# The Legal Roots of Social Intelligence and the Challenges of the Information Revolution

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**Abstract.** The paper traces current research on social intelligence back to the everlasting debate on the sources of law and the formalization of social, as opposed to individual, intelligence as the binding force of social customs. After the crisis of the Westphalian model, the legal role of social intelligence can be appreciated nowadays in accordance with new forms of customary and transnational law, much as social norms that a myriad of communities have developed online. Since rearrangements of the legal sources are intertwined with distributions of power, however, what is especially at stake today concerns the sovereign claim to regulate extraterritorial conduct, much as imposing norms on individuals that have no say in the decisions affecting them, through the mechanisms of design, code, and architecture. Current tussles on the future of the internet and its governance show that it would be deadly wrong to take today's legal role of social intelligence for granted.

**Keywords:** Governance, ICT-driven societies, IT law, Legal customs, Social intelligence, Sources of law, Spontaneous orders, Westphalian model.

## 1 Introduction

Over the past years "social intelligence" has become a buzzword of contemporary scientific research by fostering a large set of empirical and theoretical studies on information technologies (ITs)-enabled social situations, self-organizing evidence-based policies, agent-based computing, self-organizing normed-governed systems, contract based systems, computational justice, and more. The overall idea is to explore the interplay of ITs, philosophy, humanities, and the social sciences, as the European network for social intelligence (Sintelnet)'s webpage is keen to inform us. In light of current work on "social intelligence" and the aim to explore the new horizons opened up by the information revolution, in such fields as social, collective and emotional intelligence, smart data and the semantic web, intentional and collective action, natural language processing, and the like, it seems fruitful to dwell on the legal features of this work. Thanks to this stance, we can appreciate both sides of what scholars used to sum up as dialectics in Middle Ages, namely endurances (genus proximum) and breakthroughs (diffentia specifica) in the legal field vis-à-vis the information revolution and IT-enabled social intelligence.

On the one hand, what seems to be firm in the legal domain has been stressed time and again in the fields of IT law, AI and the law, robotics, etc. Consider the remarks

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of the "unexceptionalists" in the field of IT law, so that principles and provisions of the legal tradition would be capable of tackling all of the new legal issues emerging with this technology. In the phrasing of Jack Goldsmith in Against Cyberanarchy (1998), "a nation's right to control events within its territory and to protect the citizens permits it to regulate the local effects of extraterritorial acts" and, moreover, whilst the flow of the information on the internet transcends, most of the time, conventional borders of national legal systems, the transnational legal impact of the internet should be conceived as "identical to transnational activity mediated by other means, such as mail or telephone or smoke signal" [1]. The claim that the internet, or robotics, or AI, etc., neither create nor modify legal concepts, such as the principle of territoriality, the effects doctrine, and the like, is still popular among scholars [2].

On the other hand, the traditional representation of the legal order as grounded on the principle of national sovereignty – so that "in the absence of consensual international solutions, prevailing concepts of territorial sovereignty permit a nation to regulate the local effects of extraterritorial conduct" [1] – is questioned because there are no clear national boundaries in cyberspace. This leads to the illegitimate situation where a state pretends to regulate extraterritorial conduct by imposing norms on individuals who have no say in the decisions affecting them or conversely, the flow of information on the internet can determine the ineffectiveness of state action because citizens would be affected by conducts that the states are simply unable to regulate. In the wording of an unrepentant "exceptionalist" as David Post, "border-crossing events and transactions, previously at the margins of the legal system and of sufficient rarity to be cabined off into a small corner of the legal universe… have migrated, in cyberspace, to the core of that system" [3]. Like in other fields of scientific research, such as physics, biology, or engineering, scale matters.

Going back to work in social intelligence, what is then today's state-of-the-art? Does IT-enabled social intelligence affect basic pillars of the law or, vice versa, according to traditional outlooks on IT law, AI and the law, or robotics, IT-enabled social intelligence neither creates nor modifies legal concepts? Moreover, is there a middle ground in between such extremes?

