Sovereigns, Viruses, and the Law:
The Normative Challenges of Pandemic in Today's Information Societies

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Abstract. The paper examines the legal and political impact of the Covid-19 crisis, drawing the attention to fundamental questions on authority and political legitimacy, coercion and obligation, power and cooperation. National states and sovereign governments have had and still will have a crucial role in re-establishing the public health sector and addressing the colossal challenges of economic re-construction. Scholars have accordingly discussed the set of legal means displayed during this crisis: emergency decrees, lockdowns, travel bans, and generally speaking, powers of the state of exception. The aim of this paper is to stress the limits of such perspectives on powers of national governments and sovereigns, in order to illustrate what goes beyond such powers. Focus should be on the ontological, epistemic and normative constraints that affect today's rights and duties of national states. Such constraints correspond to a class of problems that is complex, often transnational, and increasingly data-driven. In addition, we should not overlook the lessons learnt from such fields, as environmental law and internet governance, anti-terrorism and transnational business law, up to the regulation of Artificial Intelligence (AI). Such fields show that legal co-regulation and mechanisms of coordination and cooperation complement the traditional powers of national governments even in the times of the mother of all pandemics. The Covid-19 crisis has been often interpreted as if this were the last chapter of an on-going history about the Leviathan and its bio-powers. It is not. The crisis regards the end of the first chapter on the history of today's information societies.

Keywords: Authority; Biopolitics; Coercion; Complexity; Coordination; Emergency; Governance; Information Societies; Legitimacy; Power; Sovereignty; Transnational; Virus.

1 Introduction

From time to time, there are historical events that deeply affect our understanding about the world and about ourselves. Such events may concern political upheavals, natural catastrophes, scientific discoveries, or technological revolutions. One of these events marked the life and work of the English philosopher Thomas Hobbes, the father of modern political and legal thought. In his autobiography from 1679, Hobbes refers to the Spanish attempt to invade England in July 1588, few months after his own birth in April of that year: "And hereupon it was my Mother Dear / Did bring forth Twins at once, both me and Fear." Fear plays indeed a crucial role in Hobbes's description of human nature and the interaction in a state in which man to man is an "arrant Wolfe." As a political and legal thinker, Hobbes's aim was to sort out a rational solution for this state of nature, much as occurred during the civil war that afflicted England from 1642 to 1651. The sovereign powers of a *Leviathan* was Hobbes's grand response.

Natural catastrophes and technological failures, in addition to political crisis and revolutions, have too inspired in-depth reflections. In his autobiography *Philosophische Lehrjahre* from 1977, Hans-Georg Gadamer recalls his reaction as a 12 years old kid to the sinking of the RMS Titanic on 15 April 1912. The belief that science and technological innovation would have brought only roses but no thorns, faded away. Some claim that Gadamer's later "rehabilitation of authority and tradition" in his masterpiece *Truth and Method* "may have begun as early as 1912 with the sinking of the Titanic" (Thiselton 2009: 219). Gadamer

seems to confirm this interpretation in some interviews. Big events call for thinking out of the box. Interestingly, Gadamer developed his own concepts of authority and tradition at odds with the formalisms of Hobbes and the Enlightenment's political thoughts. Authority entails obedience and still, *pace* Hobbes, Gadamer presents the latter as an act of reason that should be grasped in accordance with its own historical dimension. This would have been the framework, within which to grasp such events as the sinking of Titanic. The "legitimacy of prejudices"—which Gadamer examines in the introduction to the section on authority and tradition in *Truth and Method*—complements the problems of political power that are at stake in the headquarters of sovereignty with "historical hermeneutics."

In more recent times, there have been further historical thresholds, such as Hobbes's Invincible Armada, or Gadamer's Titanic. In my lifespan, I recall four of such historical events, i.e. the missile crisis in Cuba (1961); the end of the cold war (1989), September Eleven (2011), and now the Covid-19 pandemic (2020 onwards).

This paper deals with this latter pandemic. It invites once again to think big and out of the box. It is worth mentioning, in particular, today's contrast between sound scientific research in e.g. epidemiology and complex systems, and the confusion of most current political and legal debates on the Covid-19 crisis. Confusion entails chaos and bewilderment, turmoil and disorientation, much as occurs when something new and big hits for the first time. Some have focused on the short-term features of today's legal and political crisis, such as the exercise of "emergency powers" (Gostin and Hodge 2020); lockdowns (Stock 2020); and their impact on international law (Bogdandy and Villareal 2020). Others have intended to stress the long-term effects of the pandemic and the political essence of this crisis. According to David Runciman, for example, "at the heart of all modern politics is a trade-off between personal liberty and collective choice... Though the pandemic is a global phenomenon, its impact is greatly shaped by decisions taken by individual governments" (Runciman 2020). An alternative view proposes mechanisms of coordination, in order to tackle the "two particularly important choices" we face in this time of crisis, that is, between totalitarian surveillance and citizen empowerment on the one hand, and nationalist isolation and global solidarity on the other (Harari 2020).

