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VETORES PANDÊMICOS E A MODULAÇÃO ALGORÍTMICA DO POSSÍVEL
PANDEMIC VECTORS AND THE ALGORITHMIC MODULATION OF THE POSSIBLE
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Abstract

Three main strategies of restraining COVID-19 – *lockdown*, *tracking*, and *contact tracing* – share what seems to be the most generalizable mark of our time: algorithmic mediation. In parallel, silicon technologies are also advancing. If indeed, *we have never been so digital*, we suspect that the suspension caused by the pandemic opens up vectors of convergence with the current technological trends, and gives clues that we may become even more digital. The text is organized into two parts: 1. The face and the screen, and 2. The body and the street. In the first part, we consider a trend towards domesticity intensification, by putting in relation the lockdown and recent investments made by Facebook in Virtual Reality and Augmented Reality headsets. In the second part, we discuss the algorithmic leading of urban trajectories, by bringing together the notions of *tracking, contact tracing*, and Kinto – the Toyota-owned intelligent urban mobility company. In both cases, either in the relationship between face and screen or between body and street, what seems to be at stake is the algorithmic modulation of the possible.

1   The face and the screen

In September 2019, Mark Zuckerberg (2019) was interviewed by the Brazilian newspaper O Estado de S.Paulo. It is rather surprising to note the compatibility between the businessman's plans and arguments Descartes defended in the 17th century. It is moreover intriguing how their perspective relates to situations of domestic confinement, such as the one we have been subjected to for months, due to the COVID-19 pandemic. Almost four centuries later, and after so many technological and behavioral inflections, it is disturbing that the person responsible for the most accessed social networks on the Internet shares Cartesian aspirations to overcome the body and space, and this time via image.

Attempts to technologically update a certain Cartesianism are not exactly a novelty. Kunzru (1997), for instance, demonstrated that in the 1950s, the first cyborgs were already a sort of scientific and military dream to escape spatial and corporal limitations. Exoskeletons, robotic arms, and artificial organs are examples of different paths taken particularly during the Cold War, and largely already abandoned. Nevertheless, things seem to gain some updated vectorial strength when evoked by a contemporary personality as influential in our ways of existence as Zuckerberg.

Asked about his current assault into the Virtual Reality (VR) and Augmented Reality (AR) field, Zuckerberg replies in an altruistic way, almost realizing Descartes' incorporeal subject:

> "In the future, we will be able to give people the choice to live wherever they want, to take advantage of work opportunities anywhere in the world. Being close to the one you love, and working anywhere, interacting through a hologram." (Zuckerberg, 2019, n. p., our translation).

The entrepreneur's expectation – and maybe this is new – is that these new types of hardware by Facebook may replace smartphones as the primary interfaces of online communication in five or ten years. Reardon (2020, n.p.), responsible for the RV and RA in the company, is pretty direct: "We have absolute faith that people will not use devices such as keyboards, mouses and joysticks. In the future, you will use your mind."

If Descartes' *a-topia* of a rational regularity was an essential force in modern progress, when Zuckerberg's plans and pandemic confinement combine, it seems almost inevitable. Instead of the direct relationship between the inner thinking essence and the geometric regularities of space, an increasingly narrow and totalized digital relational plane is gradually emerging between the face and the screen.

It is in the search for the indivisible units that Descartes finds the doubt as a methodological device and evidence of the manifestation of thought, which, in turn, will be the determining factor of being: I doubt, therefore I think; I think, therefore I am. Thus, the fundamental division between thought and body, and also the privilege of the former concerning the latter, is established in the opposition between pure essential units, on the one hand, and imperfect compounds, on the other.

The philosopher's conclusions are emphatic: "Examining carefully what I was, and seeing that I could assume there was no body and that there was no world [...] I understood that it was a substance whose essence or nature consists only of thinking." (Descartes, 1979, p. 46-47, our translation). Therefore, there is a thinking thing, which is the guarantee of existence. More specifically, the existence of a self, because the famous expression cogito ergo sum presupposes a hidden subject. In a first-person pronominal delimitation of the singular that is not trivial: I think, therefore I am.