In order to offer a hopefully comprehensive view of these issues, the paper is presented in five parts. Next, in Section 2, focus is on the genus proximum, namely the traditional representation of what is conceived today as social intelligence in terms of legal customs, social norms, and spontaneous orders, as a source of the law. In Section 3, attention is drawn to the reasons why this traditional representation eclipsed with the so-called Westphalian paradigm, and why this latter model broke down in the mid 1900s. On this basis, the paper introduces the analysis of the differentia specifica, that is how the information revolution and IT-enabled social intelligence may impact on the legal field. In Section 4, this viewpoint is deepened with the reasons why national law-making activism is increasingly short of breath, 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. The legal tools of governance are then examined in Section 5, so as to appreciate the role that social norms, much as spontaneous orders, play in current legal systems. By assessing how the information revolution reshapes the sources of the law, Section 6 takes into account models of political legitimacy and democratic processes, much as republican institutions that shall respect equal worth of all

individuals. Whilst it is admittedly an open question how such institutions have to be built, or even conceived in cyberspace [4, 5, 6], the conclusion insists on "the goal that could successfully orient our political strategy in terms of transparency and tolerance" [7]: what is at stake concerns the right balance between legal representation and political resolution.

## 2 Legal Customs and Spontaneous Orders

The genus proximum of the analysis between legal science and social intelligence is given by the concept of custom, or customary law. The legal formalization of social, as opposed to individual, intelligence can properly be traced back to ancient Roman law and its notion of custom as a source of the system (fons iuris). Since Roman law existed for some twelve hundred years, that is from the foundation of Rome to the rule of Justinian, it is somehow natural that the meaning and definition of custom had evolved throughout the centuries. For the sake of conciseness, it suffices to sum up this evolution with the Latin saying "opinio iuris ac necessitatis." The reason why individuals act in a certain way, that is in accordance with the customs of a given society, is the belief (opinio) that such action had to be carried out because that is the social practice of the community and, therefore, it represents a legal obligation (necessitas). As such, lest we revert to the realm of myths, no specific individual had ever invented, or imposed, such social patterns: just on the contrary, these social patterns should be interpreted in the phrasing of Friedrich Hayek [8], as an unintentional phenomenon, or spontaneous order.

Against the tenets of social constructivism, e.g. Thomas Hobbes's philosophy of law and the Cartesian tradition, Hayek reckons that human intelligence has emerged and developed by following such unintentional rules of conduct, rather than the other way around, that is as an intelligent species that determines and establishes, as such, its own social norms. In the phrasing of Rules and Order (1973), i.e. the first volume of Law, Legislation and Liberty (ed. 1982), "these rules of conduct have thus not developed as the recognized conditions for the achievement of a known purpose, but have evolved because the groups who practiced them were more successful and displaced others… The problem of conducting himself successfully in a world only partially known to man was thus solved by adhering to rules which had served him well but which he did not and could not know to be true in the Cartesian sense" [8].

Among the advocates of this tradition that stress the key role of ignorance in human evolution and link the latter to the function that social intelligence has in legal and political affairs, Hayek lists a number of scholars: John Milton, John Locke, John Stuart Mill and Walter Bagehot on human ignorance, much as Adam Smith, David Hume and Adam Ferguson on human evolution, presented as a "process of cumulative development" [9]. Still, according to Hayek, this tradition should be properly understood in light of ancient Roman law and, more particularly, in accordance with the preliminary remarks of Cicero in the second book of De republica:

> Cato… used to say that the government of Rome was superior to that of other states; because in them the great men were mere isolated individuals, who regulated their constitutions according to their own ipse dixits, their own laws, and their own ordinances. … Our Roman constitution, on the contrary, did not spring from the genius of an individual, but of many; and it was established, not in the lifetime of a man, but in the course of ages and centuries (trans. by Francis Barham, available at "The Online Library of Liberty").