One of the main assumptions in this paper is that such traditional formulas, as 'emergency powers,' 'state of exception,' or the balancing between 'personal liberty' and 'collective choice' risk to be misleading, or even short-sighted in the times of Covid-19. Most national legal systems have adopted extraordinary measures, such as massive lockdowns and forms of mass tracking; and yet, it would be deadly wrong to assume that such emergency powers exist because a sovereign is at work. This is only part of the story. What is at stake revolves around something deeper than the traditional mechanisms of modern politics and how international cooperation, or the empowerment of national citizens have aimed to address the limits of every Hobbesian approach. Both alternatives lack perspective, as if they were drawing a two-dimensional picture of today's legal and political crisis. In order to flesh out, so to speak, the three-dimensional relations between the different elements of this crisis, we therefore need to properly set our level of abstraction. We have to formalize the interface that makes an investigation of some crucial aspects of this crisis possible, through a set of observables and variables of the analysis, the result of which provides a model for the field.

The paper suggests that we should pay attention to the informational features of this crisis. The informational perspective has to include both the epistemological status of the virus and the normative counterpart of the pandemic. By grasping the most relevant observables of the crisis in terms of information, the limits of most attempts to grasp the legal and political facets of today's pandemic in accordance with the traditional notions of sovereign powers, emergency measures, restriction of rights and liberties, will be clearer. Accordingly, the paper is divided into three sections.

Section 2 sets the analysis of this paper in informational terms, as a matter of "life and death." After all, in the phrasing of David Runciman, "as Hobbes knew, to exercise political rule is to have the power of life and death over citizens" (Runciman 2020). The aim of this part of the examination is to stress

what the epistemological status of viruses and the normative counterpart of pandemics may have in common.

Section 3 presents the *part destruens* of the investigation, namely, the limits of all traditional outlooks on the current political crisis and its legal boundaries. The limits concern either the lack of perspective that depends on a short-term view, or on a short-sighted analysis. Bio-politics applied to the information era is a good example (Aylmer 2020).

Section 4 illustrates the *pars construens*. We should add the notion of informational governance to the alternative between government and "governmentality of bio-politics" (Foucault 1991). On the basis of this threefold viewpoint on governments, governmentality, and governance, the complexity of the crisis should be grasped vis-à-vis the epistemic, ontological, and normative dimensions of the pandemic. Previous work on information as algorithmic compression of complexity (Chaitin 2005; Pagallo 2005), and the complexity of its normative challenges (Floridi 2015; Pagallo 2015a), casts light on how the elements of today's crisis are in proportion one to another. The vanishing point of this informational perspective on sovereigns and viruses is given by the legal facets of their interplay. The intent is to illustrate a sort of Gadamer's historical hermeneutics for our Titanic.

2. On Life and Death

Virologists still disagree on the definition of their subject matter. Viruses are somehow in between what counts as life and non-living physical entities. Viruses are indeed equipped with genetics, reproduction and evolutionary functions through natural selection, and yet, they don't possess some of the features, which are typically conceived of as necessary conditions for life, such as cells (although viruses possess genomes). One solution has been an ad hoc categorization of such entities, much as the biological status of a fungus is conceived as something of its own between animals and plants. The definition of the International Committee on Taxonomy of Viruses (ICTV) follows this strategy: "a virus species is a polythetic class of viruses that constitute a replicating lineage and occupy a particular ecological niche." Experts are still divided about the consistency of the formula (van Regenmortel et al. 2013). Some suggest to remove any reference to the polythetic nature of the class (Gibbs and Gibbs 2006); others have proposed to substitute the polythetic reference to the class with the definition of viruses as "a monophyletic group" (King et al. 2012). However, as the ICTV webpage is keen to warn us, we should further distinguish between what virus species and higher taxa are as "abstract concepts produced by rational thought and logic," and the status of viruses as "real physical entities produced by biological evolution and genetics." The "abstract concepts" particularly fruitful in the times of a pandemic can be illustrated with a basic notion of the ICTV definition of virus, that is, biological evolution.