Between the four centuries separating Descartes from Zuckerberg, there was an intense process of codification of the thought via behavioral surface, above all visual and attentional. This process approximates, among other elements, psychology, and information technology. If Cartesian philosophy made thinking as the essence of the being, psychology, driven by the confrontation between the Kantian veto (Foucault, 1999) and the nineteenth-century tendencies of objectivity (Daston, Galison, 2007), will pursue giving it an extensive and measurable dimension. From Wundt's introspection methods until the behaviorism and its synthesis with cognitivism, neurology, and informatics, there has been an unsuccessful search for the elementary physiological or behavioral unit, whose functioning may serve as a generalization, representation, or replica of subjectivity and who is independent of the indeterminacy of the space and the body.

Passos (2008), however, emphasizes that, despite an acceleration of the objective trends, the outcome of computing in the psychology labs from the 1940s onwards triggered an inflection upon the scientific naturalism taken after by the behaviorism. Thus it has contributed to the emergence of a transdisciplinary set that was conventionally named Cognitive Sciences[1] – a component, under Simon (1996), of the Artificial Sciences.

Instead of searching for the opaque nature of subjectivity, through the mathematical monitoring of the sensorimotor peripheries, as proposed by the behavioral tradition, this new computer cognitivism will be developed through the simulation method, so that "studying the intelligence of the mechanisms will be already the study of the mechanisms of intelligence" (Le Moigne in Passos, 1992, p. 219, our translation). Beyond representation, the effort will be to produce cognition through mimesis and admittedly artificial of its manifest functions and operations. We will no longer seek the truth of cognition in the deciphering of content from what would be specific about it, but in the development of an automaton capable of interacting with stimuli based on mathematical coding and processing – in this case, algorithmic.

It is like in Anderson's text (2008, n. p.): "Who knows why people do what they do? The point is that they do, and we can trace and precisely measure it like never before. With enough data, numbers speak for themselves. Nonetheless, whereas Anderson finds an argument to defend the modern science gap and a method unprecedented of behavioral monitoring, cognitivism pinpoints a descriptive gimmick of the cognizing subject: what is the matter in knowing why people do what they do or know how they know if computers are already able to carry out mechanical and cognitive actions?

These are two sides of the same scientific inflection. The naturalist machinery, which Descartes bequeathed to extensive things, loses its place to intelligent machinery, which not only overcomes the geometric casualties of nature but also the opacity assumptions of the cogito. The thought is central to the Cartesian system, and it will be reduced to intelligence, which, in turn, will be reduced to the ability to quantify and respond logically to external stimuli. These assumptions are a condition for the emergence of the term Artificial Intelligence. The computer, a powerful calculating machine, becomes the privileged model of cognition and, "through the algorithmization of intelligence, the new formulation of the modern cogito occurs: I calculate, therefore I am" (Passos, 1992, p. 219, our translation).

Intelligent devices, however, besides moving and calculating, should simulate communication with other humans. Computers, as interactive machines, will now mimic the other, and, as Crary (2001) has shown, in addition to being close to psychology, they become aligned with the history of optical and media devices, and advance through privileged audiovisual interfaces – especially imagery –, dynamic and sensitive. Here emerges a system that we could summarize as screen-camera-key (Introna, 2016), aimed at autonomously interacting with the eye-hand body axis (Virilio, 1994), which is, at the same time, a spectacle and surveillance device (Crary, 2001).

To this properly cybernetic mechanism of adapting, in real-time, of a power to the immediate contingencies, Deleuze (2010) conceptualizes as modulation. This term appears to the general public in a small and famous text – almost premonitory or, at least, speculative – first published by the philosopher in *L'autre journal*, in May 1990, and, later, in the book Conversações (2010). He made the distinction between the disciplinary diagram – the one that we were ceasing to be, in Deleuze's words, it is important to pay attention to the gerund – and the diagram of what he called the society of control. In Deleuze's words, the confinements, through which the first one acquires conditions of possibility, work by mold, while the second operates, precisely, by modulation.