On this basis, Hayek suggests that we should distinguish between two different kinds of legal sources, namely between kosmos and taxis, that is between spontaneous orders and human political planning. Although this differentiation is not new – for example, Italian legal scholars use to distinguish between material sources of law, such as customs, and formal sources, such as statutes and codes – Hayek's distinction has a normative aim. As he affirms in chapter 2 of Rules and Order, "one of our main contentions will be that very complex orders, comprising more particular facts than any brain could ascertain or manipulate, can be brought about only through forces inducing the formation of spontaneous orders" [8]. In other words, there are a number of fields concerning human interaction in which only the unintentional dynamics of social intelligence, rather than the master plan of legislators and policy makers, can achieve satisfactory results. Remarkably, this is also the opinion of several experts in IT law today [e.g. 4], who conceive the internet as a "self-governing realm of individual liberty, beyond the reach of government control" [5].

For the moment, however, let us dwell on the descriptive side of this story, in order to understand why the traditional representation of what is conceivable as social intelligence in terms of legal customs and social norms eclipsed with the so-called Westphalian paradigm, and why this latter model broke down some seventy years ago. The normative analysis of today's sources of the law is postponed until Section 5.

## 3 The Paradigm of Westphalia and Its Crisis

The Westphalian paradigm, so called after the 1648 series of peace treaties signed in Germany to conclude the Thirty Years War, pivots around the principle of sovereignty and, in Hayek's jargon, taxis as the main, or even unique, source of the law. From a theoretical viewpoint, the reference model is given by Hobbes's work and his critiques of the natural law tradition, the then popular dualism between gubernaculum and iurisdictio, that is between the seat of power and the sources of law, much as the ancient idea of customary law as the main source of the entire system. From the Hobbesian perspective, there is no legal room for social intelligence and unintentional orders, because this sort of natural spontaneity leads to the conflicts and warfare of the state-of-nature, where the man is a wolf to his fellow man (homo

homini lupus). Correspondingly, the way in which individuals can overcome this chaotic condition – which is either provoked by the lack of rules, or triggered by the multiple, or even opposite, versions of uncertain customs – is represented by the social covenant. Pace Cicero's ideal of the commonwealth (res publica), the only basis for a peaceful human interaction is given by a contract, that is constructivism. In the words of chapter 18 of Hobbes's Leviathan:

> "A Commonwealth is said to be instituted when a multitude of men do agree, and covenant, every one with every one, that to whatsoever man, or assembly of men, shall be given by the major part the right to present the person of them all, that is to say, to be their representative" [10].

Over the past century, Hobbes has been considered as the father of the modern legal and political thought; and, all in all, there are good reasons to follow this historiographical tradition [11]. Suffice it to recall three of such reasons. First, what the law is hinges on the will of the sovereign. Second, in the field of international law, no one is set to judge the decisions of sovereign states, since the law is made up by the rules effectively established by national sovereigns. Third, customary law should not be conceived as a legal source any longer, because both their international and national bases ought to be grounded on the will of the sovereign. Going back to chapter 18 of Hobbes's Leviathan, "it is annexed to the sovereignty the right of making war and peace with other nations and Commonwealths; that is to say, of judging when it is for the public good, and how great forces are to be assembled, armed, and paid for that end" [10].

From Hobbes's work and the Westphalian paradigm, of course, it does not follow a plain correspondence between theory and practice, between model and history. Moreover, some tenets of this political representation are still controversial: for instance, scholars still discuss whether Hobbes should be conceived as a "liberal" thinker [12]. According to some interpretations of the Leviathan, citizens have indeed the faculty to decide whether they should obey certain of the sovereign's commands in the "foresight of their own preservation." After all, this was the interpretation of some contemporaries of Hobbes, such as Filmer, Clarendon, and Bishop Bramhall in The Catching of the Leviathan (1658), where the latter dubs Hobbes's book as a "Rebel's catechism." Contemplate what the famous and problematic sentence of chapter 21 of Leviathan states: "When therefore our refusal to obey frustrates the end for which the sovereignty was ordained, then there is no liberty to refuse; otherwise, there is." The same ambiguity applies to how the sources of the legal system should be grasped. On one hand, by tracing them back to the will of the sovereign, the model paves the way for future positivistic, and even totalitarian outcomes: as remarked in chapter 26 of Leviathan, "the law is a command, and a command consisteth in declaration or manifestation of the will of him that commandeth." On the other hand, once we assume that that command must be expressed "by voice, writing, or some other sufficient argument of the same," the principle corresponds to the clause of

irresponsibility in the criminal law field, which is summed up, in continental Europe, with the formula of the "principle of legality," i.e., "no crime, no punishment without a criminal law" (nullum crimen nulla poena sine lege).1