The modern debate about what life is should be traced back to the 1940s, when independently one from another, great minds paved the way to the new paradigm. The connection between "real physical entities" and "biological evolution and genetics" was formalised in terms of information. This is what Erwin Schrödinger's *What's Life* from 1944, John von Neumann's 1948 lecture at the Hixon symposium on "cellular automatons," and Norbert Wiener's 1950 *The Human Use of Human Beings* have in common. Schrödinger conceived life as an encoded program, such as an "aperiodic crystal" with all the genetic information for the configuration of covalent chemical bonds (Schrödinger 1944). Von Neumann's theory of automata hinges on the idea that the laws of physics and of biology can appropriately be understood as computer programs, that is, sets of mathematical instructions that embed a plan of behaviour—which includes the ability to reproduce itself—into an automaton (von Neumann 1951). In *The Human Use of Human Beings*, Wiener, the father of cybernetics, expanded this informational view to the realm of the traditional Aristotelian "practical sciences," that is, ethics and politics. He warned against the normative challenges brought forth by the same field he had contributed to create. "Information is information, not matter or energy. No materialism which does not admit this can survive at the present day" (Wiener 1954).

A crucial element of this informational perspective is given by the notion of 'agent.' The attention is not only drawn to what an agent is, but to how different kinds of informational agents may interact in a given system. Drawing on work by Allen, Varner and Zinser (2000), further developed by Floridi and Sanders (2004), and Pagallo (2013), a physical entity can be understood as an agent if such entity is adaptable, interactive, and autonomous. Adaptability means that agents can improve the rules through which their properties or inner states change. Interactivity stands for the agent's perception of the environment and its ability to respond to stimuli by changing the values of its inner states, or properties. Autonomy concerns the modification of such inner states or properties without external stimuli, so that agents exert some degree of control over their actions. The notion of agent includes, in informational terms, both living beings and artificial entities, much as every agent conceivable in between. We may also refer to the notion of "multi-agent systems." Such MAS concern the behaviour of traditional artificial legal agents, such as a national sovereign state, an association, or a corporation (Floridi 2014). By grasping the status of an agent in informational terms, we comprehend how different kinds of agents may interact at different levels of abstraction. For example, we may be interested in some affinities between those informational agents that are made of (a piece of) code capable of replicating with detrimental effects. This definition of agent includes both natural and cyber viruses.

The focus of this paper is restricted to the normative impact of such informational agents, and their systems. The representation of tenets of ethics and economics, politics and legal systems in informational terms, has allowed us to point out what is unique to the challenges of "information ethics" (Floridi 2008), "techno-regulation" (Pagallo 2015a), or the moral principles of AI (Floridi et al. 2018). This work appears particularly fruitful in this context, because the current Covid-19 crisis has put in the spotlight three of the most relevant legal and political features of today's information societies and their agents. The first feature has to do with a class of problems that is 'complex.' This means that such problems affect the whole organization and environment of current societies. This complexity is one of the main reasons why national law-making activism has increasingly been short of breath over the past decades, and why constitutional powers of national governments have been joined—and even replaced—by the network of competences and institutions summarized by the idea of governance (Pagallo 2015b). The more an issue impacts on the whole infrastructure of the system, the more such issue is complex; but, the more an issue is complex, the less traditional notions of legal and political thought can tackle such complexity in terms of physical sanctions, national jurisdictions or self-referential rule of law. Classical examples of this complexity abound in the fields of environmental law and of internet governance (Pagallo 2015b). It seems fair to admit that the governance of pandemics should be added to this list.

Second, the class of problems we're dealing with is 'transnational,' because viruses, much as the flow of information on the internet, go beyond i.e. *trans* the boundaries set up by national and international lawmakers. National legislators have often attempted to stop this flow of transnational information, be it the information transmitted by biological viruses, or data by cyber empires. In both cases, from a legal and political point of view, the dynamics does not revolve much around how national law and international law may interact, but rather, how today's problems of national and international law present a transnational dimension. Scholars have extensively scrutinized this dimension in today's lex mercatoria, such as the set of rules regulating the eBay trading system, or the powers of the internet corporation for the assignment of names and numbers (ICANN). Transnational forms of data governance in e.g. the web of data (Pagallo et al. 2019), and the health sector (Floridi et al. 2019), help us clarify how national sovereign states fare in the times of a pandemic. Several weeks of lockdowns and self-isolation were and still are intertwined with this transnational dimension of our lives with its problems, e.g. the new wave of cyber viruses and cyber attacks triggered by the massive use of video conference systems in Spring 2020.

Third, the transparent governance of a complex multi-agent system—such as today's information societies—can ultimately hinge on the technicalities of design mechanisms. This has been the bread and butter of two generations of experts in the fields of information technology (IT) law, such as privacy and data protection, copyright and e-commerce, cyber crimes and so forth (Reidenberg 1998; Lessig 1999).