Perhaps Deleuze is mentioning a thinker who was very dear to him: Gilbert Simondon. In a conference entitled Amplification in information processes, held in 1962, he will say that modulation is "the model of control" in an "operation designed to prevent random variation" (2020, p. 298, our translation). If this is a possible inspiration, one cannot avoid remembering that Espinosa (2015) was also a very present inspiration in Deleuze's thought. The Dutch thinker, in his work Ethics, indicated that what was materialized in the immanent substance were the modes – therefore, the modulations.

If we take the two possible Deleuzian inspirations as a reference, perhaps we understand the ontological and political sense of the diagnosis of contemporary societies: modular is to control variations in a plane of immanence. If our plan of immanence is called capitalism, it means that controlling society extrapolates the limits of power – previously contained in disciplinary modeling institutions, such as the hospice, the prison, the hospital and the school, and its qualified objects, such as the crazy, the delinquent, the sick, the child – for everything that exists: modulating existences without any borders and in all areas – friendships (Mizoguchi, 2016), militancy (Souza, 2018) and whatever else will become the target of exterior power.

It is this process of immanent control – ergo modulation – that intensifies today. To the automated process that adds massive data capture and storage (dataveillance and big data), data processing (data mining), and behavior action, Rouvroy and Berns (2018) call it algorithmic governance. What we emphasize – and it seems that Zuckerberg's plans, in addition to the confinement during the pandemic, are clues to this – there is a refinement vector of this governance that deepens as the relationship between the face and the screen becomes increasingly closer and total.

Suppose entrepreneurs like Zuckerberg maintain or spread their condition of inducing global subjective processes. In that case, it may be that soon, regardless of current sanitary requirements, we may be shoulder-to-shoulder and under the same roof, each confined in his ocular cabin and immersed in his own algorithmic reality, working, having fun with friends at a show, having sex or visiting other countries. Or, in another way, each one at a different point, it doesn't matter if from the world or from home, and gathered at a distance through the reproduction of our images and sounds directly over the eyes and ears of others.

2   The body and the street

After months of confinement, because of the COVID-19 pandemic, we ask: what does the city mean? What is the point of a busy and diverse center, if social experience may progressively fit in the extensive and complex *incorporeal a-topia* of the worldwide network of computers? What is the city for, if our encounters are being reduced to touch, sound and light? If they may be coded and organized by the objective sensibility increasingly more sophisticated of screens, cameras, microphones, and algorithms? Why should we friction the body against the uncertainties of the street, if life can be summarized in the comfortable flow of the relation face - screen?

More than answering these questions, we can perceive that a more confined life is not, as it might have been in the disciplinary societies, a request of *control* (Deleuze, 2010). With the accelerated technological progress, the algorithmic machinery may raise it to another level the reach of the forces of objectivation – and, thus, of subjectification.

In the same way, the laboratory lost its physical limits, (Bruno, Bentes, Faltay, 2019), perhaps the possible inducements of power can already be extended to the point where it is no longer required, by necessity, to privilege the face and the eye as the locus of intervention. This could be possible placing on the seemingly limitless perimeters and power of data capture, storage, and processing systems. Since algorithmic governmentality fuses the laboratory, social life, and subjectivities, perhaps it may include the flow of the body in its field of determination at this stage and progressively. This flow, in addition to the visual and attentional ones, has been considered an unproductive and dangerous element by the long-standing urban tradition inheriting Cartesianism.

We have just discussed the convergence between lockdown and VR and AR headsets to discuss vector evidence of domestication and totalizing refinement of the face-screen relationship. So, to deal with the algorithmization of the body-space relationship, we turn to the convergence between tracking, contact-tracing, and Toyota's smart urban mobility company Kinto. Tracking was first adopted in China. As Weiland (2020) described it, the strategy works from a mandatory pairing system by QR code, connected to the monitoring of locations and displacements via GPS. With the smartphone camera, the user must pair his device with points scattered over the cities (checkpoints) – locomotive interiors, terminals, access portals to institutions, and commercial buildings – so that the system can assess whether it is allowed to proceed. In case the geomonitoring captures that the perimeter of locomotion has covered places of a high incidence of infected people, the pairing QR code indicates the red signal and the code becomes a restriction factor. Contact-tracing, initiated in South Korea, as shown by Criddle and Kelion (2020), does not monitor the location, but tracks the proximity of the bodies via Bluetooth. If a person approaches the contact network of another person who has had the disease or symptoms, they receive a message recommending isolation. Despite the differences, the two strategies aim to control the circulation of bodies in the city – either by monitoring trajectories or by tracking contacts.

