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ARTICLE

DIGITIZATION OF THE TERRITORY: MATERIALITIES AND MEANINGS OF THE ACTION

DIGITALIZAÇÃO DO TERRITÓRIO: MATERIALIDADES E SENTIDOS DA AÇÃO

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Abstract

Today, the digitization of the territory involves all spheres of life and all places. It can be understood as the digitization of systems of actions and objects, intensifying the contradiction between the possibility of greater (desired or not; conscious or not) unification and cooperation of the production of value by all and the increase of the extraction and concentration of this value by a few, sneaky and competitive agents or institutions. The digitization of the territory deepens the systemic pattern of the generation and appropriation of wealth, at the same time that it promotes resistance or permanence of other uses based on the solidarity of the commonplace space, involving all people, classes, subjects, groups, companies, and institutions. This essay seeks to reflect on how the digitization of the territory has been expressed as a set of materialities and actions that bear different meanings of exploration, cooperation, or resistance. It is still questioned whether, from there, it is possible to envision the transition to a new historical period, a popular period of history.

Keywords: territory in use; subjects of action; technique; geographic environment; periodization

Resumo

A digitalização do território envolve, hoje, todas as esferas da vida e a totalidade dos lugares. Pode ser compreendida como a digitalização dos sistemas de ações e objetos, acirrando a contradição entre a possibilidade de maior unificação e cooperação (desejada ou não; consciente ou não) da produção de valor por todos e o aumento da extração e concentração desse valor por poucos, sorrateiros e competitivos agentes ou instituições. A digitalização do território aprofunda o padrão sistêmico da geração e apropriação de riquezas, ao mesmo tempo em que promove resistências ou permanências de outros usos a partir da solidariedade do espaço banal, envolvendo todas as pessoas, classes, sujeitos, grupos, empresas e instituições. Este ensaio busca refletir sobre como a digitalização do território tem se expressado enquanto conjunto de materialidades e ações portador de diversos sentidos de exploração, cooperação ou resistência. Problematiza-se ainda se, a partir daí, é possível vislumbrar a transição para um novo período histórico, um período popular da história.

Palavras-chave: usos do território; sujeitos da ação; técnica; meio geográfico; periodização

INTRODUCTION

Period is a *system of events* comprised of the variables whose interactions define a given movement of the whole. Periods are constituted by ways of making and regulating life that crystallize into objects, which begin to modulate the succession of other times and events. Periodization can be understood as a succession of geographical means, which become more technical, a history of the uses of the territory carried out by society through the available techniques and animated by a project, a horizon of realization (Santos, 1999).

From the 1950s onwards, the beginning of the current period is characterized by the *technical-scientific-informational milieu* – or globalization – marked by the uniqueness of the technique, convergence of moments, and a unique engine through a global added value (Santos, 2000).

The beginning of the 21st century marks a new phase of this technical-scientific-informational milieu with the increasing *digitization* of the territory, the massive connectivity of bodies, ideas, emotions, and objects. New entities are constituted and start to be part of our daily lives worldwide: Internet of Things (IoT), Internet of Bodies (IoB), algorithms, digital currencies, robots (or bots), Industry 4.0, big data, clouds and digital platforms, data centers, and artificial intelligence (AI).

The 2010s can be considered the period of the digitization of the territory on a global scale and its profound impact on places and daily life. In that decade, the proliferation of massive connectivity was made possible by smartphones and other devices that allow screen-to-screen, facilitating the spread of digital technologies as infrastructures of our daily life. Subsequently, the Covid-19 pandemic inaugurates the 2020s, deepening even more the digitization of the territory, with the imposition of the need to use digital technologies in almost all dimensions of life.

What does the deepening and intense digitization of the territory mean in terms of its possible uses? Would it be the emergence of a new historical demographic period of communication? Or the most recent phase of the current technical-scientific-informational period?

THE DIGITALIZATION OF THE TERRITORY

Since the beginning of the constitution of the current technical-scientific-informational milieu, the elements of what would become the key variable and current driver of the digitalization of the territory were already present. The first phase of this milieu (post-World War II) is marked by innovations in telecommunications. The second, post-1970, is characterized by information and finance. The third phase is marked by structuring a global internet network in the 1990s. The current phase is characterized by the emergence of integrated platforms for the digitization of life from the 2010s with *Web 2.0* ("Social Web" allowing users to produce and share informational content, such as digital social networks and blogs), massified after the launch of smartphone operating systems in 2007 and apps (short for software application or mobile applications) in 2008, highlighting the use of digital algorithms and AI in these technical systems.

