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When a virus takes place: Some geographical reflections on the Sars-Cov-2 pandemic

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When a virus takes place: Some geographical reflections on the Sars-Cov-2 pandemic

Abstract

The Sars-Cov-2 pandemic seems to have surprised most political and health authorities by the speed that the virus spread and the need to control it through strict confinement measures, unprecedented in peacetime on a global scale. How can we understand the ‘success’ of the pathogen in geographical terms? This article aims to show that the pandemic was built from very specific characteristics of the urbanized world-system. Effectively, only the conditions of global urbanization could explain the geographical kinetic and exhaustiveness of the Covid-19 pandemic. The article also aims to understand how local and regional spatial differentiations of such phenomenon is established and, finally, proposes an interpretation of the pandemic, considering the anthropocene paradigm.

Keywords: Planetary urbanization. Pandemic. Hyperspatiality. Synchronization. Anthropocene.

Quando um vírus toma lugar: algumas reflexões geográficas sobre a pandemia de Sars-Cov-2¹

Resumo

A pandemia de Sars-Cov-2 parece ter surpreendido a maioria das autoridades políticas e sanitárias, em razão da velocidade da difusão do vírus e da necessidade de controlá-la por medidas estritas de confinamento, sem precedentes em tempo de paz na escala planetária. Como apreender o “sucesso” do patógeno em termos geográficos? Este artigo objetiva mostrar que a pandemia se construiu a partir das próprias características do sistema-Mundo urbanizado. Com efeito, só as condições da urbanização global podem explicar a cinética e a exaustividade geográfica da epidemia de Covid-19. O texto visa também compreender como se

¹ Translated from the unpublished original by Michel Lussault.

estabelecem as diferenciações espaciais locais e regionais de tal fenômeno global e propõe, finalmente, uma leitura da pandemia à luz do paradigma do antropoceno.

Palavras-chave: Urbanização planetária. Pandemia. Hiperespacialidade. Sincronização. Antropoceno.

Quando un virus prend place: quelques réflexions géographiques sur la pandémie Sars-Cov-2

Résumé

La pandémie de Sars-Cov-2 semble avoir pris de court la plupart des autorités politiques et sanitaires, en raison de la rapidité de la diffusion du virus et de la nécessité de la contrôler par des mesures de confinement strict, sans équivalent en temps de paix à une échelle planétaire. Comment appréhender le “succès” du pathogène en termes géographiques? Cet article se propose de montrer que la pandémie s’est construite à partir des caractéristiques mêmes du système-Monde urbanisé. Ce sont en effet les conditions de l’urbanisation globale qui seules peuvent expliquer la cinétique et l’exhaustivité géographique de l’épidémie de Covid-19. Le texte tente également de comprendre comment s’établissent les différenciations spatiales locales et régionales d’un tel phénomène global et propose in fine une lecture de la pandémie à la lumière du paradigme de l’anthropocène.

Mots-clés: Urbanisation planétaire. Pandémie. Hyper-spatialité. Synchronisation. Anthropocène.

The interest of Geography in pathogens is easily explained: they are actants² whose intervention is intrinsically spatial, because they diffuse ‘in’ the vastness, via contacts between the hosts they contaminate. In this way, they help provide agency to the space specific social profile of a contagious disease. Hence, geography used epidemics to conceptualize and model the diffusion process.³ Epidemiology is, in part, a science about the diffusion of contaminations.

2 As the author defines in another work, ‘actant’ is a general term that “designates any social reality (not necessarily a person) endowed with the ability to contribute to the organization and dynamics of individual and/or collective action. In short, every entity that is definable and distinguishable, that is active in a social process, which operates acts is an actant” (LUSSAULT, 2009, p. 149). [NT]

3 See, for example, the well-known book by Peter Gould, *The Slow Plague: A geography of the AIDS pandemic*, Oxford, Blackwell Publishers, 1993.

A virus is not a living entity, like a bacterium, because it needs a body to infect for it to multiply and then pass on to another living organism (human, animal, plant). Without that, the protein capsid that contains some genetic material (here, RNA), it cannot last very long. The virus itself is forced to 'exist' by moving its character as an 'agent', revealing itself to be 100% geographical (if it doesn't move, it disappears). This explains why the battle against it requires equally geographical responses: confinement, distance between humans who run the risk of transmitting the disease, suspension of mobility, and quarantine.

That said, even for specialists concentrating on these phenomena for years, the intervention against the Sars-Cov-2 virus was, and remains, astonishing. 'It' (specifying that this third person singular is fiction but allows us to speak of this transient microorganism in a convenient but erroneous way, because this 'it' always consists of a high concentration of virus that infests the body of each host, multiplying indefinitely as the pandemic progresses) managed to literally grip the world-system in the blink of an eye.⁴ We remain a little incredulous about what happened, noting that paralysis has set in everywhere. While Europe is barely beginning to lose its confinement, after the second pandemic wave, entire subcontinents continue to suffer severe impediments to the inhabitants' 'normal life'. In a few weeks, a transient microorganism, unknown to all, managed to impose itself durably as a global geopolitical operator and act far beyond its order of magnitude, which is that of the bodies that contaminate far beyond its immediate sphere of action, which it is that of infected organisms, neither that of mobilities, production activities and world markets, nor monetary policies of central banks.