Legal constraints embedded into spaces, places, or digital interfaces, can either aim to nudge people (Thaler and Sunstein 2009), or to the decrease the impact of harm-generating behaviours (e.g. risk management), or to prevent such harm-generating behaviours even from occurring (Pagallo 2011). Work on the ethical and legal challenges of self-enforcing technologies should thus help us tackle current discussions about whether and to what extent new IT solutions for virus mass tracking, such as the Pan-European Privacy-Preserving Proximity Tracing model (pepp-pt.org), or the Apple-Google design system, should be adopted. The role of design mechanisms in the governance of today's societies with their flux of information and transnational agents can hardly be overestimated.

However, as mentioned above in the introduction, scholars have often overlooked these facets of today's legal and political crisis. In some cases, this lack of attention is justifiable since focus of the experts has been—and moreover, can legitimately be—on the short-term aspects of the pandemic, e.g. how US emergency laws should strike a balance between public health and civil liberties (Gostin and Hodge 2020). Yet, a considerable amount of comments on the legal and political facets of the Covid-19 crisis has been simply short-sighted. Scholars often dismiss such crucial aspects of today's information societies, as their complexity, transnational dimension, and dependency on design mechanisms for data and IT technologies. Some claim the alternative is between "citizen empowerment" and "totalitarian surveillance," between "global solidarity" and "nationalist isolation" (Harari 2020). Others reckon, "in a lockdown, we can see the essence of politics is still what Hobbes described: some people get to tell others what to do" (Runciman 2020). The times of pandemic make clear that our problems are quite more complex. The next section aims to put things in perspective, by examining what role sovereign powers play in the Covid-19 crisis. It's a matter of life and death, after all.

3. Back to the Leviathan?

Sovereign powers of national states have played a major role in the first months of the Covid-19 crisis. According to Carl Schmitt's 1922 formula, "Sovereign is he who decides on the exception" (Schmitt 1985). Since January 2020, national governments, i.e. the executive powers of national states, have declared and enforced emergency measures, including orders and decrees for severe restrictions of rights (e.g. privacy), and liberties (e.g. association and economic freedoms). As a corollary of the sovereignty principle, each state has made decisions in accordance with its own specific laws. Emergency and martial laws apply both inwards (e.g. national lockdowns), and outwards (e.g. borders control). The President of the US, Donald Trump, for example, authorized entry restrictions from China by the late January 2020, later dubbing the crisis as a "Chinese virus." Then, travel bans were imposed by Trump on continental Europe by mid March 2020 and, a few days later, on the UK and Ireland as well. The first European country imposing a "national quarantine" on 9 March 2020, i.e. Italy soon found itself progressively isolated. The government had to take back control of the national darling, i.e. the flag carrier of Italy, Alitalia, on 17 March 2020. The most common remark of such days was 'this is like a war.'

Like any war, we got deaths. Some countries, as Spain and Italy, announced the dramatic toll of the crisis in a formal and ritual way (at 6 p.m. of every given day in Italy, in the morning in Spain, whereas the cheer for frontline workers was at 7 p.m. in New York City). Since 21 January 2020, the website of the World Health Organization (WHO) delivers its "situation reports." By 6 May, we already had 107 reports and, alas, 247.503 deaths (of which, 147.780 from the European region, 81.070 from the Americas, etc.). The collapse of some national health systems was—and still is in certain cases—a concrete possibility. As the Ancient Roman lawyer Cicero would have suggested in these cases, *Salus Rei Publicae suprema lex esto*, "the health of the people should be the highest law" (*De Legibus*, book III). Most people have indeed reacted in admirable and outstanding ways, and still, we should ask how national governments exercise their powers and how people will respond to this exercise. Some grasp the current crisis as "the Faustian bargain identified by the philosopher Thomas Hobbes in the middle of the 17th century, when the country was being torn apart by a real civil war," that is, the Faustian political bargain between personal liberty and

collective choice (Runciman 2020). Others suggest that we should add to the emergency powers of national governments, the analysis of that which Michel Foucault called "governmentality" (Foucault 1979). This is the outlook that was much discussed in the aftermath of the previous crisis, that is, with September Eleven (Mbembe 2003; Agamben 2004). What would "governmentality" add to our previous analysis?

Governmentality focuses on power techniques that aim to govern populations. Current lockdowns demonstrate that populations are the subject of specific forms or techniques of government that Foucault summed up as "biopolitics" (Foucault 1991). There would be "two major features" of this governmental rationality: the centralization of political power and the development of power technologies that aim to govern individual conduct continuously and permanently (Gutting and Oksala 2019). Foucault talked about the latter as the individualising power, or "pastoral power" of modern life. His bio-examples on people's diet, mental health, or sexual practices can properly be complemented with today's use of facial recognition software for social score ranking, methods of profiling, and mass surveillance practices. Work on the "new surveillance" society since the early 2000s (e.g. Marx 2002), and later, the age of "surveillance capitalism" (Zuboff 2019), can be understood as the footnotes, or the updating, of Foucault's analysis on a new historical form of "governmentality" with specific technologies of power and beliefs about the nature of society and the markets. This account of neoliberal societies, which hinge on competitiveness and the self-interest of economic subjects, frames many current analysis in the times of pandemic. Going back to the words of David Runciman, it is as if today's information societies could simply offer "a choice between rival forms of technocracy. In China, it is a government of engineers backed up by a one-party state. In the west, it is the rule of economists and central bankers, operating within the constraints of a democratic system" (Runciman 2020).