According to Bergé & Grumbach (2017) and Silva (2019), it is the emergence of a datasphere in the last two decades – understood as technosphere and psychosphere – characterized by the massive production of data captured through the widening of technical objects implying the concomitant production of an ideology, which has promoted new social, economic, and political dynamics. According to Lévy (1998), *cyberspace* is this means of communication and culture given by the global interconnection of computers. Flordi (2020) updated the term to *infosphere*, a way of life made of information, data flows, interactions, a material and mental hybrid, *technosphere* and *technocosmos*, seeking to overcome the notion that there are *separate* spaces and highlighting that it no longer makes sense to ask whether it is connected. For Sadin (2018), it is an *increased humanity*, a cognitive extension that emerged after 1945, a hybrid of human and artificial intelligence, a *binary regime* that, through the electronics industry, AI, biotechnology, and nanotechnology, has merged organisms and electronic flows. According to the author, this increased humanity refers both to our environment and to our condition, a phenomenal power given by digital agents, whose growing power, however, has not guaranteed the fullness of individual and collective life (p.154).

When discussing the etymology of the term *digital* (from Latin, *digitus*, "finger" or "hand"), used for more than two thousand years, Sossai (2019) points out the inflection in its use from the mid-1940s in the incipient area of information technology in order to establish a rupture and discontinuity. It then refers to processes and equipment related to the

systematization and storage of electronic data based on binary codes (digits 0 and 1). According to the author, it is a linguistic innovation to understand and conceptualize a set of electronically-based technologies – software and hardware – unknown until then, digital systems (mathematization and binary data coding, bits) of informational processing, which began to propagate what is digital as an element of globalized connectivity.

Much of this process has its genesis and current predominance in the USA, although other countries have participated in and contributed to it. Today, China is the main exponent vying for hegemony in these technological routes. In 1943, the US Armed Forces invested in the production of the Electronic Numerical Integrator and Computer (Eniac), which was ready in 1946. In the 1960's, the US Department of Defense created the ARPANET (Advanced Research Projects Agency Network), a packet-switched network connecting computers on a national scale through Transmission Control Protocol/Internet Protocols (TCP/IP), the two founding technologies of the current internet. The internet gradually expanded to the world, interconnecting several other networks and devices, first to Europe and Australia in the 1980s, and then to other regions in the globe from the 1990s onwards. In 1995, it was already under the management and control of the market and was of interest to agents and large private corporations.

The US Pentagon also implemented, in the mid-1960s, through DARPA (the Defense Advanced Research Project Agency), a project for the development of *artificial intelligence*. This term was coined in 1956 at the Dartmout Conference (Hanover-NH, USA) on computing, language, mathematics, and information, to refer to rational models and intelligent systems of machines and computers, also marking the creation of a new scientific area.

AI differs from computer science because it uses a non-closed and deterministic programming language, as computers generally do, leaving an open space for the machine to learn (*machine learning*, self-learning, *deep learning, deep*, or intelligent machines), as defined by computer scientist Arthur Lee Samuel in the 1950s, when he created a computer program that played checkers. Machine learning is based on the study and elaboration of mathematical algorithms that can learn and self-correct from their mistakes, as well as make predictions about data based on patterns and behaviors.

The production of new materialities and the massive application of AI and algorithms by integrated digital platforms in the last two decades have promoted new techniques and reasonings of land use. This radical transformation is operated by cybernetics, computer

science, and electronics through machine learning and, above all, AI, plus the unprecedented expansion of a set of globally connected materialities – infrastructures (cables, stations, centers, antennas, satellites) and devices (computers, screens, sensors, smartphones) – characterizing the digitization of the territory. This leads us to problematize whether it is the emergence of a new geographical environment corresponding to a new historical period, or a new stage, or phase, of the current period.

Currently, geopolitical disputes between major powers and increasingly asymmetric corporations are based on the integration and digital unification of territories, with AI playing a central role in the economic, political, and cultural dynamics. According to Fiormonte and Sordi (2019), GAFAM (the acronym for Google, Amazon, Facebook, Apple, and Microsoft), the largest financial empires on the planet, pressured by the incipient Chinese technological empire (Tencent, Alibaba, Baiudu, and fifth and sixth generation internet, 5G and 6G), more than a geopolitical *monster*, constitutes a global invading *paideia* of bodies and souls, the *digital colonialism* that, according to the authors, represents a threat to the cultural and epistemic diversity of the world.

When dealing with the emergence of global cyber-surveillance systems in the early 2000s, Genaro (2020) highlights algorithmic materialities as the core of a set of invisible infrastructures of GAFAM corporations, with the US Silicon Valley as a colossal center of calculation to "control spaces and times, from peremptory circumscriptions, inventories, classifications, surveys, cartographies, incursions, and remote actions" (p.6). Many of these companies are linked to the NSA's PRISM (US National Security Agency) global surveillance program for collecting data on internet users, after Edward Snowden's revelations. Therefore, it is a powerful process of *algorithmic governmentality* (Sadin, 2018) orchestrated by a *state-business machination* (Genaro, 2020).