Yet, despite this ambivalence, what the Westphalian paradigm stands for in this context is pretty clear, namely a monistic doctrine of the legal sources that triumphed throughout the 1800s, just to decline around the mid 1900s. This decline can be expressed with the words of Philip Jessup and the seminal 1956 lectures at Yale Law School that shed light on a law neither national, nor international, but transnational, that is, in order "to include all law which regulates actions or events that transcend national frontiers. Both public and private international law are included, as are other rules which do not wholly fit into such standard categories" [13]. Whether or not this process has to be traced back to the belle époque [14], it seems uncontroversial that the more a set of issues becomes systemic, the less such problems can be tackled at a national level. Although this inverse relationship was noted over and over the last century, the information revolution has dramatically accelerated this very process. As a result, from a legal and political viewpoint, a new Locke would have to change the title of his masterpiece, and dub it nowadays "Two Treatises of Governance." Next section explores why.

## 4 From Government to Governance

The information revolution is affecting our understanding about the world and about ourselves: we are interconnected informational beings that share with biological organisms and engineered artefacts "a global environment ultimately made of information," i.e., what Luciano Floridi calls "the infosphere" [15]. A crucial feature of this new environment has to do with the complex ways in which multi agent (human/artificial) systems interact. This complexity challenges concepts and ways of reasoning through which, so far, we have grasped basic tenets of the law and politics. A key point of the analysis concerns the use of ICTs: whereas, over the past centuries, human societies have been ICT-related but mainly dependent on technologies that revolve around energy and basic resources, today's societies are progressively dependent on ICTs and moreover, on information as a vital resource. In a nutshell, we are dealing with ICT-driven societies [7].

What this huge transformation means, from a legal and political viewpoint, can be illustrated with the ubiquitous nature of the information on the internet. The flow of this information transcends conventional boundaries of national legal systems, as

[1] In the wording of Article 7 of the 1950 European Convention on Human Rights, "[n]o one shall be held guilty of any criminal offence on account of any act or omission which did not constitute a criminal offence under national or international law at the time when it was committed." However, as lawyers know, there is a savings provision pursuant to art. 7(2) of the Convention, which states: "This article shall not prejudice the trial and punishment of any person for any act or omission which, at the time when it was committed, was criminal according the general principles of law recognized by civilized nations." The aim of this provision is to cover such exceptional cases as the Nuremberg trial against the Nazis.

shown by cases that scholars address as a part of their everyday work in the fields of data protection, computer crimes, digital copyright, e-commerce, and so forth. This flow of information jeopardizes traditional assumptions of legal and political thought, since the idea of the law as a set of rules enforced through the menace of physical sanctions [e.g. 16] often falls short in coping with the new challenges of the information revolution: identity thefts, spamming, phishing, viruses, and cyber attacks have increased over the past decade, regardless of harsh national laws like the US anti-spam act from 2003. Furthermore, a number of issues, such as national security, cyber-terrorism, availability of resources and connectivity, concern the whole infrastructure and environment of today's ICT-driven societies and thus, these issues have to be tackled at international and transnational levels. Whereas constitutional powers of national governments have been joined – and even replaced – by the network of competences and institutions summarized by the idea of governance, sovereign states, although still relevant, should be conceived as one of the agents in the public arena.

In [17], eight meanings of governance are discussed: in this section, it suffices to quote two of them. On the one hand, according to the World Bank, the idea of governance concerns "the process and institutions through which decisions are made and authority in a country is exercised" [17]. On the other hand, Hyden, Court and Mease refer to "the formation and stewardship of the formal and informal rules that regulate the public realm, the arena in which state as well as economic and societal actors interact to make decisions" [17]. On this basis, the notion of governance can be furthered as a matter of "good" governance. In the case of the World Bank, focus should be on inclusiveness and accountability established in three key areas, namely, i) "selection, accountability and replacement of authorities"; ii) "efficiency of institutions, regulations, resource management"; and, iii) "respect for institutions, laws and interactions among players in civil society, business, and politics." In the case of Hyden, Court and Mease, the concept of good governance can be measured along six dimensions, i.e., "participation, fairness, decency, efficiency, accountability, and transparency," in each of the following arenas: "civil society, political society, government, bureaucracy, economic society, judiciary."