A reinforced system

In my opinion, the 'performance'⁵ power of the virus is because it took full advantage of the characteristics of the contemporary world. To understand it, we must first remember what the World is, from my point of view: a new way of spatializing human societies, a mutation in the order of human habitation on the planet. Thus, it is judicious to capitalize the word, World, reserving this word in the lowercase for what concerns the mundane, the social (Lussault, 2013). A revolution in magnitude comparable to that of the Neolithic or the industrial revolution – two great periods in which humans established radically new frameworks of existence. This time, it is an urban revolution: widespread urbanization, with its most active phase beginning after 1950, accelerating since 1990 and skyrocketing after 2010, it is the main instituting and imaginative force of the contemporary world, which is both globalized and globalizing. This instituting force arranges material realities, human and non-human, in a new way, and builds the

4 This text continues some of the analyzes developed in *Chronique de Géo'virale*, Lyon, 205, editions, 2020.

5 Here, one must understand the word in a sense inspired (freely!) from linguistics. In this discipline, in a very schematic way, some of the specialists consider that the utterances produced by individuals in and for their acts do not only concern the domain of the *constative*, that is, the way it registers a state of the world, but also that of the *performatives*, which add a state to the world. I take up this idea (found, in particular, in the works of Catherine Kerbrat-Orechionni) and transpose it to consider that the geographer must be aware of the social effects of the intervention of any 'spatial operator' (any entity that operates spatial acts – this is the case pathogens), and thus better delimit their 'performance'. Certainly, Sars-Cov-2 adds an unprecedented state to the World-system.

spatial environments of societies. It is imaginative because it installs the ideologies, knowledge, imaginaries, and images that make up the world.

Globalized and globalizing urbanization is no longer entirely thinkable based solely on statistics (although surpassing the threshold of half of the earth's population considered urban at the beginning of the 21st century is a significant milestone in the process). It is also not based on simple topographical and material expansion of cities: a critique is needed of strictly demographic and 'partitioned' approaches – from the angle of urban-rural relations.⁶

Urbanization is essentially the replacement of societies' modes of organization and previously dominant ways of life by new modes and ways of life: those of the globalized urban. The economy is new; social and cultural structures undergo profound mutations; temporalities, spaces, and spatialities are turned upside down; and a specific biophysical environment is created. (Paquot, 1990). Today's earthlings, wherever they live, inhabit the planet in urban areas.

Thus, a World has been installed through urbanization; it constitutes the contemporary state of the terrestrial ecumene. The ecumene being the concept that designates the space of life specifically created by and for the human species, that is, the Earth as an inhabited Planet – which differs from everything that preceded it. Globalization does not come from a simple intensifying internationalization but is on a global scale (while the worlds of old were on an infra-terrestrial scale) that acts in an unprecedented way and imposes itself as an attraction for a set of social and cultural phenomena. Much more than that of the beginning of this century, the 2020 World constitutes a system⁷ of great cumulative complexity that spatially scatters and interconnects heterogeneous realities belonging to the individual, social, biological, and physical fields. This is why we cannot reduce the World-system to a physical system, and neither think nor model it as such. We humans have built a geo-historical reality in which everything is in interaction and in which any phenomenon is no longer independent of the myriads of phenomena that it activates in return each time it manifests itself.

I think that this 'systematic' has grown considerably over the last 20 years. For the same reason, the most recent phase of globalized capitalism has promoted, in particular, an unprecedented growth in logistics, a new empire of widespread numerical connection. The production chains have 'broken down'⁸ [dégroupage] in a context of hyperindustrialization with the non-stop growth in the number of manufactured goods and constantly redistributed economic geography. The unbelievable intensification of the role of land and real estate income in the drainage and fixation of financial assets in infinite expansion and in permanent circulation has resulted in changes in urban landscapes without equivalents in history (with the appearance, everywhere, of urban skylines⁹ and the multiplication of hyper-places, markers of worldliness,

6 See Brenner and Schmidt (2013) and Brenner (2018). A large part of Francophone urban studies has identified this novelty (since the late 1960s), although it is good manners to underestimate its contribution, as it was not written in English.

7 It is not necessary here to insist at length on the anticipation of the thought of the World as a system by Francophone geography. As for me, I belong to the affiliation of the approaches emblemized at that time by the important book *Le monde espace et système* (Durand; Lévy; Retraillé, 1992).

8 I take up this term from Pierre Veltz, who, since the 1990s, insisted on the process of globalization of industry, linked to this ability to turn the geographies of productive spaces upside down. Cf., in particular, Veltz (2017).

9 see Appert and Montes (2015).

such as Malls, airports, the amusement parks)¹⁰, an incredible development of national and international tourism, whose pilgrimage flows are until recently around the planet. A new and strong presence of social networks and 24-hour information media is establishing a global public scene.

All of these sustain global actors, who are ready to bend local, national, and even global governments to their interests. Consider, for example, of the influence of Gafam (Google, Apple, Facebook, Amazon, Microsoft), the role of platforms such as Uber or Airbnb, the action capacity of investment funds and banks, the role of large logistics, technological, aeronautical, automobile, agro-industrial, chemical, and pharmaceutical groups. Everywhere, lobbies prosper, and lobbyists have a good reputation. Note that it was not difficult to convince or recruit (and sometimes buy) the so-called governments, captivated as they were – and remain? – by the siren song of the promoters of the dominant imagination of World City.¹¹

The epidemic ‘success’ of the Sars-Cov-2 demonstrates this reinforcement of the systemic character of the relationships between the world components. The pathogen is totally dependent on the passage from body to body to survive and needs an extension field made up of numerous people close and/or connected to infect. This was easily found thanks to the spatial characteristics of the urbanized Earth, which it took advantage of. Since humanity has existed, it has encountered many more deadly viruses than Sars-Cov-2 – the 1918-1919 Spanish flu or the 1958-1959 flu, for example. If, today, the coronavirus causes a planetary collapse, it is not because it is more dangerous than the others, but rather because it expresses the extent to which the World has become interdependent links.¹² As soon as something happens somewhere, it triggers inordinate reactions to the initial impulse – like we just endured. For that very reason, now no phenomenon is insignificant; however small, it has unpredictable potential.