It is an extensive and continuous monitoring of the uses of digital platforms (social media, applications, audiovisual streaming services, sharing platforms, and audiovisual consumption) aiming at modifying the behavior of users. According to Bruno et al. (2019), it is *the psychical economy of algorithms* that extracts value and commodifies data from people's attention and psychical, emotional, and affective states through algorithms whose strategies act in three layers and produce value (economic), knowledge (epistemology), and behavior (management and control). According to the authors, the information that matters "is no longer only the traces of our actions and interactions (clicks, likes, shares, views, posts),

but also their psychical and emotional *tone*" (p.5). Therefore, this is a strategy to forecast and induce behaviors both on digital platforms and other spheres of daily life.

According to Zuboff (2018), the current period is *information capitalism* or *surveillance capitalism*, and big data is not only a technology but a new *systemic logic of accumulation* that *thrives in public ignorance*, automation that imposes and produces information, leading to prediction and modification of user behavior. It is a connected network of sensors, devices, and equipment that, by integrating objects, bodies and places, extracts data as raw material, having algorithms as mediators in this process. This new ubiquitous architecture of power, which is both a means of production and behavior, the author called *Big Other* a "network that records, modifies and commodifies daily experience, from the use of an appliance to their own bodies, from communication to thought, all with a view to establishing new paths to monetization and profit" (pp.43-44).

The Covid-19 pandemic in 2020 greatly accelerated this ongoing digitization process, plunging the world into a *Screen New Deal* (Klein, 2020), the *doctrine of pandemic shock* as an event of *disaster capitalism*. According to the author, we would be facing the dilemma of a future marked by high-speed digital connectivity, networks, and personal data that will be at the service of actions of States and large corporations or, on the other hand, regulated and supervised democratically and publicly. Thus, schools, universities, health facilities, workplaces, leisure and transportation have faced existential questions about the future, especially with the strong *lobbying* of technology companies and products for remote education, telehealth, next-generation internet (5G and 6G), and autonomous cars. The *Screen New Deal* may drain public resources, leaving other social policies in short supply. A future in which movements, words, feelings, and relationships are tracked, quantified, located and processed according to interests and associations between large technology corporations and states. A future that is said to be operated by AI, but that is actually maintained by millions of workers and directed by powerful economic and political agents (Klein, 2020).

As a current phase of the technical-scientific-informational milieu, the digitization of the territory can be understood as a dimension of *financialization*, a current systemic and informational pattern of wealth (Braga, 1997). This *financialization of the territory* (Contel, 2016) that is deepened by digitization challenges the identification and understanding of the infrastructures and capillarity of technical networks in the process of draining the value and wealth produced from the use of the territory by all people. *Big data* as a new

technical-informational logic of accumulation is inseparable from the production and massive capture of *small data* (Zuboff, 2018).

If *technical macro-systems* have been unifying objects, networks, and technical systems of various orders and meanings (Gras, 1997; Ribeiro, 2015), digitalization takes this integration to new dimensions and orders, both macro and micro, globally and daily. These are technical means consisting of both large objects, systems, and mega machines as well as small devices, miniatures, and nanotechnologies. *Daily infrastructures* are more present, spread, and expanded than ever, and are often not perceived and ignored. If on one hand macrosystems were increasingly being invaded and sensitized by the senses, particularities and vitalities of places, with digitization and the artificial intelligence that permeate them, this process of singularization becomes more intense.

In the late 1950s, Simondon (2020) had already pointed out that technical improvement would not correspond to the greater automatism of objects, but rather to a greater margin of indeterminacy, of openness to individuation, as an *open machine*, with man as its regent and living interpreter. However, the contradiction between the state of the techniques and the state of the policy opened up by digitization puts us at risk of greater control and massive surveillance of behaviors in an integrated network on a global scale.

Egler (2013), when talking pioneeringly about *the digitization of territory* – when reflecting on democracy and social participation in cities – drew attention to the inseparable relationship between *rational* and *vital*, where the appearance in the digitized society of a virtual city disconnected from the vital one is actually the transformation of space itself, when virtual and vital *combine and produce a more complex totality* (p.7). Hui (2020) avoids the simplistic opposition between hasty rejection of technique *versus* blissful progressivism by proposing *cosmotechnics*, which always has a local dimension and assumes technologies in their diversity. Hence, he proposes *technodiversity* to understand the role of culture and history in the divergences of technological development, now globalized, and in the production of alternative technologies and *digital humanities*.

The digitization of territory can be understood as the digitization of bodies and things that, by rationalizing systems of actions and objects, intensifies the contradiction between greater unification and cooperation (desired or not; conscious or not) of production by all; and the extraction and concentration of this value of labor by some. However, the digitization of the territory, as a dialectical pair, also presupposes the creation, resistance, or permanence of

other uses of the territory and meanings in the production and appropriation of this wealth, the result of the common, of the solidarity of *banal space* (Santos, 1994), of the territory used by all people, groups, companies, and institutions.