Drawing on such definitions, we can appreciate how the system of the legal sources appears far more complex than it used to be under the traditional Westphalian model and the dichotomy between national and international law. By including Jessup's "other rules which do not wholly fit into such standard categories" [13], the current sources comprise such fields of transnational law as the internal legal regimes of multinational organizations and today's lex mercatoria, enterprises and labour unions as private actors in international labour law, much as human rights law, sports law and, of course, IT law [18, 19, etc.]. Whilst some propose a parallel between the old medieval system of European common law (ius commune) and the new system of plural legal sources [20], others refer to Jessup's "other rules" as a sort of global law without the state [21]. Yet, in both cases, there is room for the return of customary law as a fundamental component of the whole system and, hence, a new legal role for social intelligence and spontaneous orders. Next section dwells on this scenario in light of the new dichotomies between hard law and soft law, and between game

players and game designers. The overall idea is to lay down, so to speak, the statics of the system, that is its new legal sources and tools. On this basis, Section 6 aims to deepen the dynamics of the system, namely the processes that characterize and challenge today's ICT-driven societies from a normative viewpoint.

## 5 The Legal Tools of Governance

There are four major differences between the system of legal sources of the Westphalian model and today's governance of ICT-driven societies. First, this latter system of legal sources is tripartite, rather than bipartite: in addition to the traditional sources of national law and international law, in which the only relevant actors used to be the sovereign states, the system includes the sources of transnational law and the agency of non-state, or private (as opposed to public), actors.

Second, the new system of legal sources incorporates customary law as a key part of the system. To be sure, traditional international law has always hinged on customary rules, such as the principle pact sunt servanda, that is "agreements must be kept." Yet, this customary basis of international law has suggested time and again, that international law is a rudimental sort of legal system or, at least, it should be deemed as mere positive international morality. On the contrary, customs of transnational law provide the solid basis for such fields as current lex mercatoria, or transnational corporate and business law, in accordance with the thesis of Hayek on kosmos, unintentional orders and the role of social intelligence.

Third, pace Kelsen's definition of law mentioned above in section 4, we should further distinguish between binding and non-binding rules, that is between hard law and soft law-tools of governance. In other words, in addition to the traditional hard law-rules of the legal system, such as national statutes, codes, or international agreements, we have to add recommendations, codes of conduct, guidelines, and the standardization of best practices. Although scholars often equate the hard rules of the law with the effectiveness of national legal systems, so that the norms of both international and transnational law would be less and less binding, this is not necessary so. On the one hand, among the sources of national law, there is room for forms of soft law such as, say, the recommendations and opinions of data protection authorities. On the other hand, once we consider such a field as the current network of internet governance, it is noteworthy that several of the effective binding rules have their source in the field of transnational law, spontaneous orders, and the decision of non-state actors, rather than the traditional activism of national lawmakers.

Fourth, the new scenarios of the information revolution have suggested national and international lawmakers, and private companies alike, more sophisticated forms of legal enforcement, complementing the traditional hard rules of the law and softer forms of legalized governance via the mechanisms of design, codes, and IT architectures. Admittedly, such a shaping is not necessarily digital: consider the installation of speed bumps in roads as a means to reduce the velocity of cars, lest drivers opt to destroy their own vehicles. Yet, scale again matters, in that many impasses of today's legal and political systems are increasingly tackled by embedding

normative constraints into ICTs through the design of interfaces, self-enforcing technologies, default settings, and so forth. Whereas, in their work on The Design with Intent Method, Lockton, Harrison and Stanton describe 101 ways in which products can influence the behaviour of their users [22], it suffices to focus on three different ways in which we may evaluate this new role of governance actors as game designers, rather than game players, of current social interaction.