Being diplomatic

The spread of the virus also proves that nothing escapes urbanization, which is the reference environment of all life, human and nonhuman. In urbanized spaces, the interconnect between all living humans and nonhumans is evident, even if we tend to forget this. The pandemic is a convincing indicator of the effects of changes in the relational geographic economy among living creatures, due to the mutation of ecosystems driven by urbanization. The relationships of location and distance between humans and non-humans – their ‘geopolitics’, *stricto sensu* (i.e., the political dimension of their struggles for places), and their ‘diplomacies’ (i.e., the instituted imaginations of possible modalities of regulating said relations) – were, in recent decades, totally reconfigured by the dynamics of globalization. Here, I use the term diplomacy inspired by the philosopher Baptiste Morizot,¹³ who, based on the analysis of the return of wolves to France, provides an effective role as an inhabitant of a space in which sharing with other ‘agents’ (human and non-humans) is

¹⁰ see Lussault (2017).

¹¹ see Lussault (2016).

¹² This pandemic crisis likely reveals the extent to which, in contemporary globalized societies, the issue of ‘good health’ has become the main concern of dominant social groups, in particular, and death appears as an almost unacceptable perspective.

¹³ notably Morizot (2018).

problematic. For Baptiste Morizot, the only way to avoid falling into a war against each other is to proclaim a new narrative of ‘diplomatic cohabitation’. This is not a meta-narrative looking down from above, but a performative narrative that supports an acceptable cartography of coexistences in intertwined human and nonhuman territories.¹⁴ I find this approach very stimulating and emphasize what I would call the ‘geopolitical’ dimension, that takes into account the expression of diplomacies in effective and concrete interspatialities (that is, in arrangement of spaces), be they conflicting or not. It seems to me that, in tension, the geopolitical-diplomacy pair makes it possible to comprehend in a stimulating way the cohabitation of the terrestrial ecumenum by humans and non-humans on all scales. In my opinion, this is a real work for the social sciences and, in particular, for urban studies, at the time of entry into the anthropocene.

We can immediately understand how this this interpretation can be applied to the spatial interactions between the Covid-19 coronavirus – which will, of course, continue to circulate for a while (even if the arrival of efficient vaccines changes the pandemic dynamics a little) and ‘take up residence’ in ‘homes’ – and in its human hosts and non-hosts. Of course, these interactions are limited, but we can direct them in many ways depending on the type of ‘diplomacy’ of ‘geopolitics’ chosen, as evidenced by the different ways to approach containment and limit circulation in the world. Between the practices of South Korea, Japan, Italy, France, Germany, USA, Brazil, or Denmark, etc., it is not so much different sanitary approaches as the establishment of different diplomatic and geopolitical specific regimes, which are always based on a certain vision, a way of telling the story of the ties between humans and pathogens and a way of conceiving the spatial devices that make it possible to maintain and regulate these relationships.

This is how we can, for example, understand the research of the anthropologist Frédéric Keck (2020) when he examines the ways in which States or territories such as Singapore, Taiwan, and Hong Kong prepare to manage an avian flu pandemic based on their experience with epizootics originating from the viral reservoir of mainland China. This preparation is based on establishing an alert network, in which non-humans, birds in this case, are used to indicate, by when they become infected, the arrival of a destructive virus. There, humans, particularly those engaged in bird-watching societies, recruit nonhumans as a geographic watchman to provide the best management possible if another nonhuman agent enters into the territory. This forms a sentinel device in the service of the collective. Here we have spatializations and repertoires of particularly subtle and apparently effective spatialities. Furthermore, we can reason that this type of preparation, which permeates society as a whole, has allowed these territories to more efficiently manage the current pandemic, given individuals’ familiarity with pathogenic microorganisms and the development of a reputable ‘immunity’ strategy. The word immunity designates the set of management modalities, by a spatialized group, of its relations with the outside world and the treatment of the entry and exit phenomena of pathogens.

¹⁴ It is worth emphasizing the interest of the approaches of environmental philosophers and anthropologists, who try to analyze these intersections between living beings. We can begin reflections with the geographies that address the issue of human habitation and/or that of territories and territorialities, for example, Desprest (2020) or Tsing (2017).

Synchronization and Sync

Returning to the epidemic diffusion, we find that the virus first thrived where population concentrations are high (throughout the spread of the disease, less dense and populated places end up being infected, usually, by either tourism/leisure activities or professional relocations) and intensely activated social ties – which explains why the density criterion is not absolute (cf. *infra*). The map of its initial establishment is a map of urban agglomerations. In the very heart of the affected spaces, the epidemic produced virulent hotspots in locations in specific groups: temples, churches, stadiums, carnivals, and covered markets. The virus thrives in places where copresence is notable and social interaction is intense – i.e., strong urbanity. The geography of the virus follows urbanization and especially borrows the relational networks that it enters.