DIGITIZATION AND NEW USES OF THE TERRITORY

In 1990, there were 2.6 million internet users. In 1991, when the computer network was opened to the world with the first website, this number was 4.2 million people. In 2000, it grew to 396 million users, 1.9 billion in 2010 and, in 2023, a total of 5.16 billion people are connected and use the internet (DataReportal Kepios, 2023).

Digital social media platforms, such as Google (search engine and YouTube) and Facebook (WhatsApp and Instagram), control the data and privacy of billions of people worldwide, except for countries such as China, where the QZone platform (Tencent) predominates, and Russia and some former Soviet republics with the VKontakte and Odnoklassniki platforms. With an estimated global population of 8.01 billion inhabitants: 68% have cell phones, 64.4% use the internet and 59.4% access social media; 2.96 billion use Facebook, 2.41 billion use YouTube, 2 billion use WhatsApp, 2 billion use Instagram and 1.05 billion use TikTok (DataReportal Kepios, 2023).

In Brazil, the internet network arrived in 1988 linked to universities in São Paulo, with support from the São Paulo Research Foundation (FAPESP), and Rio de Janeiro (the Federal University of Rio de Janeiro), highlighting the National Laboratory of Scientific Computing (LNCC) and the creation of the National Research Network (RNP) in 1989, with support from the National Council for Scientific and Technological Development (CNPq), which in the early 1990s connected about 65,000 users from 600 institutions to the internet. In 1989, the Top Level Domain Country Code ".br" was created and, in 1995, the Internet Steering Committee in Brazil was created. But it is in 1996 that the country starts to have its own *backbones* (broader and interconnected computer network systems) with commercial providers and first websites. In 1997, there were about 1.8 million internet users in the country. According to the DataReportal Kepios report (2022), the number of internet users increased from 90.6 million in 2012 to 165 million in 2023. According to IBGE's National Household Sampling Survey, Continuous PNAD, there were 184 million internet users in Brazil in 2021[1].

In Brazil, 84.3% of the population is connected to the internet (70% in 2019), 97.1% use internet through smartphones (66% in 2019) and about 80% of the Brazilian population accessed media and social media in 2022, of which 96.4% used WhatsApp, 90.1% Instagram, 88.2% used Facebook, 69.6% used TikTok, 67.8% used Facebook Messenger, 62.3% used Kuaishou, 55.4% used Telegram, 51.1% used Pinterest, 47.9% used Twitter, and 38% used LinkedIn (DataReportal Kepios, 2022; 2023).

The network is accessed mainly by applications via smartphone, and 85% of these accesses in 2016 were for instant messaging and 77% of the population used social media (Bertollo, 2019).

The digitization of the Brazilian territory occurred because of the widespread use of the smartphone – present in 92.6% of households in the country – provided by the operation of antennas (Base Radio Stations, about 92,000 unevenly distributed in the territory according to the diffusion of the technical-scientific-informational milieu) interconnected by *backhaul* network (also interconnected with the fixed network), satellites, electromagnetic spectrum, fiber optic cables (national *backbone*; and about 400 international oceanic cables) and 2G, 3G, 4G, and 5G networks (generation of mobile telephone) that integrate the territory and enable a more rationalized and corporate use hegemonic agents, in addition to greater influence in the communication, informational, cognitive, and behavioral fields (Bertollo, 2020).

Silva (2019) points out that, although more than half of the websites visited in Brazil in 2018 were national (13.4% based in the US and 5.9% in other countries), the analysis of the total page views of these websites showed that only 18.3% of them were from Brazilian websites, while about 75% were concentrated in US companies. In addition, 90% of the traffic on these American websites were concentrated in three companies (Google, Facebook, and Microsoft), which, according to the author, demonstrates the exploitation of data and the incidence of international vectors of information about individuals in the country.

The use of apps in smartphones in Brazil is even more internationally-based, and the main origins are: USA – 35.7%; Brazil – 27.9%; Europe – 21.7%; China – 6.2%; other Asian countries – 6.2%; other countries – 2.3% (Silva, 2019). On Brazilians' smartphones, there is an average of 74 apps installed, with at least 34 of them used daily or once a month; 92% are used to watch videos, 91% are used to exchange messages; 77% are used to access maps and

routes, and 65% are used to play games and 61% are used to access online banks (DataReportal Kepios, 2019; Bruno et al., 2020).