As previously defended (Carmelini, 2016), the history of modern transport and hegemonic urbanism can also be thought of as a long and continuous process of containing urban uncertainty by the state and market management of circulation, and thus of possible encounters in the city. We understand the locomotive confinement as complementary to domestic-television and institutional confinements: while the former composes an urbanistic system of conduction of bodies by the prescribed layout of cities, the others lead, respectively, attention to the imagery circuits of consumption and the movements of the body by mechanical circuits of disciplinary production. As Virilio (2015) wrote, they are overlapping systems of the same process of eliminating the body and space in favor of ubiquity.

Thus, the function of transportation is mainly communicational – organization of the common (Sodré, 2016): besides distributing the bodies in space and inducing encounters, it protects the bodies from urban intensity during dangerous and unwanted but necessary crossings. Paving, confinement, ordering, comfort, and acceleration are fundamental elements, developed in a complementary way by the automotive industry and urban action. We believe, therefore, that the various devices added throughout modernity to organize urban circulation have worked as mechanisms to fit the circuits of work and consumption over the untimely flows of the city; a fitting that is perhaps being accelerated and inflected towards an algorithmization of the street.

An algorithm is "a set of instructions to achieve a certain result" (Finn, 2017, p. 32). It is not necessarily related to calculation or computation, just with the obedience to the steps to reach an end. Planning and the structure of the cities' road network, as well as the definition of itineraries, frequency, bus stops, getting off, or transfers, are all defined ahead, mostly according to the requests and expectations of the economic and political elite. Taking this into consideration, we might think of them as big algorithmic systems, whose primary function is to mechanically link stages of daily crossings of bodies, things, and money through spots strategically placed in the city.

Although alarmed by the possibilities of algorithmic acceleration from pandemic strategies – tracking and contact-tracing –, it is important to acknowledge that operational matrices of these mechanisms were already present. On the one hand, the design of roads and transport systems are already very efficient systems for regulating circulation, locations, proximity, and meetings (Chun, et al., 2019). And, on the other hand, as long as we are under the regime of algorithmic governmentality[2], our relational data is precisely the most coveted raw material in the market. (Toonders, 2014).

As a technological layer that overlaps the road network to regulate urban circulation and privilege certain relationships, the novelty of computational algorithms as a meeting management system is a question of a degree, not of nature. Methods and scales are changed to accelerate and refine the system; kinetic and intelligent automata replace human and mechanical actors. However, the basis and goals remain the same since the Parisian urban medicine in the eighteenth century (Foucault, 2004): to impose metrics to the uncertainty of the cities to govern it. If there is any novelty in the algorithms, it is that we may be in new grades of modulation.

Introna (2016) argues that algorithmic screens trigger cognitive performance; tracking and contact-tracing allow us to imagine a spatial dimension of it: the organization of a specific locomotive choreography, employing dynamic border devices that regulate and order the flow of bodies in circulation through the city. Tracking, for instance, works with a system of codes analogous to traffic lights and with similar effects to tourniquets in public transport. It is like each individual had a traffic light or a turnstile attached to the body, which closes and opens in response to immediate encounters and not to the previous pendular ordination of massive flows. The boundaries that channel urban flows not only generate movement and become automated but proliferate through spaces and bodies. This way, algorithmic performance can now be performed by singular choreographies, despite its growing reach over the populations.