Yet, there is the other side of the Covid-19 crisis. In addition to the aims of "governmentality," we should take into account the protection of people's rights and the "empowerment of citizens" (Harari 2020). The European Court of Human Rights has over the past six decades ruled over the limits of state powers in times of emergency. It is worth mentioning that some crucial rights of the 1950 Convention on human rights refer to "health" as the legal basis for restricting the exercise of such rights as Art. 2's "freedom of movement"; Art. 8's "right to respect for private and family life"; Art. 9's "freedom of thought, conscience and religion"; Art. 10's "freedom of expression"; down to Art. 11's "freedom of assembly and association." Against the framework of the ECtHR case law, we may thus expect that e.g. its proportionality test will help us tackle some of the balances that shall be struck in the times of a pandemic. Other legal sources may include the doctrine of the European Court of Justice in Luxembourg, together with statutes and case law of national jurisdictions. The previous sections have already mentioned work on how to balance public health necessities and civil liberties in the US legal system (Gostin and Hodge 2020), much as the debate on data protection by design solutions in EU law. Crises do not only have to entail 'zero sum' games, but may also end up with 'win win' solutions.

Whether or not current legal safeguards will be good enough to tackle the Covid-19 crisis remains of course a mid-term issue. The evaluation depends—also but not only—on the second phase of the crisis with the reactivation of essential economic activities. Much as occurs in Plato's *Republic* (369 C), when Socrates explains to Glaucon "the origins of the state," crises force us to trace the basic principles of mutual need and division of labour, thereby providing for priorities: "Now the first and greatest of necessities is food, which is the condition of life and existence... The second is a dwelling, and the third clothing and the like." Socrates and his pupil Plato have been often depicted as idealistic thinkers at odds with the realism of modern legal philosophy, e.g. Hobbes and the *Realpolitik* approach of several current commentators. Nonetheless, natural and positive law traditions have both to address the basic question on who should use coercive power. In the phrasing of Socrates, "nothing can be more important than that the work of a soldier should be well done" (*Republic*, 373 E). Coercive power involves problems of political authority and legitimacy, i.e. who controls the soldiers in the story of Socrates in the *Republic*, much as the techniques, according to which the work of a soldier can be considered as "well done." One of the crucial features of today's information societies has to do with the fact that physical coercion has increasingly been

joined—and even substituted—by new forms of digital coercion. Military techniques have evolved since Plato's times, much as Foucault's forms of governmental rationality have increasingly been transformed into matters of access to and control over data in the information era. Work on cyber force and cyber wars (Pagallo 2015c), digital retaliation (Taddeo 2017), workplace and techno-regulation (Brownsword and Yeung 2007), up to current "pastoral powers" of profiling (Hildebrandt and Gutwirth 2009), illustrate this trend.

The lockdowns of today's pandemic, however, have dramatically juxtaposed the digital and physical bodies of the population. This juxtaposition has created the first-sight impression that what really matters when crises hit hard is the use of coercive power over the physical body of the population (Runciman 2020). Yet, by insisting on the first extraordinary legal measures in response to the crisis, this kind of bio-political approach to the threats of pandemics mistakes two different kinds of problem. The first regards the aforementioned issues of political authority and legitimacy, that is, the Gordian knot of coercion and its counterpart obedience: in chapter 21 of *Leviathan*, for instance, Hobbes concedes, "the obligation of subjects to the sovereign is understood to last as long, and no longer, than the power lasteth by which he is able to protect them" (Hobbes ed. 1999). Such ability, duty, or self-interest of sovereigns begs however a further question. In addition to the extent to which a sovereign's subjects believe their sovereign is able to protect them, e.g. the opinion of US population on Donald Trump's management of the Covid-19 crisis, we should wonder to which extent current sovereigns can really protect "their" population, and moreover, what kind of powers a sovereign should have, in order to attain such end today.