Sars-Cov-2, like many other opportunistic entities, is perfectly adapted to the ‘general mobilization’ that is fundamental in the World system, in which everything and everyone constantly circulates, everywhere and in everyway. It behaves like the tiger mosquito – a great traveler who follows the transportation routes of individuals and goods. While humans have always moved around since prehistory, contemporary urbanization has produced a veritable explosion of movements – for each individual, moving is an activity and a fundamental social value. We cannot forget that the ongoing world population growth, in which more inhabitants desire to travel more and to consume goods and services that also demand more transport to be available.

Therefore, the virus has become a planetary passenger, who borrows all possible modes of travel, by accompanying its hosts who transport it and take it cross borders. It traveled extensively but not exclusively by plane. It benefited from all the modes of transportation that humans enjoy, henceforth, in a common way – each individual became a distributor in their everyday life. Thus, tourism has been an ideal vehicle for dissemination, having become global (even contributing to the systemic accentuation of this globalization) and assessable – as an activity with many people in proximity.

Sars-Cov-2 enjoyed the ‘hyperspatiality’ that was imposed as a principle of globality:¹⁵ every ‘spatial operator’ that is somewhere and/or moves is, due to the importance of numerical mobilities and communications, potentially connected and in contact, materially and/or immaterially, to an indefinite number of other operators. The virus prospered in a short period of time with this hyperspatiality that ensured the worldwide spread of the epidemic, allowing it to quickly overflow from its initial circumscribed location and permitting the forced adaption of the spatial system that explains why viral diffusion can provoke a global crisis far exceeding the sanitary field.

Hyperspatiality allows us to understand what I call ‘hyperscalarity’ of Sars-Cov-2 – active at all scales, synchronously. For this reason, it is simultaneously present and acting on the micro scale, the microorganism completely occupied with ensuring its viability; on the bodily scale in each person it infects; on urban scale in areas where the epidemic spreads; on the State

¹⁵ For a more accurate presentation of hyperspatiality and hyperscalarity, see Lussault (2017).

scale in which governments must organize the confinement to defend against its accelerated and widespread expansion; and on a World scale, stressed by the relentless and blazing advance of the pandemic, staged via real-time cartographies and graphs of the exponential diffusion of the pathology. The geography of the virus consists of all these spaces of magnitude and with completely different internal logic that are adjusted by the viral, hyperspatial, and hyperscalar operation, and which synchronize, at the same time as ‘synchronize’.

I return here, reflecting a little on the concept of synchronization, created and developed by Boris Beauce, from the Greek *chora* (which designates the existential space, as opposed to the *topos*, which is the positional space) and from *syn* (which means common), to define the spatial content of the synchronization.¹⁶ Thus, the epidemic synchronizes, as it guarantees the agreement of very different times – let us not forget that the virus is very short and has absolutely nothing to do with economic cycles or urbanization, etc. All of this is tied, however, to a temporal configuration of the pandemic. The diffusion of Covid ‘synchronizes’, because it acts in disparate spaces – that remain so, because these acts do not cause the disappearance of their differences. The pandemic reveals the importance of this synchronization/ synchronization pair, which seems to be at the center of the current functioning of the world, explaining that even the local-global dialog should currently be complexified.

The health crisis we are enduring allows us to understand the disconcerting power of interactions in a world system in which relationality is constant. Because no direct causal, simple, and mechanical chain exists between the infection of the first patient by the virus and the world crisis, there is even an apparent incommensurability between the microorganism that infects a body and the globalized macro-market that is paralyzed in the end. The virus does not directly stop the functioning of the World as if it is an evil superpower in a Marvel film (and no superhero is there to stopping it). However, by becoming an epidemic vector, first in China, in the Wuhan region, it provoked powerful feedback loops that quickly surpassed ‘critical thresholds’ (tipping points) for subsets of the spatial system. For example, when a critical number of patients is reached and the growth curve of cases and deaths becomes, not arithmetic, but rather geometric, thresholds of geographic contamination are reached and everything turns upside down, geographic spaces become the seat of a disease that feeds on itself, as we have seen in Wuhan, Lombardy, Mulhouse, Madrid, New York, etc. When epidemic outbreaks of such importance appear, the system becomes unsettled, and fear becomes an essential ingredient. The political decisions of confinement and restriction interlink and reinforce each other. The retroactions become even more accentuated, deregulate the functioning of entire regions, immediately break down the networks of national and global relations, and engage the world in a situation in which nothing seems easily controllable, let alone quickly reversible.

The state of the system changes very quickly. It had succeeded, for better or worse (after the 2008 alert), to keep it more or less managed (according to the prevailing economic

¹⁶ see Beauce (2018).

standards), and then everything fell apart! The expansion of the virus provoked an unprecedented systemic emergency that was impossible to predict – we are in that uncertainty, which must be coped with. It appeared contingently, even though we can retrospectively discover its conditions of possibility. However, we could/should have known that the probability of this type of concatenation was possible and prepare for it – a preparation that was sorely lacking in most countries, with the exception of places that had learned from previous episodes and integrated this knowledge into their *ad hoc* provisions.

The infection of patient zero, in the anonymity of an epidemic that is still germinating, is something analogous to (which could be refuted from the strict point of view of chaotic systems theory) the flapping of a butterfly evoked by Edward Lorenz in a famous 1972 conference entitled: “Predictability: Does the flapping of a butterfly’s wings in Brazil set off a tornado in Texas?” Here, virus spikes that attach themselves to an individual’s coat will unleash a global crisis. Lorenz theorized the ‘butterfly effect’; today, we would observe a ‘virus effect’.