It is common knowledge that systems capturing data have long evaded domestic limits and personal computers. Cameras, bank cards, interactive surfaces, several smart gadgets, location systems, drones, and so on are mere examples. Nonetheless, the algorithmic intervention, in other words, the personalized and automatic response over behavior, discussed by Introna (2016) and Rouvroy and Berns (2018), occurs to a large extent through the eye-screen relation. What we can see with the strategies of tracking and contact-tracing is the novelty of algorithmic responses that occur directly through spatial elements over the bodies, in this case, of the possibilities of locomotion. It is an intervention that defines, in real-time and in a personalized way, the possibilities of displacement of a body from the automated reading of its behavioral patterns, that is, a type of intervention that no longer passes through the algorithmic logistics of the visible but by infrastructural modulation of space.

Appealing to the anthropology of animal hunting, Seaver (2018) includes algorithms in the technological lineage of traps. For him, however, the trap is a contextual, physical, and subjective system that, besides the final act of imprisonment or execution of a body, is composed of the artificialization of stages through which the prey will be conducted until the ultimate moment. Although there is no explicit violent or repressive gesture in the algorithmic context, there is rather both the social generalization of the structure – which tends to make its use progressively necessary – and an automated compression of the arc of possibilities, which is justified by the need for a predictive selection of available contents, but which results in the performative induction of predictable behaviors. Everything that exists – everything that is contemporary whether because it is already stabilized in strata, or because it is already predictable through the connections, and dismantling of these same strata – and everything that does not yet exist – what Deleuze called virtual (Deleuze, Parnet, 1998) – is the target of this government which wants to manage the possible and also constrain the impossible. Freedom to the individual decision is supposedly respected on algorithmic platforms. However,

there is the production of an operational environment beforehand, in which expected decisions become more likely and even necessary. Thus, the act of decision, or the possibilities of decision, are already previously defined, both by imposing the structure and by the narrowing of virtuality. The spatial manifestation of this, as we have seen, goes back to the 19th-century matrices of urbanism, mainly due to the strategies for managing meetings through circulation. What seems new to us – and tracking and contact-tracing provide clues to this – is the possibility of simultaneously inducing massive and singular trajectories.

Even though our discussion starts with dictatorial scenarios, there are clues that an even broader and more sophisticated algorithmic machinery is being built on urban spaces beyond China and South Korea, and that these systems, now operationalized by the state and legitimized by pandemic exception, can settle in various ways by the social body and be used for more everyday purposes of control. Google and Apple, for example, have come together to develop the most comprehensive contact-tracing system in the world, covering, with their IOS and Android systems, around three billion people (Nikas, Wakabayashi, 2020). In Hong Kong (Meisenzahl, 2020) and India (Josh, 2020), aiming at expanding control beyond class and caste borders, electronic bracelets are already in use, replacing cell phones in the application of the strategy and which vibrate in the event of proximity to risk. In several other countries, wearable accessories and mobile surveillance systems are being developed – such as drones – combined with algorithmic monitoring of the location of contacts, body temperature, heart rate, etc., in order to carry out a COVID-19 control that may not be harmful to production and consumption flows (Biddle, 2020; Rodriguez, Windwehr, Schoen, 2020).

Similar and more everyday systems are not far away. In July 2020, Kinto, a company created by Toyota to invest in the field of urban mobility, arrived in Brazil. It is known that Toyota was paradigmatic in the methods of manufacturing production in the second post-war period: automation and increased sensitivity to variations in consumption (Coriat, 1994). If at that moment, it was the first to realize that capital was shifting from disciplinary exploration to the algorithmic modulation of subjectivities, now they seem to realize that the symbolic values of the automotive experience – speed, virility, grandeur –, so striking in the first half of the 20th century (Berardi, 2019), are moving, under the sign of intelligent mobility, to the pure flow of the body in space.

Data from daily circulation are very revealing of behavioral patterns (Andrejevic, 2015). The novelty is that Toyota, with Kinto, does not need to give up its traditional hardware – the automobile – to move forward on this valuable terrain. In addition to producing its cars, it can now both computerize it (León, 2019) and consider it within the network of possible movements whose connection nodes – other hardware, such as bicycles, scooters, stations – it will also produce. As a consequence, in addition to capturing and processing data, Kinto will be able to modulate the trajectories. More than propulsion equipment, its product is now urban circuits, within which the modes will be just stages. The ultimate goal will be producing private multimodal routes to algorithmize possible city locomotives. Toyota, which traditionally makes urban machines, also begins to produce urbanistic machines.