Since the French legal philosopher Jean Bodin first defined the notion of sovereignty in 1576, as the right of he who only depends on his "own sword," the meaning of sovereignty has evolved and adapted to multiple political contexts. Sovereignty embraces forms of direct democracy (Rousseau), dictatorship (Schmitt), much as the power of constitutional republics (e.g. Art. 1, 7 and 11 of the Italian constitution). From a theoretical viewpoint, scholars have widely discussed on whether the set of traditional powers attributed to sovereigns represents a "polythetic class" or a "monophyletic group," much as occurs with the epistemological debate on the status of biological viruses. Still, from a practical viewpoint, it seems fair to concede that, whether polythetic or monophyletic, the list of sovereign powers has been shrinking over the past decades. Section 2 illustrated some of the reasons for this trend, drawing the attention to the complex nature of problems that are more often transnational, and increasingly data-driven and ICT dependent.

The aim of the next section is to further explore this scenario, by examining the ontological, epistemic, and normative constraints of sovereign powers during the Covid-19 crisis. The centralized powers of national states have to be understood in accordance with the scale of the problems we're dealing with, whereas sovereigns can only tackle part of this huge complexity. Lessons learned from the fields of environmental law and IT law, much as anti-terrorism and transnational business regulations, can shed light on what is beyond the influence of national governments with their emergency powers. A model of governance for today's pandemic should follow as a result of this analysis.

4. The Governance of Pandemics

The governance of some critical aspects of today's information societies helps us put current emergency powers of national sovereign states in perspective. In addition to that which national governments and governmental rationality are supposed to do in this context, focus should be on the wider framework, within which we can appreciate the scale of the problems we are dealing with, and hence, the limits of the powers exercised by sovereign states. Such limits concern (i) mechanisms of coordination, in addition to the exercise of coercive power; (ii) transnational and international dimensions of the law, in addition to the national boundaries of sovereign states; and, (iii) the set of constraints that both governance actors and national governments have to face vis-à-vis problems that affect the whole infrastructure and ecosystem of our societies. Accordingly, this section is divided into three parts on (i) the requirements of governance,

namely, what governance is supposed to be; (ii) its functions, i.e. what governance is supposed to do; and, (iii) both solutions and open issues of today's governance.

4.1 Requirements

According to the jargon of international law experts, governance can be understood as the set of formal and informal rules through which decisions are made and political authority is exercised (Pagallo 2015a). At the international law level, such rules define the space, in which sovereigns as well as societal and economical actors interact. Contrary to some realistic accounts of international law as a sort of Hobbesian state of nature, some have insisted on the role of coordination and even cooperation in international affairs: the world political order could better be understood as an "anarchical society" (Bull 1977); or, a form of "governance without government" (Rosenau and Czempiel 1992). The current Covid-19 pandemic has adjourned this debate on the re-distribution of powers that occurs through coordination mechanisms in the international arena, e.g. the role and powers of the World Health Organization in the current crisis (Buranyi 2020). Still, one of the lessons learned over the past decades in some fields of international law, such as anti-terrorism law (Roach 2011), is that dealing with phenomena that cross or do not know borders, any attempt at legal regulation that involves national law and does not include elements of international law, comparative law, or transnational law, is bound to fail.

In order to understand why this can be the case in the times of a pandemic, attention should be drawn to the sets of constraints that arise during the decision-making process of both national sovereigns and governance actors. Such constraints regard either the nature of the issues under scrutiny (ontological constraints), or the knowledge we have vis-à-vis its degree of validation (epistemic constraints), or the set of values, rights, or principles that are at stake in the decision-making process (normative constraints). The cumulative effect of such constraints should make clear the limits of Hobbes's sovereign powers in protecting "its" population.

From an ontological point of view, we already stressed that the class of problems under scrutiny in this paper, e.g. the legal and political challenges of the Covid-19 crisis tend to cross or ignore borders. In general terms, environmental issues, internet protocols, terrorists, or viruses impact the whole organization and ecosystem of our societies. From an epistemic view, the datafication of science and societies affects how we should grasp and manage this complexity. In addition to current debates on virus mass tracking, the information revolution has already triggered new problems of adaptability, flexibility, inclusiveness, aversion of risk, responsiveness, and data monitoring, that are particularly relevant in such fields, as the e-health sector (Blasimme and Vayena 2019; Pagallo et al. 2019). From a normative perspective, it is worth mentioning how often transnational law and mechanisms of coordination or cooperation complement national and international regulations through contracts, rather than international agreements, or through "spontaneous orders," rather than simple political constructivism (Murray 2007; Post 2009; Solum 2009; Reed 2012; Pagallo 2015; etc.). Whereas inter-national law refers to the legal relations "between" national states, trans-national law refers to relations that go either "through," or "beyond" national boundaries. Section 2 has already stressed that several weeks of lockdowns and self-isolation during the Covid-19 crisis were—and still are—incessantly accompanied by this transnational dimension of our lives with its problems.