The research report on the ten PsiApps (psychological and emotional self-care apps, a subgroup of health-related apps, *mobile health* or *mhealth*) most downloaded in the Play Store of Google apps in Brazil showed an increase in the download of the Health Fitness Apps in the first month of the Covid-19 pandemic (March 2020): an increase of 226% non-organically (driven by ads) and 166% organically (direct, spontaneous search, without ads). Within the scope of undeclared data capture and sharing by the apps under investigation, 66% of the trackers in these apps were owned by Google and Facebook. Trackers are one of the software tools used to collect information and track user activities and the use of apps to optimize the operation of the app, create personalized profiles, and target advertisements (Bruno et al., 2020).

All data generated by products, services, searches, research, accesses, and browsing through the internet are transmitted, stored, and retransmitted through data centers, technical objects installed inside some companies. Sometimes, they have the dimension of building complexes ("*server farms*"), for their own use, or they offer storage *spaces* to third parties, such as the *digital cloud* service offered to users for data and information storage. According to Silva (2019), of the 4,328 data centers worldwide in 2018, 58% were headquartered in the United States, Canada, Germany, France, the United Kingdom, Switzerland, and India, with the US hosting 1,741, about 40% of the world's total data centers, and China and Hong Kong, with 129 (2.9% of the total). Although Brazil has the fourth-largest population of internet users in the world, it houses only 41 data centers and is not among the main global centers for capturing, storing and retransmitting digital data. This is dramatic and makes the Brazilian territory vulnerable to the process of data extraction, prospection, forecast, manipulation, behavior induction, and future selling of *surveillance capitalism* (Zuboff, 2018).

Artificial satellites are another important component of the materialities of the digitalization of the territory, as well as the participation of private companies in the constitution of this strategic technosphere in the electronic integration of the planet at the service of the interests of the hegemonic agents of politics and the economy (Castillo, 1999), which little by little extends to other planets and celestial bodies. The Starlink project of Elon Musk's SpaceX company (also owner of Tesla, an automotive and energy company) started in 2015 with the launch of lots of private satellites through space rockets, with an initial

projection of 12,000 units, which could reach 30,000, to provide fast internet on the scale of the planet. As of October 2020, this private constellation of SpaceX satellites already had 900 units in orbit. Other *Big Tech* companies have also started similar projects, such as OneWeb Satellites, which has already launched a few batches of satellites. Soon, Amazon will start its Kuiper project and Facebook, its Athena project.

Intermediary services and digital platforms (data capture, storage, and distribution) – technical-informational corporations – have been the dominant stage in the process of creation, extraction, and accumulation of values in contemporary capitalism. Based on data from the consulting firm CBInsights, from 2018, Silva (2019) points out that technology companies with a market value of more than one billion dollars, totaling a market value of US$470 billion, are mostly American (122 companies concentrating 43% of the total value) and Chinese (76 companies also representing 43% of the total value of this market): such as the American Uber (transportation), Airbnb (real estate), Palantir Technologies (Big Data), WeWork (real estate) and Pinterest (social media); and the Chinese Didi Chuxing – transportation; China Internet Plus Holding (Meituan Dianping) – delivery services; Toutiao (Bytedance) – digital media; Lu.com – finance; and Bitmain Technologies – Blockchain. Only Brazil's Nubank, a *fintech*, appears in this list of technology companies with a market value of more than a billion dollars.

While in 2010 half of the ten most valuable global corporations in capitalization markets were in the oil industry, in 2017, more than half of these corporations were already digital platforms, four American and one Chinese (Apple, Google / Alphabet, Microsoft, Facebook, Amazon, and Tencent), with the presence of a single oil company, the American Exxon Mobil (Bergé & Grumbach, 2017). In 2013, a *data center* consumed electricity equivalent to a large shopping center, and if the so-called digital cloud were a country, it would occupy the fifth position in energy consumption worldwide. Following this pace of growth, the digital industry will represent 20% of electricity consumption by 2025, thus consuming and contaminating as much or more than any other industry in the past (Fiormonte and Sordi, 2019).

By criticizing the so-called *virtual* reality and the entire global lexicon that accompanies it (*gig-economy, sharing economy, platform economy, crowdsourcing, home office, homework*, etc.), Antunes (2020) points out that this machine-informational-digital *world* has always been driven by financial capital. In addition, the author recalls that the

entire set of materialities that supports it (energy, cables, satellites, ores, buildings, equipment, sensors, and electronic devices, etc.) can only exist due to human activities, work, which even refers to the extraction of ores in Chinese, African, or Latin American mines. Hence,

> There are no cell phones, computers, satellites, algorithms, big data, internet of things, industry 4.0, 5G, that is, nothing from the so-called virtual and digital world that does not depend on the *work* that begins underground, in *the branches of hell* (Antunes, 2020, p.3).

If all materiality and main information flows are directed and concentrated in the countries of the North, most of the workforce is present in the global peripheries, in the Southern countries. The selectivities, differentiations, and cleavages of the unequal territorial division of labor have simultaneously expanded virtual *online* work and manual work (Antunes, 2020) – both carriers of energy and information, as stated by Raffestin (1993) when defining work. They have been increasingly inserting and intermediating manufacturing, commercial, and production processes, services, management, and agribusiness.