The first aim which design may have is to encourage the change of social behaviour. Think about the free-riding phenomenon on peer-to-peer (P2P)-networks, where most peers tend to use these systems to find information and download their favourite files without contributing to the performance of the system. Whilst this selfish behaviour is triggered by many properties of P2P applications, like anonymity and hard traceability of the nodes, designers have proposed ways to tackle the issue through incentives based on trust (e.g., reputation mechanisms), trade (e.g., services in return), or alternatively slowing down the connectivity of the user who does not help the process of file-sharing [23]. In addition, design mechanisms can induce the change of people's behaviour via friendly interfaces, location-based services, and so forth. These examples are particularly relevant because encouraging individuals to change their behaviour prevents risks of paternalism, when the purpose of design is to encourage such a change of behaviour by widening the range of choices and options. At its best, this latter design policy is illustrated by the open architecture of a web "out of control" [24].

The second aim concerns how to decrease the impact of harm-generating behaviour, rather than changing individual conduct via design mechanisms. This further goal is well represented by efforts in security measures that can be conceived as a sort of digital airbag: as it occurs with friendly interfaces, this kind of design mechanism prevents claims of paternalism, because it does not impinge on individual autonomy, no more than traditional airbags affect how people drive. Contrary to design mechanisms that intend to broaden individual choices, however, the design of digital airbags may raise issues of strong moral and legal responsibility, much as conflicts of interests. A typical instance is given by the processing of patient names in hospitals via information systems, where patient names should be kept separated from data on medical treatments or health status. How about users, including doctors, who may find such mechanism too onerous? Furthermore, responsibility for this type of mechanisms is intertwined with the technical meticulousness of the project and its reliability, e.g., security measures for the informative systems of hospitals or, say, an atomic plant.

Then, there is the most critical aim of design, namely to prevent harm generating-behaviour from occurring through the use of self-enforcing technologies, such as DRMs in the field of intellectual property protection, or some versions of automatic privacy by design [e.g. 25]. Serious issues of national security, connectivity and availability of resources, much as child pornography or cyber-terrorism, may suggest endorsing such type of design mechanism, though the latter should be conceived as the exception, or last resort option, for the governance of ICT-driven societies. Contemplate some of the ethical, legal, and technical reasons that make problematic the aim of design to automatically prevent harmful conduct from occurring. As to the

ethical reasons, specific design choices may result in conflicts between values and, vice versa, conflicts between values may impact on the features of design: we have evidence that "some technical artefacts bear directly and systematically on the realization, or suppression, of particular configurations of social, ethical, and political values" [26]. As to the legal reasons against this type of design policy, the development and use of self-enforcing technologies risk to curtail both collective and individual autonomy severely. Basic tenets of the rule of law would be at risk, since people's behaviour would unilaterally be determined on the basis of technology, rather than by choices of the relevant political institutions: what is imperilled is "the public understanding of law with its application eliminating a useful interface between the law's terms and its application" [27].

Finally, attention should be drawn to the technical difficulties of achieving such total control through design: doubts are cast by "a rich body of scholarship concerning the theory and practice of 'traditional' rule-based regulation [that] bears witness to the impossibility of designing regulatory standards in the form of legal rules that will hit their target with perfect accuracy" [28]. Indeed, there is the technical difficulty of applying to a machine concepts traditionally employed by lawyers, through the formalization of norms, rights, or duties: after all, legal safeguards often present highly context-dependent notions as, say, security measures, personal data, or data controllers, that raise a number of relevant problems when reducing the informational complexity of a legal system where concepts and relations are subject to evolution [29]. To the best of my knowledge, it is impossible to program software so as to prevent forms of harm generating-behaviour even in such simple cases as defamations: these constraints emphasize critical facets of design that suggest to reverse the burden of proof when the use of allegedly perfect self-enforcing technologies is at stake. In the wording of the US Supreme Court's decision on the Communications Decency Act ("CDA") from 26 June 1997, "as a matter of constitutional tradition, in the absence of evidence to the contrary, we presume that governmental regulation… is more likely to interfere with the free exchange of ideas than to encourage it."

