a self-reinforced mutual process of datafication-algorithmization-platformization (i.e., the co-evolutionary *digital trinity*)[6] is taking place all over our lives (Latzer 2022), governed by ubiquitous mechanisms of *surveillance-for-profit* (Zuboff 2019).

Importantly, big data are not set out according to aims determined by actors; instead, they have an internal structure which depends on their readability by computers, whereby the same data can be read and used always in multiple ways. The data-based digital media, unlike the traditional media (press, broadcasting, television) whose epistemic function was to mediate experiences, can develop past the consciousness of the individuals and beyond the human experience, because they are not guided by purposes. Instead, they underlie the permanent reconfiguration of means and their connection options; that is, a fact that devaluates human experiences and thereby change the experience of the subjects and the subjects themselves (Ladeur 2021a: 118).

Accordingly, Boris Groys uses the example of Google: "Thus, Google presupposes and codifies the radical dissolution of language into sets of individual words. It operates through words that are liberated from their subjection to the usual rules of language – to its grammar" (Groys 2012: 6). He further emphasizes, again in reference to Google, that in many of the new communication forms on the internet "man ceases to speak in the traditional sense of the word, man becomes a user, a word curator-using old linguistic contexts, places or territories or creating new ones" (Groys 2012: 11). Especially in the Web 2.0 (social web) environment,[7] as far as the digital user is concerned, "he or she lets words appear or disappear in different contexts – in a completely silent, purely operational, extra -or metalinguistic mode of practice" (Groys 2012: 11).

In this analytical context, one can refer to Katherine Hayles (2012: 2), a pioneer theorist of digital culture, who speaks of the impact of learning to read in the internet (e.g., by performing Google searches) on psychological and physical processes, as well as on our ability to understand complex texts, to concentrate, etc. Referring to the

[6] This trinity metaphor "does not refer to theological (Catholic) interpretations of God the Father, Son and Holy Spirit, but primarily to its co-evolutionary and complex character. […] [It] is driven by the strong belief in controllable human evolution, explicitly called for by the transhumanism movement and marked by the pursuit of 'converging technologies' in highly industrialized countries" (Latzer 2022: 5, 7).

[7] For this point, see indicatively Tsekeris & Katerelos 2012.

transformations that characterize the deterritorialized spatial dynamics reflected in media assemblages, she points out that technical devices cognize and, by doing so, profoundly influence human complex systems (Hayles 2017: 5). It is significant that, in the digital era, our meaningful dialogue with the world is practiced primarily via the internet: "today Google plays the role that was traditionally fulfilled by philosophy and religion. Google is the first philosophical machine that regulates our dialogue with the world by substituting 'vague' metaphysical and ideological presuppositions with strictly formalized and universally applicable rules of access" (Groys 2012: 5). Arguably, ChatGPT is the next one.

Search engines in general are network subjects based on the cooperation of human shaping of algorithms and learning capable machines (Brison & Gelber 2019: 33ff.). Nowadays, the largest share of the disseminated information in all social fields takes place via the search engines, in which occurs a permanent configuration of "free floating signifiers" that refer to "really existing and already displayed contexts" (Groys 2012: 10). Not only the new media but also the traditional media provide their information to the public indirectly through search engines. The collection, categorizing and processing of data is characterized as "content curation" (Groys 2012: 12; Metzler & Garcia 2022). The course of the technological processes of algorithmic curation of information is determined by the architecture of the network after the "great unbundling"[8] of information, its aggregation and recombination in the search engines or the social media.

As stated above, another example of a digital form which does not dispose of an exclusive technical infrastructure are the digital and virtual platforms (Bowers et al. 2021). These platforms consist only of data that can be distributed across several layers. However, the changes that occur with the digitalized knowledge processing cannot be without social consequences in reference to the implicit common knowledge. The algorithmic content curation by social media and search engines strongly restricts the exposure to information that does not comply with already established views, opinions and values, something that essentially limits the variety pool of social ideas and jeopardizes common ground and common knowledge (Mokyr 2004; Ober 2010), albeit the pluralism of online sources.[9]

These risks mostly lie in the fact that the trans-subjective networks between the individuals and the knowledge they produce (which is processed and curated by the big digital intermediaries and platforms like Google, Amazon, Facebook, TikTok, etc.) potentially lead to homophilic "private worlds",[10] loss of diversity, post-truth, and collective blindness (versus collective intelligence). This is because of the highly

[8] FCC report on the changing media landscape in the USA in the Broadband Age (June 2011). The television program has changed through re-bundling; it is transformed into a network whose nodes are docked various media services. See https://www.fcc.gov/general/information-needs-communities

[9] For a relevant discussion, see Lorenz-Spreen et al. 2022.