Therefore, an unequal distribution and appropriation of the created materialities and flows that have always been at the heart of geopolitical disputes. And if the world production of new objects in the second half of the twentieth century surpassed all the material production of humanity that preceded it in the previous millennia (Santos, 1992), at the beginning of the twenty-first century, the pace of this materialization has intensified even more, indicating the production of new uses. What illustrates this process is the *energy transition* in progress from a hydro and fossil dependent collector paradigm to a clean and renewable *farmer* model based, among others, on portable microgenerators, especially in ongoing military and aerospace disputes (Barreiros, 2019). According to this author, the USA, China, Russia, India, and other intermediate powers have been working with the scenario of the year 2050-2060 to affirm the new energy paradigm. In the military field, three technologies of the *dronification* of war by air, sea, land, and space operated remotely already stand out: drones, swarms, and AI.

The digitization of the territory has also enabled offensives of virtual bullying, digital robots, fake profiles and fake news manipulating behaviors and promoting racist, denialist, classist, homophobic, and xenophobic positions (Sancho, 2018). The scandal of Cambridge Analytica's performance in elections in several countries, such as Brazil, and the use of digital social networks in the 2018 elections are recent examples of this process (Bertollo, 2019).

The Covid-19 pandemic has also intensified the digitization of the territory, either because of the technologies directly used to combat the disease through identification and

surveillance, or because of the quarantine and physical isolation strategies associated with work and teaching in the virtual modality, applications for purchases and deliveries of products and services. It is estimated that the five big tech companies in the GAFAM group are expected to have excess profits of US$46 billion in the pandemic (Oxfam, 2020). It is noteworthy that the fortunes of the four richest – Jeff Bezos (Amazon), Bill Gates (Microsoft), Mark Zuckerberg (Facebook), and Elon Musk (Tesla, Space X) – represent 42% of the total of the 643 richest and 50% of the total of the 15% richest in the US (ATF, 2020). Digitization implies not only an increase in income and wealth inequality, but an increase in the concentration of wealth at the top by the owners of technological corporations that command the digitization of territories and are directed and controlled by financial capital.

The digitization of the territory is a process that today affects all spheres of people's lives and all places on the planet. It is becoming increasingly difficult to separate the activities of work, leisure, culture, education, health, consumption, and political action from the uses of digital technologies and processes. Just like financialization, we are all involved in digitization.

OTHER POSSIBLE USES AND THE EMERGENCE OF THE POPULAR PERIOD

If the digitization of the territory implies greater productivity, spread, and drainage of value, increasing concentration and sociospatial inequality, it also contradictorily intensifies the dispute over the uses of the territory, as a *policy of equality and difference* based on what is *common* (Dardot and Laval, 2017), on the memory and solidarity. One of the main challenges today is to understand the political struggle of the subjects as a dialectic *equality /difference* (Santos, 2006): recognition of difference and distribution of authority (ethnic, racial, gender, ancestry); and equality and redistribution of the commonwealth produced (class inequality and universal labor rights, and human dignity).

Sancho (2018), when discussing communication for the political action of social movements and *connected crowds*, provided by digital networks, resumes the following trajectory: inaugurated by the *Zapatismo* of the Zapatista Army of National Liberation (EZLN) in Chiapas (Mexico), in 1994, forming a global current from e-mail messages; the alter-*globalization movement* against neoliberalism that, with the same tool, motivated the protests in Seattle in 1999; *hacktivism* from the 1990s (free *software*; data privacy on the network; use of networks for disruption and direct action); and after 2004 (*web 2.0*) the

emergence of digital social networks and connected crowds occupying streets and squares, with the emblematic events of the Arab Spring and *Occupy* Movement in 2011, reverberated in several other countries.

The *Breque dos Apps*, a strike movement characterized by the national activity interruption of app delivery companies in Brazil, in July 2020, illustrates the scale of the fight for equality and redistribution. Tozi et al. (2020) identified this movement as forms of resistance within the technical-scientific-informational milieu itself when analyzing a protest organized virtually by Uber drivers in several cities around the world in 2019, demanding better working conditions and remuneration.

Therefore, understanding the processes of sociospatial inequality and economic, political, and cultural domination linked to the digitization of the territory would not only involve reading the geopolitical dispute and hegemonic transition between North American GAFAM and Chinese BATX (Baidu, Alibaba, Tencent and Xiaomi), but also understanding the other senses, other worldviews, and notions of individuals and society involved in this sociotechnical process.