A global world of spatial differences

Therefore, we can support the idea that the origin of the virus’s performance potency is first of all ‘geographic’ because it takes advantage of the spatial characteristics of the urbanized world. Nevertheless, such a global epidemic configuration should not prevent us from being aware of the regional specificities of the pandemic. Although it is still difficult to precisely analyze and understand the important differences, a region’s own urbanization modalities seem to play a role. In the case of Lombardy and Veneto, where the impact of the disease, during the ‘first wave’ of the epidemic, reached a surprising magnitude, a vast perimeter forms a complex urban metaorganization that schematically associates (i) many ancient cities, often dynamic attractions, though very different sizes, scattered regularly from west to east, parallel to the river Po, from Milan to Venice, each with a distinct character and home to a large local ‘autonomous’ peri-urbanization; (ii) spaces for very extensive activities located almost continuously on both sides of highway A4 and the railway line – structuring axes of this entire Lombard and Venetian complex, served by a narrow network of communication routes – and punctuated by hyper-places (airports, shopping centers) and large industrial and productive ‘clusters’; and (iii) urbanized areas that extend very widely to the north and south perimeters of these first two axial spaces, at great distances, as well as in the remaining ‘empty spaces’. Here there is more interstitial, diffuse, porous perimeters (notably towards the Alps), marked by agriculture, but at the same time closely linked to the other two (i and ii). For example, Bergamo, one of the largest urban poles (both due to the influence of its famous Città Alta perched on a hill, and the gigantic Oriocenter Mall, located below and adjacent to the airport specializing in low-cost flights, which has become an important point for tourists to enter Italy), is closely linked to the northern ends of the country, which have long been home to mountaineers and agro-pastoralists, but who are not isolated.

This large paradoxical and ambiguous multicentric and sprawling territory is dense and diffuse, homogeneous, and heterogeneous, with strong internal and external interconnections.

This area is the true economic center of the peninsula and one of the most productive regions in Europe. Integrated with globalized production, it has a constant flow of people, goods, and data. Cities are historical crucibles of intense sociability, sometimes intra- and interfamilial, including children and elderly people, where the proximity and civility of contacts are valued – which helps establish the ambience and unparalleled culture of the *città*, the fundamental to the attractiveness of Lombardy and Veneto.

National and international tourism is important within this regional system, due to the concentration of heritage cities among the most reputable in the world and the prestige of major cultural (biannual and triennial) and ‘creative’ events – Milan, world metropolis, draws tourist interested in fashion and design. Asian and Chinese visitors are common, which lends credence to a hypothesis that tourism introduced the virus early on, redoubling that linked to manufacturing and commercial activities. The slow underground progression of the disease would have prepared its explosion, starting in mid-February. Football matches (not only those in the A series), which are important and popular, could also have been particularly favorable to the simultaneous contamination of many people.

On the other hand, if we observe the epidemic cases that start in secondary cities, often small and apparently more isolated, but in reality, they are always linked to large areas and hyperplaces (Casti; Adobati, 2020a, 2020b). An aging population, especially in the aforementioned secondary cities, making them highly exposed to excess mortality from Covid-19, and solid public hospital systems, but undersized to hand the phenomenon, are both ingredients for a brutal epidemic, which found a favorable ‘urban environment’ due to their relational intensity. However, the characteristics that can explain this greater exposure to the pandemic by Lombardy and to a lesser extent Veneto are also those that provide their urbanity and dynamism in normal times. The current fears should not lead to definitively condemning the historical, spatial, and social configurations that founded specific urban cultures. The same prudence in terms of extrapolation and prediction would also be useful for the future of the entirety World-system.

In addition to this specific example, if we try to identify constants in the analysis of interregional and local differences assumed by the epidemic, the specifics of each case should consider. In my opinion, a combination of five primary factors (which are themselves multifactorial) can be identified. These are presented very succinctly in a nonhierarchical order to begin a discussion.

- (1) The mode of introduction and dissemination of the virus in a given space are important and heterogeneous. The virus does not penetrate all territories in the same way, with the same load (and this issue of the magnitude of the viral load, which can vary greatly between people, becomes important as studies advance), epidemic potential, and dynamics. Here we must again emphasize the role of international and national tourism, which is a very effective introduction vector, even in areas far from major centers. For example, the

Wood River Valley, a community of 22,000 inhabitants in the center of Idaho, known for its ski resorts, experienced a contamination rate higher than that of New York City. Other such examples are occurring in the Alps and elsewhere.

We must also remember the role of epidemic hotspots linked to concentrations of individuals at temples, stadiums, and festivals. All these meeting and contact locations allowed simultaneous contamination of large numbers of people and rapid diffusion. In these types of circumstances, the role of people called 'Superspreaders' has been observed. These people who infect dozens of others in encounters where they come into physical contact with a large number of people. Here, instants of events-places, such as evangelical services (where communion among the faithful requires hugs and passionate singing that, as we know today, are virus-carrying aerosol diffusers), nightclubs, or even family parties or football games, seem particularly auspicious for the appearance of these superspreaders. Then the virus invites itself in through individuals returning home from these encounters to disperse its infection on a vast scale.