## 6 Between Representation and Resolution

The previous section has focused on the statics of the systems, namely the hard law and soft law-tools of governance, much as the variety of design mechanisms, through which governance actors may attempt to rule the dynamics of today's ICT-driven societies. However, in order to grasp the specificity of societies that progressively are dependent on information as a vital resource, let us prevent a twofold misunderstanding. At times, scholars address the challenges of the information revolution to the traditional models of political legitimacy and democratic processes as if the aim were to find the magic bullet. Vice versa, others have devoted themselves to debunk these myths, such as a new direct online democracy, a digital communism, and so forth, by simply reversing the paradise of such techno-enthusiasts [30]. All in all, we should conceive today's information revolution in a sober way,

that is as a set of constraints and possibilities that transform or reshape the environment of people's interaction.

On the one hand, this profound transformation affects norms, competences, and institutions of today's governance, much as people's autonomy and the right of the individuals to have a say in the decisions affecting them: consider the debate on the role that national sovereign states should have in today's internet governance, vis-à-vis such transnational and technical organizations as, for example, the internet corporation for the assignment of names and numbers (ICANN). Moreover, contemplate how a myriad of communities have emerged and developed their own legal systems online [6, 31, 32, etc.]. Theoretically, five models of internet governance may be conceived of [5]: the model of cyberspace and spontaneous ordering, the model of transnational institutions and international organizations; the model of code and internet architecture; the model of national governments; and, finally, the model of market regulation. Whereas, in the phrasing of Solum, "no single model provides the solution to all the problems that Internet regulation can address," it follows that "the best models of Internet governance are hybrids that incorporate some elements from all five models" [5].

Yet, on the other hand, a normative approach is vital, so as to order thinking about making governance policies for current ICT-driven societies. As Luciano Floridi suggests in his contribution to The Onlife Manifesto, focus should be on the foundations of an "efficient" and "intelligent" multi-agent system, the model of which may represent a goal that could successfully orient our political strategy in terms of transparency and tolerance: "Finding the right balance between representation and resolution, while implementing the agreement to agree on the basis of ethical principles that are informed by universal human rights, is a current major challenge for liberal democracies in which ICTs will increasingly strengthen the representational side" [7]. Time and again throughout this paper, attention has been drawn to the rearrangement of the national law sources vis-à-vis the strengthening of the representational side via the crisis of the Westphalian model (Section 3), much as the return of customary law and a new role for social intelligence and spontaneous orders as a fundamental component of the system (Sections 4 and 5). At the end of the day, this rearrangement should be conceived as that which actually is, namely a huge redistribution of power. Therefore, how should we strike the right balance between representation and resolution?

First, the self-organizing properties of current social interaction, on which I have insisted in this paper, should be prioritized. In accordance with the Supreme Court's CDA ruling, which concluded the previous section, this means that the burden of proof falls on national and international lawmakers, much as governance actors, whose aim is to rule the processes of ICT-driven societies. After all, this is what occurred at the World Conference on International Telecommunications (WCIT-12), held in Dubai, United Arab Emirates, in which several national governments had to illustrate the (preposterous) reasons why they should have the right to manage the internet, by divesting "ICANN of its authority and bring domain-name administration within the scope of a government-only agency like the International Telecommunications Union (ITU)" [33]. Luckily, this new attempt to impose the

bankrupt theory of the Westphalian system finally failed, much as the US Stop Online Piracy Act (SOPA) and the Protect IP Act (PIPA) bills did in winter 2011-2012.

Second, once the need for some sort of regulation is proven, governance actors should really know the subject matter which they intend to govern. Although this latter proviso may appear as a truism, this is the bread and butter of scholars dealing with the regulation of cyberspace [31]; on making laws for cyberspace [6]; etc. Think again of WCIT-12 and debate prior to the Dubai conference, on the economic modelling of the internet and the proposal of the European Telecommunications Network Operators' Association (ETNO), a group of European telecommunications providers led by Telecom Italia, Telefónica España, France Telecom, and Deutsche Telekom. Leaving the technical details of the proposal for a new economic model of the internet aside, it is noteworthy that the decision of the WCIT-12 conference Chair was to move the debate into the ITU and more particularly, into the ITU division (ITU-T) that designs telecommunications standards. "By analogy, it would be the equivalent of taking one's tax questions to an architect rather than a certified public accountant or other tax expert. To be sure, an architect is educated, licensed, and may even have a personal opinion about taxes and money – and even how certain construction techniques might be cheaper or result in tax rebates. However, to state the obvious: architects build and design things, while accountants deal with taxes and money" [33].