Han (2020), when discussing the use of *big data* in China to face the Covid-19 pandemic, such as the 200 million surveillance cameras, many equipped with AI and technology for facial recognition and remote temperature measurement of people, pointed out that in China, as in other Asian countries (South Korea, Hong Kong, Singapore, Taiwan, and Japan), there is no criticism of digital surveillance due to the notion of predominant collectivism and the absence of an exacerbated individualism. This is unlike other countries, such as the USA, which have so far been the spearhead in the digitization of territories, where there are many critical views that emerge from this process and that have been formulated by society, academia, critical dissidents, and former employees of large companies, movements, and activist groups.

In the USA and other countries, this criticism arises in the midst of defending the freedom of the individual and the preservation of their intimacy, which expresses the contradiction of the very idea propagated by the digitization of the territory that would be the valorization (customization and personalization) and freedom of individual choice. This would be another fable element of globalization (Santos, 2000). Another important movement is the attempt to regulate this digitization, such as in European countries, especially in Germany. In Brazil, in addition to critical production, there is legislation considered advanced

in the regulation of the use and protection and privacy of personal data, but with low implementation, such as: the Civil Rights Framework for the Internet of 2014; General Personal Data Protection Law of 2018 (that came into force in 2020); and discussions to sign bilateral International Data Transfer agreements with other countries. Also, it is noteworthy that in Brazil there are some organized and active movements for the democratization of media and communication in general, and for the expansion and guarantee of universal access to the internet for the entire population.

Therefore, it is essential to consider the banal space (Santos, 1994) as a territory used by all and a dialectical perspective, both of scarcity and lack and production of otherness and alternatives, of opposition and difference, as what it is and also for what it is possible to be (Lefebvre, 1991). When discussing the sociabilities made possible by new digital technologies in the midst of processes of exclusion and social fragmentation, Ribeiro (2020) highlights the emergence of two simultaneous movements: new sociabilities that are independent of the most immediate contexts of collective life and that occur in a network; and new associativisms and collectives that are more deeply rooted in places. This shows the vitality of the technical and sociocultural links in the places.

The *hacker philosophy* and *civic hackers* constitute new collective subjects whose creativity, knowledge production, and networking promote alternative rationalities and other uses and appropriations of the technical-scientific-informational milieu, therefore, other possible historical ones (Almeida, 2019).

If the Covid-19 pandemic expanded a *Screen New Deal* (Klein, 2020), it also created and strengthened several uses of digital networks and platforms in a sense that is more related to community, solidarity, redistribution, and care for others, at various scales, operating donation campaigns (food, medicines, hygiene, and cleaning products) and monitoring and identifying contagions and deaths by Covid-19 in the peripheries (Albuquerque and Ribeiro, 2020). There is also the formation of new short productive spatial circuits putting consumers and producers in direct contact, especially service provision, artisanal production, fairs, and organic and peasant agriculture.

We can illustrate Finapop (Popular Financing) as one of the other uses created in Brazil in 2020, an investment fund managed in partnership with cooperatives of the Landless Workers' Movement (MST) and an investment broker, and OYX, a cross-cultural indigenous

world cryptocurrency idealized by indigenous communities of two ethnicities in the states of Rondônia and Mato Grosso.

The digitization of the territory provides both the communication and recognition of processes of domination and exclusion, in its own place and in other places and contexts, and the elaboration of common and convergent actions and meanings of social groups in different places. Appropriations of new digital technologies that contradict the processes of domination, exploitation, and state-business control of digitalization platforms. Therefore, divergent from the process of modernization of hegemonic digitization that seek to purify and separate body-person, collective-subject, technical-political, and territory-society – as if they were distinct and not *hybrids* (Latour, 1994; Cataia and Mestre, 2015) – whose regime of binary quantification aims at the commodification, management, and control of some over most places and people.

Thus, the intensification of contradictions with the digitization of the territory invites us to problematize the *demographic or popular period of history* (Santos, 1982; 2001) from the inseparable relationship between culture and territory, communication and times of action, having as centrality the population, the people. To what extent has the appropriation and use of these new technologies and materialities by rationalities and senses fostered public dialogue, the manifestation of popular culture, the elaboration of redistributive programs and projects, pointing to a new historical period?

Dramatic challenge and aggravation to the historical possibilities and alternative uses of the territory in this sense are not only related to the extreme disparity in spatial distribution and access to these materialities in the world and places. Above all, it has to do with the fact that *Big Techs* (Google / Alphabet, Apple, Facebook, Amazon, and Microsoft) controlled by financial capital, the *root platforms*, according to Pessanha (2020), dominate almost the entirety of this digital infrastructure, the interconnections of their flows and mass of data generated, extracted, and circulated.