- (2) The sociodemographic characteristics of a population (rate of the elderly population, prevalence of pathologies, social and family structure, social and racial inequalities, etc.) must be taken into account. The epidemic is in no way independent of social inequalities and even harshly spotlights them. Thus, in the USA, African Americans were particularly exposed to the disease especially its severe forms, while facing difficulties in accessing health facilities. Commentators have also linked this phenomenon to the strong reaction of the African American population as well as other racial and social minorities to the murder of Georges Floyd by police officers in Minneapolis on May 25, 2020. Although the most fragile communities suffered the full impact of the economic and health effects from Covid, this new chapter of police violence seemed to be even more unfair and unbearable than the (many) previous ones.¹⁷
- (3) The pre-pandemic situation of the health system is obviously essential. The potential of the (public and private) hospital system (equipment, social openness, geographic network, reception capacity, and the availability and competence of staff) and urban medical system (very differently mobilized depending on the country) must be considered. We also cannot forget establishments for the elderly, who are particularly exposed to serious and fatal forms of the disease. It is an understatement to say that not all

17 Cf., for example, the reaction of famous NBA basketball player Kareem Abdu-Jabbar in the Los Angeles Times, on May 30, 2020: "Don't you understand the protests? What you're seeing is people pushed to the edge." Available at: <https://www.latimes.com/opinion/story/2020-0530/dont-understand-the-protests-what-youre-seeing-is-people-pushed-to-the-edge>. Accessed on: 5 Oct. 2020.

health systems had the same resistance to the increase of heavy caseloads. The comparison between France, Italy, and Germany is particularly interesting and indicates that Germany has benefited from a well-integrated, accessible, and efficient healthcare system, with a very good link between urban medicine and hospital medicine.

- (4) The state of preparedness¹⁸ of public authorities and society as well as the ways that the epidemic has been viewed and managed are decisive factors. The differences in this area between the attitudes and reactions of public authorities in different countries, regions and cities are breathtaking. The French lack of preparation was notable, as was the procrastination in exams, masks, isolation of patients, and monitoring epidemic outbreaks. Surprisingly, even France had the total disregard for the possibility of genuinely involving local actors and inhabitants in managing the response to the epidemic. While some countries chose to see citizens as responsible individuals, the French state treated them like unruly children. This is a reminder that the issue of preparedness is not limited to how the authorities mobilize and implement measures to overcome a crisis in the best possible way (the example of Korea is perhaps one of the most vivid of what it means to anticipate a crisis and its evolutions by a public authority), but extends to the reflection on the capacity of the entire 'society' (especially citizens) to be equally active in this preparation and mobilized in the cooperative management of the epidemic. Here again, examples from Korea, but also from Germany or Denmark should be contemplated.
- (5) Finally, the geographic configuration of a region and the modalities of spatial functioning (as in the Lombardy example) of course intervene. However, not everything is simple and mechanical. For example, urban density is undoubtedly a favorable condition for dissemination, but it remains relative: some cities and/or very dense neighborhoods were spared more than cities and/or much less dense neighborhoods, even if they were close. Thus, Manhattan, at the height of the epidemic, had 730 cases per 100,000 population, while Staten Island had 1644. The type of density is more important than anything else, namely, how this density organizes itself into specific urban forms and is modalized by the spatial relationships between individuals. The virus flourishes where interactions between people (the interspatialities) are strongest, which takes precedence over the sole criterion of density. A sparsely populated and sparsely dense space, but in which the inhabitants are in close daily contact, will be an ideal playing field for the virus,

¹⁸ The word *preparedness* is at the heart of Anglophone studies that are dedicated to how improve the way a given society faces catastrophes ('natural', health and/or technological). This approach is very different from prevention, which is promoted in particular by the theory of risk. Especially Lakoff (2006) distinguishes prevention, precaution, and preparation by treating them as different 'reasoning styles'.

as much as if not more than a dense space, but with low urbanity, where there is little contact among the inhabitants. Furthermore, even in a very dense space and intense social life, the spread of the epidemic can be prevented by paying attention to 'barrier gestures' (mask use, social distancing, etc.), as effectively demonstrated in South Korea, Taiwan, Singapore. On the contrary, the difficulty of accepting the use of masks as a simple protection tool in many countries allowed the rapid spread of the virus, even in geotypes with relatively low urbanity.

The combination of all these factors could explain the intensity of the geographic differentiation of the epidemic. Thus, a very important point is that globalization globalizes the phenomena but does not eliminate geographic specificities. We will go even further and formulate the hypothesis that the more globalization promotes standard operations, the more it internationalizes (as does the epidemic, which takes advantage of the ordinary operations of globalization), and the more local and regional particularities are due to geographic and social characteristics.

A semiological and 'immunological' crisis

Thus, due to hyperspatiality and hyperscalarity, in a few weeks, Sar-Cov-2 became an actant on the World system. If we accept the analogy proposed here to emphasize a point that seems important to me, just as a virus causes an immune reaction in a body by scrambling information and its treatment by the organism, the coronavirus epidemic provokes a kind of 'immune reaction' of the World-system by disturbing the significance and the instruments of understanding previously employed. This unprecedented crisis has given rise to a daily dramaturgy, staged by all media, by digital networks and platforms, by information channels of world actors such as the WHO, by global scientific journals, etc. Each inhabitant of the earth was called to continually follow a unique spectacle: the inevitable progression of the disease, which convinced everyone of the imminent danger to the world.