Returning to Descartes: in the first part of the text, to discuss a pandemic vector that aligns the lockdown strategy and Zuckerberg's stated yearnings, we have discussed points of compatibility between cogito, domesticity, and the deepening of the face-screen relationship. At this point, unlike before, we return to Descartes to reflect on the city – the Cartesian trait with the extensive thing. In the second part of the *Discourse on Method*, Descartes (1998) exercises a curious urban impulse that seems to be compatible with Kinto-Toyota's plans. He writes that, in order to achieve perfection, a city must be designed by one person, one thought, one reason – "that's why big cities are commonly poorly aligned with curved streets and unequal" (Descartes, 1998, p. 30-31, our translation). For him, spatial perfection is geometric. Although they may be unnecessary once they exist, composite spatial phenomena – res extensive – must relate to the essential thinking self – res cogitans – for a mathematical reason. The Cartesian operation performs a totalitarian verticalization in the city, thus harmonizing it with the interiorized unity that it supposes to be the essence of existence. It is important to note that the notion of interiority used here says less of a spatial delimitation than of an individualization. It is an enclosure in itself, the exclusion of pores for otherness. Thus, as long as we are sufficiently free from relational interference that can open zones – dangerous or useless – of indeterminacy, it is possible to be inside, even without being spatially confined. The suppression of urban multiplicities is, therefore, the same as the interiorization of the city – or rather, its destruction, since the city is exteriority par excellence (Deleuze, Guattari, 2012)

Kinto, however, not only triggers a vector of interiorization of the city through a network of private urban equipment but also offers its customers the individualized experience of urban interiorization, since its networked road structure is capable of, to some extent, modulate individualized itineraries, supposedly more suitable for users in different situations. At the root of the argument, what Kinto seems to offer, perhaps in a still-low degree, is precisely urban domesticity: a locomotive experience that adds the domestic individuality of the automotive paradigm, the fluid agility of the cyclist and the radial mobility of the pedestrian. All of this, evidently, linked by the fast automatism of algorithmic devices.

3   Conclusion

In this text, one discussed the convergence among contemporary vectors triggered/boosted by the urgency of the COVID-19 pandemic and recent advances in algorithmic technologies. If, as proposed by this edition of the journal, *we have never been so digital*, in this text one indicates the three main strategies of restraining COVID-19 – *lockdown*, *tracking,* and *contact tracing* – relate with recent technological improvements and help us mapping trends of what might be coming up. We might become even more involved in tight and flexible plots of algorithmic governmentality.

In the first part, we deal with the compatibility between lockdown and RV and AR glasses – Technologies longed for by Zuckerberg (2019) – such as those that will soon replace smartphones as the primary technology mediator of online relationships. We have been particularly interested in observing tendencies of deepening domesticity and the intensification of the relationship between face and screen. We have shown that, despite the current euphoria, the digitalized relationship between the face and the screens dates back to some most basic Cartesian aspirations, especially when regarding overcoming body and spatial uncertainties, in favor of the thinking essence and rational determination of space.

In the second part, we have related *tracking* and *contact tracing* with Kinto – a company created by Toyota to invest in urban mobility – we have discussed the possibilities in algorithmic modulation in urban trajectories. If Toyota traditionally produces automotive vehicles, that is, urban machines, we understand that now, with Kinto, they will also be able to offer a personalized urban trajectory. In other words, urbanistic machines. Any online device with access to the countless GPS spread in the city, be it smartphones or online gadgets, will manage to capture transport data. The novelty here, both by strategies of monitoring location and the contact tracing used during the pandemic as well as by Kinto, lies in the capacity of, based on captured data, directly interfere over urban trajectories: algorithmically operate infrastructure modulations in space.

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1 An investigative field that emerged during the 1970s, on the crossroads of several disciplines – psychology, linguistics, neuroscience, epistemology, etc – with computer technologies and computer science. (Passos, 1992).

2 Especially since 1998, when Google inaugurated the PageRank algorithm. (Cardon, 2016).