Inseparable from the banal space, the digitization of territory also refers to the relationships between artificial intelligence and memories, permanence, and resistances historically crystallized in the places that print other uses and also other meanings to these digital networks. Like Hui's cosmotechniques (2020) regarding technodiversities in Asian countries, also for Latin America and, in this case, for Brazil, it is essential to consider not only the presence of individualism and competitiveness characteristic of the current stage of

neoliberal capitalism, but also the practice and notion of person and community that animate other uses of traditional peoples and communities, indigenous people, workers' associations, social movements, in addition to the organic solidarities in the urban peripheries that make the notion of the individual something inert and empty. As Ribeiro (2004) points out when talking about a denied East, the ancestral relations between space, market, and culture nurture in Brazil the memory of the popular classes and the life of spontaneous relations in places.

The *age of intelligences*, the emergence of a world of intelligence (Santos, 2001) challenging new understandings of the links between intelligence, memory, culture, and territory, are inaugurated. Such as the role of *biocultural memory* (Toledo and Barrera-Bassols, 2015), biological diversity and cultural diversity inextricably elaborated and rooted in particular geographical contexts; the half-organism relationship in the studies of genetics by epigenetics; or *iconographies* (Gottmann, 2007), a psychological and cultural dimension, sometimes with relative autonomy from immediate materialities, whose diversity stabilizes external forces on places.

Particularities and singularities in the places that flood, permeate, and distort the systematics imprinted by the actions and materialities of the digitization of the territory. The role of *memory* collectively and territorially produced and reproduced in this process is highlighted. Would the memory of AI and *big data*, because they are storage systems, which are unable to write their memories, only reproduce what was fed into them? Unlike memory, which is a process of transformation and current creation, dialectically and dialogically linked to a place and to historical experiences and narratives. Hence, Heinz von Foester (Pessis-Pasternak, 1993) states that computers have no memory. Therefore, memory, culture, and territory are inseparable. They are heritages and also re-apprenticeships (Santos, 2000), humanities and meanings of life constantly rediscovered and reinvented.

It is about the imagination and creation of new things that escape the rule of manipulation and massification of the hegemonic rationality of the digitization of the territory. Therefore, a direct relationship with memory and ancestry, but also, and therefore, with the new needs and possibilities that are presented in the contradictions of the current period. Data of culture, learning, meaning, and condition of existence that differs from manipulation. It is about the dispute for the creation or colonization of the future, of other futures.

Santos (2000), when proposing the popular period of history, highlights the centrality of the population and people, the emergence of the masses and people as popular culture,

particularizations and singularizations already present everywhere due to the links and vitality between culture and territory. Therefore, the demographic is not only related to the population growth or increase in population density, but, above all, the growth of sociodiversity in each place and, the mixture of cultures and knowledge constituting a new and rich system of actions and production of meanings from places. This sociodiversity is the result of growth, density, and migration, but also of the connections and communications made possible by the increasing digitization of the territory, allowing this cultural mixture on broader spatial time scales between non-contiguous places.

The digitization of the territory highlights the dispute of meanings within this new hegemonic network and not outside it, a permeability greater than any other previous technical system. Techniques in a given geographical situation are not homogeneous, because if hegemonic techniques are networked, other techniques created or inherited are amalgamated. Although in a given situation all the techniques end up being inextricable, the uses that are made in place imprint other meanings. “Such solidarity is not exactly between techniques, but the fruit of the solidary life of society” (Santos, 2001, p.128).

Therefore, understanding the digitization of the territory, which perhaps is a transformation of the way of life of humanity as inaugural and profound as orality and writing have been, the three periods of the human spirit in Lévy (2010) requires a renewed *episteme* (Sahr et al., 2016; Silva, 2017): dialectical / dialogical, open / transdisciplinary and that incorporates the subject who speaks and the meaning of their action. Challenge to understand the inseparability of subjects and their places as a policy of equality (class and universal rights of work and human dignity) and a policy of difference (ethnic, racial, gender, recognition). Above all, as the westernization and colonization of the future (Marramao, 1997), hegemonic digitization is based on the production and reification of the individual in a mercantile and instrumentalized way, a process increasingly jeopardized in the world and in places by creating common meanings of uses of the territory by indigenous peoples, traditional communities, urban peripheries, and the labor world.

In geography, the reading of great processes and long-lasting events through hegemonic agents (State and large corporations) predominated in the twentieth century. In the twenty-first century, the plurality, temporality, and multidimensionality of embodied subjects (Silva, 2017), their particularities and universality, should also be recognized to understand the uniqueness of digitization as a banal space and the centrality of the humanities in the new

historical period that opens up. Thus, dialectically and dialogically, the digitization of life conducted by hegemonic agents will, in a contradictory way, enable the emergence of a plurality of subjects and a new geographical environment, a popular period of history to which the renewed *episteme* of geography contributes.

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NOTES

1 – Data available at: https://www.ibge.gov.br/estatisticas/sociais/populacao/17270-pnad-continua.html?edition=34949&t=results (accessed February 2023)

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