The Covid epidemic vampirized the informational field, dramatically proliferating the news as we now live under the empire of communicational immediacy. The epidemic is a sanitary alert, but also a political test, which participates in and comes from an informational and even semiological crisis, because it degrades the systems of signs and the logic of meanings that we are used to in the current world context and the experience that we can have. The pandemic has produced new signs and meanings but altered the standard geographic imagination of globalization. Sars-Cov-2 has become the protagonist of a story different from the one we were used to hearing. It has disturbed both the genre of the official narrative of globalization and the descriptions (textual and statistical) of the 'normal' state of the world. Covid has even shaken up its representations, whether the maps produced to capture the epidemic or even strange images taken by drone and repeated in a loop of deserted urban spaces, abandoned cities embalmed like corpses in a mausoleum. The virus spreads quickly, and now we see ourselves losing reference to qualify what is happening – hence the success in

this period of all prophetic ‘words’ and/or calls to leave globalization, change capitalism, etc. by authors who often immediately think they have an advantage, when they often only express their analytical dismay and their anguish about the future.

Thus, we propose to model the pandemic as an informational and semiological disturbance – a perspective that we can only suggest here. Let us start again from the idea that a virus actively interrupts the information field when it infects a body. It disturbs the body, alerting the host’s defense system. For the Covid-19 pathogen, this interference is very powerful and subtle, as it can go as far as the onset of the now famous cytokine storm, an exaggerated immune reaction that is sometimes fatal. The first informational battleground is, therefore, the space of contaminated bodies and from this initial terrain, after viral multiplication, the expansion can continue.

The infection of patient zero, from an animal reservoir, probably much earlier than initially believed, around the beginning of autumn 2019, in Hubei, by an initially unknown virus, constitutes the original alteration of the information space. However, the geo-history of Sars-Cov-2 begins earlier, in as yet unknown spaces and times, where the virus crossed species barriers to pass from bats to pangolins, before reaching humans. At first, we did not understand what was happening. ‘We’ (local health and political authorities), fearing this meaningless novelty, hid what seemed ‘insignificant’ but still embarrassing. This was the first ‘hermeneutical’ error that began a long series in the context of a pandemic in which conflicts between qualified facts and interpretation have been constant and central. Thus, when the signs piled up, when everything became grimly significant, and after weeks of cover-up what could no longer be denied, Wuhan was quarantined on January 23 – China began regular reports to the WHO and the international community at the beginning of 2020. This constitutes a very ‘performative’ spatial and communicational act, which the very fact changes the state of the world and launches an alert process on a completely different scale – while China pressed the WHO that this warning should be as explicit as possible, however, without harming the idea that the country acted in the best way and as quickly as possible. This real tension around ‘elements of language’ has then repeated more or less wherever the epidemic has occurred. However, we began to admit the likely expansion out of China of a virus that quickly seems uncontrollable, constantly multiplying in the bodies of more and more patients, embedded in their circulations, conquering new fields of intervention, far removed from the life worlds of the affected individuals, at the same time very concrete and abstract. The world’s productive systems and financial circulations, as well as that of the decision-making and regulatory bodies of sovereign States have been driven mad by the progression of the epidemic. When Italy is brutally affected, and then other European countries, data placed on maps, exponential growth diagrams of cases, digital models also converted to graphs (and presented as predictive, especially by authorities and the media, without the authors actually denying it, although they are only abstract simulations of diffusive processes, this narrative scam being heavy with consequences) launch a panic – fueled by news channels and social networks. States react hastily, after being left behind,

on the grounds that everything did not seem clear. They could not/did not want to decode the signals that reached them in abundance, as Chinese scientists, the WHO, and even the government of Xi Jing Ping delivered important early information that allowed them to characterize a virus, which Europe, USA, Brazil considered based on the seasonal flu reference system – an interpretation error that other countries, such as Korea or Singapore, did not commit. Governments suddenly frightened by their own postponement overreact, and they too begin to articulate (often warlike) rhetoric and metaphors to produce a wealth of information that accompany and justify decisions they believe to be based on science. Economic and social actors as well as international organizations are not left out, and countless facts, data, speeches, writings started to cover any other preexisting discourse, as nothing that happened a few weeks before still seems to make sense. All this fed a dramaturgical process that globalized and transformed the virus into a ‘quasi-character’, the hero of a disastrous intrigue. It is portrayed as a kind of relentless monster, which feeds the epidemic relentlessly, we are overwhelmed by emotion, paralyzed, stunned by the accumulation of ‘breaking news’ – which turns out to be false, therefore, ‘broken news’.¹⁹ Viruses of uncontrolled information intensifies the work of penetrating viruses, rumors follow rumors, scientists even touch the oracles. Sars-Cov-2 has become a major semiological operator, each day the infernal machine of the media and networks feeds on the smallest crumb of information and feeds dramaturgy – until it loses its relevance and is replaced by another.

The anthropocene as the current moment

To end this burning analysis, with all the difficulty of this type of exercise that sometimes leads to overdetermining explanations, it seems to me that we can take this pandemic episode as a ‘total anthropocene fact’. This can underpin our reflections on ways to cohabit, collectively invent in the face of the challenges that globalization poses – and of which we are, therefore, both actors and ‘victims’.