Third, once the subject matter of the governance regulation is properly known, it is likely that both binding and non binding rules will increasingly concern the architecture, code, or design of the system, rather than traditional legal rules that have to be enforced through the menace of physical sanctions. Here, the three design mechanisms discussed above in Section 5 are critical. When the aim is to broaden the range of people's choices, so as to encourage the change of their behaviour, such design policy looks legally and politically sound: this approach to design prevents threats of paternalism that hinge on the regulatory tools of technology, since it fosters collective and individual autonomy. Likewise, the aim of design to decrease the impact of harm-generating behaviour through the use of digital airbags, such as security measures or user friendly interfaces, respects collective and individual autonomy, because this approach to design does not impinge on people's choices, no more than traditional airbags affect how individuals behave on the highways. Yet, to complement the hard and soft-law tools of governance by design entails its own risks, when the aim is to prevent harm-generating behaviour from occurring. Although many impasses of today's legal and political systems can be properly addressed by embedding legal safeguards into ICT and other kinds of technology, we already mentioned some of the several legal, ethical and technical reasons why the use of allegedly perfect self-enforcing technologies raises serious threats of paternalism and, even, of authoritarianism. Whether DRMs in the field of digital copyright, automatic versions of the principle of privacy by design, or Western systems of filters in order to control the flow of information on the internet, the result is the modelling of individual conduct [34, 35]. Recent statutes, such as HADOPI in France, or DEA in UK, show how new ways of protecting citizens even against themselves do materialize.

## 7 Conclusions

This paper has traced current work on social intelligence back to the everlasting debate on the sources of law, so as to examine some crucial challenges of the information revolution, namely if, and to what extent, there is legal room for processes of social intelligence and in Hayek's jargon, whether unintentional and spontaneous orders can be deemed as sources of today's legal systems. In section 2, attention was drawn to ancient Roman law and the formalization of social, as opposed to individual, intelligence as the binding force of legal customs. Then, in section 3, focus was on the eclipse of this representation in light of some tenets of Hobbes's legal philosophy, and the paradigm of Westphalia that triumphed throughout the 1800s, just to decline around the mid 1900s. This latter process was summarized in section 4, in accordance with the evolution from the role of government and national sovereign states, that is the core of the Westphalian model, to the complex network of processes, sources, and institutions summed up by today's governance of ICT-driven societies. Whilst section 5 examined the statics of the system, namely the legal tools of governance, section 6 contextualized them in light of current debate on how to govern ICT-driven societies and, more particularly, matters of internet governance.

As to the statics of the system and differences between the Westphalian model and the current system of legal sources, the paper insisted on the legal role of social intelligence through new forms of customary and transnational law, much as social norms that a myriad of communities have developed online. However, current tussles on the future of the internet and its governance showed that it would be deadly wrong to take such a new legal role for granted. Although national law-making activism is increasingly short of breath, the backlash of sovereign states on today's kosmos is understandable, once we recall that rearrangements of legal sources are intertwined with a redistribution of power. The challenges of the information revolution do not only concern whether traditional state action over ICT-driven societies is more or less effective. In addition, such challenges regard how national states aim to regulate and control both territorial and extraterritorial conduct by imposing norms on individuals that have no say in the decisions affecting them, through the mechanisms of design, codes, and architectures. A procedural approach has been suggested, so that: i) the burden of proof should fall on national and international lawmakers that aim to intervene in the self-organizing properties of current social interaction; ii) governance actors should really know the field in which they intend to intervene, once the need for regulations is proven; and, iii) self-enforcing technologies should represent the exception, or last resort option, for coping with the impact of the information revolution. From a normative viewpoint, these are the conditions for a right balance between representation and resolution.

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