4.2 Functions

What governance is called to do in addition to national governments and their international organizations is to set the proper level of abstraction for the balances that shall be struck between multiple regulatory systems in competition. As stressed above in Section 2, following the story of Socrates about the "origins of the state," such regulatory systems in competition include the forces of the market and of social norms, the military sector and politics. The Covid-19 crisis has made such competition, and the corresponding

problems of balancing, apparent. Sovereigns have had to strike dramatic balances between, for example, when reopening from the Covid-19 crisis—in order to protect business and the economic sector—and the social acceptability for the number of deaths due to such reopening, which may trigger further problems of social cohesion.

Paradoxically, the exercise of sovereign powers with lockdowns, emergency laws, curfews, or states of exception has come with the eco-benefits of such measures as an unintended consequence. Dramatic drops in pollution and greenhouse gas emissions go hand-in-hand in many parts of the world with the most devastating economic crisis since World War II. Much as occurs with national governments, we can thus say that governance should be effective in striking balances between multiple regulatory systems, such as the forces of the market and of social norms (Pagallo and Durante 2016). What changes with the balances that shall be struck in the time of a pandemic is the scale at which national lawmakers and governance actors define such balances with their corresponding moral dilemmas. How should we grasp such interaction between multiple regulatory systems at different magnitudes of complexity?

4.3 Solutions and Open Problems

We already mentioned that coordination and cooperation mechanisms, rather than techniques of coercion, are more effective to tackle the ontological, epistemic, and normative constraints of national governments. Some philosophers, or tycoons like Bill Gates, have insisted on the role of international cooperation and "global solidarity" in these cases (Harari 2020). Work on coordination mechanisms illustrates how new forms of governance, over the past decades, have already complemented—and even substituted—the top-down regulations of sovereign powers for a class of problems that is complex, often transnational, and increasingly data-driven. The list of legal sectors include also but not only data protection and internet regulation, anti-terrorism and transnational business law, ICTs and environmental regulations. Each field has its model of governance, as occurs with the Web of Data and data protection (Pagallo et al. 2019), linked democracy (Poblet et al. 2019), artificial socio-cognitive and socio-technical systems (Andrighetto et al. 2013), human computing interaction (Fredericks et al. 2016), or the use of Artificial Intelligence (AI) in the health sector (Casanovas et al. 2017; Pagallo et al. 2019). Still, each field of regulation relies on the power of coordination and cooperation mechanisms through which multiple forms of legal co-regulation govern individual and social behaviour. For example, in the field of AI governance, coordination mechanisms include both multi-stakeholder mechanisms upstream for risk mitigation, e.g. unwanted consequences of human-AI interaction, and systems for user-driven benchmarking of marketed offerings that allow trust in products and services as well as providers to be measured and shared (Floridi et al. 2018).

However, in order to prevent another misapprehension in today's debate, we should not overlook four different ways in which the connection between the power of coordination mechanisms and the power of sovereign states can be grasped. All these ways were already under scrutiny in this paper. They regard:

(i)   Coordination as the condition and basis for any sovereign's act of coercion, e.g. Plato's account on the "origins of the state" in the *Republic*;

(ii) Coordination as the result of coercive sovereign powers, e.g. Foucault's techniques of governmental rationality and the "pastoral power" of modern life;

(iii) Coordination as opposed to such coercive sovereign powers, e.g. today's research on the "spontaneous orders" of the internet; and,

(iv) Coordination as complementary to coercion.

The latter has been our stance in this paper. By stressing the limits of the power of national governments and sovereign states in the current Covid-19 crisis, by no means the intent has been to underestimate such

a state power. After all, this power has been in full display during the first weeks and months of the pandemic. Sovereigns have had and still have a crucial role in re-establishing the public health sector, and addressing the colossal challenges of economic re-construction. National governments and international institutions shall grapple simultaneously with the most devastating public health and economic crisis of a lifetime. According to the Letter to G20 governments signed by Bertie Ahern and 200 other former leaders on 6 April 2020, the global effort should include $ 1 billion urgently for WHO, $ 3 billion for vaccines, $ 2.25 billion for therapeutics, and a further $ 35 billion to support countries with weaker health systems and vulnerable populations. Moreover, the international community should waive this year's poorer countries' debt repayments, including $44 billion due from Africa, whereas the World Bank and many regional development banks shall be recapitalized.