For a long time, we have chosen to underestimate the extent of the upheavals linked to Global Change and have difficulty admitting the extent to which we would have to modify the most legitimate ways of seeing, thinking, acting, producing, consuming, and conceiving growth, prosperity, and solidarity. Hence, a paradigm shift is in progress, with the emergence of the concept of the anthropocene. While the idea of an environmental crisis, to which some still cling, refers to the classic idea that societies would simply have to manage a momentary setback, for which we will necessarily find a solution, the anthropocene term denotes the existence of a bifurcation, of which we are in the process of experiencing the first manifestations. Defined as a new ‘epoch’ less geological than historical, the anthropocene proceeds from the direct and prominent influence of human activity on the planetary biophysical system. However, many researchers are inclined to identify what is called the

¹⁹ The author seems to be referring to a BBC comedy program that mocked the 24-hour a day channels. Available at: https://en.wikipedia.org/wiki/Broken_News. Accessed on: 5 Oct. 2020. [N.T.]

post-1945 'great acceleration' phenomena of Global Change (Steffen et al., 2015; Syvitski et al., 2020). In other words, a period corresponding to the beginning of the contemporary phase of massive urbanization. Therefore, this could be considered the vector of effective entry into the anthropocene, which is at the same time a metaproblem that informs and questions all fields of society, at all scales, and in another factor of globalization, configuring another complex systematization (global change), which has just been connected with the systematics linked to widespread urbanization.

We propose the following hypothesis: we face and increasingly must face that a new state of the terrestrial ecumene, which results from the hyperscalar effects of globalizing urbanization, marked by the massive impact of certain urban activities on the planetary biophysical system, characterized especially by:

- (i) global warming and its multiple effects;
- (ii) depletion of nonrenewable and even renewable resources;
- (iii) rapid reduction of biodiversity on a terrestrial scale;
- (iv) unprecedented modification of the metabolism of large biotic and abiotic systems (soils, oceans, and waters), due to the first three developments and the impact of human activity in terms of pollutants and the diffusion of synthetic chemical molecules.

Global change reorganizes everything and operates by synchronization and by synchronicity. It reorganizes spaces and times, and this reorganization produces social inequalities, injustices, and major political tensions. However, it also creates new aspirations, skills, desires to act, proposals for cohabitation, and organization of different spaces, new imagery of animals and plants, new cultures, etc. Therefore, we are beginning to identify the contours of a situation in which two systematic forces pair, feed, consolidate, and contradict – we observe relationships that could be qualified as ago-antagonistic between generalized urbanization and global change, and which best characterizes the specificity of the anthropocene.²⁰ Caused by a virus whose appearance is an indication of the convulsion of urbanized ecosystems and whose dissemination has been empowered by the current configuration of the World system, the pandemic has shown that the combined process of urban globalization and global change has reached a critical moment, which opens up the possibility to question the habitability of the planet for humans and for all living beings that it hosts and with whom we maintain, whether we like it or not, interdependent relationships.

²⁰ Ago-antagonism is an original theory developed by endocrinologist and biologist Elie Bernard Weil (1988), who postulates that any emergent phenomenon is constituted by a system that comprises at least two elements that can only cooperate if they have 'opposite' effects. For him, a system is characterized by a pair of forces that oppose (antagonism) and 'cooperate' (agonism). Such systems are marked by hetero-organization, in that their dynamic (which is 'dissipative') is not reduced to a single efficient internal causality. This approach has been widely commented on in systems science, and I find it interesting to identify this relationship between urbanization and global change.

For things like this, I think that one of the challenges of thinking about the anthropocene is for us to re-inscribe our present in a history enriched by the anthropization of the planet, the fabrication of the ecumene, of providing depth and plurality while it has long been overdetermined by the ‘modern’ vision. This progressive, heroic vision was founded on the domain of ‘nature,’ supported by *ad hoc* engineering and sciences increasingly converted to utilitarianism as Western societies asserted their (late) empire. Nevertheless, the new connected stories currently remind us to what extent the teleological vision of our planetary occupation by the European powers and then by the US mutilates our knowledge and makes us forget other residential experiences. Those of the first peoples, of course, as well as those from other cultural areas, whose complexity has been forgotten, as shown, for example, by Romain Bertrand’s work on Indonesian space. His recent book, *Qui à fait le tour de quoi? L’affaire Magellan*, immerses us in an insular world that, when approached by Franco de Magalhães’ expedition, reveals itself to be intensely interconnected, linked, crisscrossed by centuries-old trade routes, which did not wait for Europe to organize itself and develop rich and subtle material cultures and cosmologies, cosmogonies, and political organizations that were not minor (Bertrand, 2020). The same could be said of so many extra-occidental areas, which offer other paths for defining the relationships between humans and their ‘environment’ (which, in fact, does not surround us because humans also pass through it), different in any case from what European and later US imperialism has recently imposed as the only possible model.

If this pandemic does indeed confirm, in its own way, that we have definitely entered the anthropocene – there is no return – should not it encourage us to fully recognize the multiplicity of stories of the planetary adventure of the human species, the variety of relational economies that can be envisioned with non-humans lives and unliving entities, thus, to again provide the possibility of conceiving various possible scenarios for the future? Several scenarios would not be so competitive and, better yet, synchronized and synchronously reconcilable, in the sense that we would accept that the World does not function on a single standard. Can we accept, by political choice by the world society, that various visions of cohabitation could peacefully coexist? Can we choose to compose a World ‘reconciled’ with non-humans at the same time as entire sections of our own history, and a World of pluralities? The experience of life and *in vivo* thinking in scale one of the pandemic offers a real opportunity to engage in this reflection.

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