[10] See the excellent analysis by Michael Latzer (2022).

polarized and gated virtual communities of like-minded users,[11] as well as of the hidden and opaque corporate algorithms that curate their information diet to only maximize engagement and reflect what they prefer (Ladeur 2015: 239). In this way, what is largely excluded is openness, serendipity, and the possibility to come across various ideas and topics one did not specifically select (Sunstein 2017: 5, 79; Zeri et al. 2019). Such process abstracts from creativity[12] and strengthens the conformity of the social behavior in a highly problematic manner.

In the digital era, under the condition of a disruptive transformation based on an endless combination of myriad fragments, the connection of the specialized knowledge with the life-worlds of the citizens is not feasible (Ladeur 2021b: 257). Given that we live in the *age of anger* (Mishra 2017) and of political and social polarization in the context of a fluid digital network order, the realization of debates about common stocks of knowledge becomes very difficult. This fact makes impossible the maintenance of trust, as well as of a common coordination system between the individuals and the generation of social rules (Ladeur 2021b: 300).

In the postmodern global society of networks, the logic of the self- and hetero-observation in the mirror of others is actually replaced by a "discontinuous experimental logic" beyond the shared reality of the life-world (Ladeur 2014: 25). The relative stability of social norms, which were firmly based on physical experience and implicitly structured the social orientation of the subjects, is undergoing a deep process of disappearing. With the emergence of digital communication and the disintegration of the life-world, there is no more a joint basis for a common reference to the practical self- and world-construction. However, in the society of networks, there is no change of the fundamental implicit "instituting" power (Descombes 2016: 194) which pertains to the *instituting social imaginary*,[13] a whole network of language patterns, representations, narratives, ideas, attitudes, beliefs, values, customs, rules and norms. But there is a mutation of the forms of appearance of the instituting power in the networks which generate and reflect knowledge beyond the distributed experience (Ladeur 2014: 32).

Conclusions

The present study focused on the critical analysis of the fact that the knowledge generated through advanced algorithms and big data radically alters the conditions of communication and knowledge-production in contemporary society, and therefore the structure of the public sphere as manifested since the eighteenth century. Humans will be reformatted (Baecker 2010). Marshall McLuhan has rightly anticipated that what in the long run matters is the medium itself in influencing how we think, feel, and act

[11] See the relevant notions of "echo chambers" and "filter bubbles" here: https://reutersinstitute.politics.ox.ac.uk/echo-chambers-filter-bubbles-and-polarisation-literature-review

[12] See https://sloanreview.mit.edu/article/how-twitter-users-can-generate-better-ideas/

[13] For this theoretical conception, see Castoriadis 1991.

(Carr 2020: 22). The multiple effects of technology "do not occur at the level of opinions or concepts, rather they alter patterns of perception" (Carr 2020: 3). Hence, this paper undertook a comprehensive overview of the development of the knowledge infrastructure since the eighteenth century in the "society of individuals" and then in the "society of organizations", from the '50s until the '80s, when the nonlinear transition to a new historical era begins, i.e., the era of the network society, strongly characterized by the disruptive development of both technology and knowledge.

In the emerging network society, which is heavily based on data-driven digital technologies, an inconceivably enormous amount of data takes place over new hybrid systems. The so-called *data revolution* results from the capacity for massive storage, processing, filtering, configuration and reconfiguration of data under conditions of interoperability. In some sense, the very large online platforms (VLOPs), like Google and Facebook, whose function is the digital and data-based processing of different contents and services, produce an unprecedented *disconnection* between the consciousness of the individuals and the domain of human experience. The link of the specialized knowledge with the life-worlds of the citizens is almost not possible.

In the postmodern global society of networks, with the emergence of digital communication and the gradual disintegration of the life-world, the basis for reflexive self-observation, mutual understanding, and a common reference, or a common horizon, concerning the practical self- and world-construction, becomes increasingly weaker. All in all, over against the existent dangers of social fragmentation and the potential threat of collectively resorting to a kind of *goblin mode*,[14] futures thinking (foresight mindset) and futures literacy[15] need to be systematically cultivated in order to allow people to better grasp the role that the future plays in what they see and do in the new technological condition.

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[14] See Paul 2022.

[15] See https://en.unesco.org/futuresliteracy/

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