The exercise of sovereign powers during the Covid-19 crisis is however a necessary, yet insufficient ingredient of the analysis. Section 2 has illustrated the inefficacy of national state powers when dealing with the scale of problems that are complex, transnational, and data-driven. Section 3 insisted on the legal limits of sovereignty, even in the times of the Covid-19 crisis, pursuant to the doctrine of Courts and some basic principles of the rule of law. Section 4.2 inspected the ontological, epistemic and normative constraints that affect both rights and duties of national sovereigns, much as the scale at which some of the most complex challenges of today's information societies are, or should be, addressed. Such different scales of the issues that legal and political systems have to face have realigned the role of governments and the technicalities of "governmentality" through a network of coordination and cooperation mechanisms that goes "beyond," or "through" national sovereign borders (Pagallo 2015b). Although the exercise of extraordinary powers during the Covid-19 crisis may end up with the disruption of some of such transnational or international networks, this scenario appears most of the time unlikely, or self-defeating, since such networks exist and have been developed over the past decades, because of the limits that national sovereign powers reveal, when coping with agents that do not know or simply cross borders: viruses, internet surfers, money launderers, or terrorists.

Admittedly, we still have the open problems of today's environmental and transnational business regulations, together with the troubles with anti-terrorism, data protection or internet governance. Cooperation and coordination mechanisms and new forms of legal co-regulation are not the magic bullet. Rather, as stressed in this section, these forms of transnational and international governance complement, but not erase the powers of sovereign states. Their interaction should be grasped at the different scale of the problems we are dealing with the regulation of the internet and the big companies of Silicon Valley, the digital economy and the protection of the environment, the transnational borders of finance, or terrorism, down to the existential threats brought about by viruses and pandemics. This realignment does not wipe out the powers of sovereign states. Should such powers disappear, there would be no space to go through, or beyond.

5. Conclusions

We shouldn't have ignored the risk of a new pandemic, after the SARS crisis from 2002-2004, and the 2009 Mexican swine flu pandemic. The bell however rang in January 2020, and most societies were taken aback, simply with their guard off. Epic crises entail huge decisions, and hence force us to think hard. The paper has focused on the legal and political impact of the Covid-19 crisis, drawing the attention to some fundamental questions on authority and legitimacy, coercion and obligation, power and cooperation. National states and sovereign governments have had and still will have a crucial role in addressing the colossal challenges of economic re-construction. Scholars have accordingly discussed the set of legal means displayed during the crisis: emergency decrees, lockdowns, travel bans, and generally speaking, powers of the state of exception. Against this kind of debate, the aim of this paper has been twofold, namely, (i) to stress the limits of current perspectives on governments and "governmentality techniques" of bio-politics; and, (ii) to illustrate what goes beyond or through such boundaries of national sovereign states.

On the one hand, we shed light on the limits of today's debate with the set of ontological, epistemic and normative constraints that affect rights and duties of national sovereigns. The governance of current pandemics has shown the nature of these limits. First, the class of problems we are addressing is complex, because such issues affect the whole organization and environment of current societies. Second, the dimension of the crisis is transnational because it concerns agents and legal systems that do not know or cross national borders. Third, the normative constraints of the crisis reminded us of how, more often, the legal problems of our societies revolve around problems of access to—and control and protection over—data and information in digital environments. Current discussions on IT solutions for virus mass tracking, such as the Google and Apple initiative to trace people's contacts with the virus, stress the fact that our societies are not simply related to the use of ICTs, but rather, they are data-driven and ICT-dependent.

On the other hand, the paper aimed to stress that many crucial features of the current crisis can be addressed through the lessons learnt from previous work on environmental law, internet governance, anti-terrorism and transnational business law, or data protection. These fields have developed over the past decades through models of governance that hinge on different forms of co-regulation and networks of coordination and cooperation mechanisms, as a response to the troubles of national states with problems that are complex, often transnational, and increasingly data-driven. Such sources of transnational or international law do not entail that all problems are fixed. The Covid-19 crisis has added to the previous issues of transnational business regulation, anti-terrorism and internet governance, or the protection of the environment, that which Yuval Harari calls the "two particularly important choices" of this pandemic, that is, between totalitarian surveillance and citizen empowerment, and between nationalist isolation and global solidarity (Harari 2020).

These big choices, as an act of reason, have to be grasped in accordance with their historical dimension. This was the lesson that Hans-Georg Gamader learned, reflecting on the catastrophe of the Titanic. The historical dimension suggests that we should similarly grasp the current crisis, in accordance with the lessons learnt in a world that already is interdependent from an ecological, technological, and economic viewpoint. The legal and political balances that shall be struck in the times of this pandemic, between liberty and public choice, empowerment and surveillance, solidarity and isolation, are going to take place in societies that already have systemic problems that regularly go through, or beyond national legal boundaries. The Covid-19 crisis has dramatically put such properties of today's information societies in the spotlight: viruses affect their whole infrastructure, do not know borders, and should be tackled with the best of our data-driven technologies. Every particularly important choice of this pandemic—which does not take into account the scale and complexity of the problems we are confronted with in the information era—is simply doomed to fail.

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