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A Public Law Approach to Internet Standard Setting*

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Abstract

This article lays the foundations of a comprehensive analysis of the legitimacy of global Internet governance institutions from the perspective of public law. It does so by extending the application of the international public authority approach (IPA) not only beyond public institutions, but beyond ICANN and the unique identifiers regime, which have been the focus of public and scholarly attention so far, to cover another domain where informal and private institutions play a leading role: Internet standardisation. In order to do so, section B. provides an overview of global Internet governance as an example of the privatization and informalization of authority that characterizes global governance. Section C. presents IPA's conceptual framework and situates it within the broader context of public law approaches to global governance, focusing on the way it justifies the application of pubic law standards to the exercise of authority by informal and private institutions and instruments. Section D. inquires whether the development of the main technical standards of the Internet, the TCP/IP protocol suite, by two private and informal institutions, the IETF and the W3C, qualifies as an exercise of international public or functionally equivalent authority. These standards can be regarded as authoritative because they constitute the code of the Internet and because economic network effects render them economically obligatory. Whereas technical standardization meets IPA's original functional equivalence criterion for identifying those instances where private authority should be assessed and subjected to public law standards, the extent to which it qualifies as public authority according to Goldmann's more demanding conception of it remains an aspect to be clarified in further research.

A. Introduction

This article seeks to further the mutual fertilization of two literatures: the literature on global Internet governance, and public law approaches to global governance. It is based on the conviction that public law approaches can make a valuable contribution to the problem of legitimizing global Internet governance, and that public law perspectives on global governance can learn from the study of global Internet governance.

Within the transdisciplinary literature on global governance,[1] scholars interested in the legitimacy of global Internet governance have often resorted

[1] K. Van Kersbergen & F. Van Waarden, "Governance' as a Bridge Between Disciplines: Cross-Disciplinary Inspiration Regarding Shifts in Governance and Problems of

to public law standards. Public law principles – such as independent review, transparency, due process or the rule of law itself – have been widely invoked in this domain, both for descriptive-reconstructive and for evaluative purposes. Lawyers have found themselves applying these principles not only to institutions of public international law, but also to informal and private organizations, because it is this kind of institutions that the global Internet governance literature depicts as the *governors* of the Internet.[2] However, the justification of this particular way to proceed – the application of public law concepts to private and informal institutions – has generally been taken for granted. This article addresses this assumption by situating such approaches within the broader context of theories about the role of public law in legitimizing global governance that provide precisely this kind of justification.

If public law perspectives have the potential to enrich the critical understanding of global Internet governance, Internet governance is a *fertile testing ground* [3] for public law theories of global governance, too. The governance of the Internet has been qualified as "the new frontier of global institutions"[4] because it has indeed been at the forefront of institutional innovation not only within the State but also beyond. The Internet sector has spearheaded the transformation of the State-centric regulatory model that had historically prevailed in the regulation of information and communication networks into the current co-regulatory model, where private and informal institutions play a leading role.[5] Global Internet regulation exemplifies the postnational constellation *as governance*,[6] i.e. as precisely the kind of institutional

Governability, Accountability and Legitimacy', 43 *European Journal of Political Research* (2004) 2, 143-171.

2 L. A. Bygrave & T. Michaelsen, 'Governors of Internet', in L. A. Bygrave & J. Bing (eds), *Internet Governance. Infrastructure and Institutions* (2009), 92.

3 T. Schulz, 'Private Legal Systems: What Cyberspace Might Teach Legal Theorists', 10 *Yale Journal of Law and Technology* (2007) 151, 151.

4 J. Mathiason, *Internet Governance: The New Frontier of Global Institutions* (2009).

5 B. Frydman, L. Hennebel, & G. Lewkowicz, 'Co-Regulation and the Rule of Law', in E. Brousseau, M. Marzouki & C. Méadel (eds), *Governance, Regulations and Powers on the Internet* (2012), 133-150; M. Holitscher, 'Co-Regulation for Internet Governance?', in D. Stauffacher & W. Kleinwächter (eds), *The World Summit on the Information Society: Moving from the Past into the Future* (2005), 256; O. Lobel, 'The Renew Deal: The Fall of Regulation and the Rise of Governace in Contemporary Legal Thought', 89 *Minnesota Law Review* (2004) 2, 342; C. T. Marsden, *Internet Co-Regulation: European Law, Regulatory Governance and Legitimacy in Cyberspace* (2011).

6 T. Buthe & W. Mattli, *The New Global Rulers: The Privatization of the Regulation in the World Economy* (2011), 126.

landscape that challenges traditional understandings of international law, its role in international affairs, and its relation to legitimacy beyond the State. It is not least in response to the rise of the type of institutions that characterize the global governance of the Internet that new theories focusing on public law and authority in global governance more generally have developed over the last decade.[7] This extensive, complex, and heterogeneous domain offers, to put it in these theories' language, multiple examples of public and private, formal and informal *institutions* using a variety of regulatory *instruments* for what may – or may not – qualify as *exercises of public authority* or instances of *administration* beyond the State, which may – or may not – reproduce or be subjected to principles of constitutional, administrative or international institutional law.[8]

This article furthers the application of public law approaches to global governance by applying one of such theories, the *international public authority approach* (IPA), to one of the core aspects of global Internet governance, Internet standard setting, where informal and private organizations play a leading role. It does not provide a fully-fledged public law analysis of the informal and private aspects of global Internet governance generally or of technical standardization in particular. Rather, the purpose of the article is to assess IPA's potential for the analysis and critique of aspects of global Internet governance other than the Internet Corporation for Assigned Names and Numbers (ICANN), which has been the focus of scholarship so far. The article inquires in particular whether the development and maintenance of the main Internet technical standards, those of the Transmission Control Protocol/Internet Protocol (TCP/IP) suite, by the Internet Engineering Task Force (IETF) and the World Wide Web Consortium (W3C), two informal and private organizations, qualifies as an exercise of public authority beyond the State, and highlights a number of difficulties that this entails.

7 Although "[…] theorizing public authority in global governance is still in its infancy." N. Krisch, 'Global Governance as Public Authority: An Introduction', 10 *International Journal of Constitutional Law* (2012) 976, 986.

8 *Infra*, sec. C.

B. Global Internet Governance and the Rise of Private and Informal Regulation

I. Global Governance, Privatization, and Informalization

The turn to governance within and beyond the State,[9] and specifically the configuration of *global* governance as it is today, has been characterized as a process of relocation of political authority.[10] In general, authority has been relocated away from the State. The relocation has been both vertical amongst public entities – from States upwards to international institutions, and downwards, to intra- or sub-state institutions – and horizontal – at each level from public, inter- or intra-state institutions to private, hybrid or informal institutions. The result has been a diffusion of authority into multi-layered or multi-level institutional complexes characterized by the presence of informal and private or hybrid elements. This does not entail, however, that the State has become obsolete, an empty cage without significance. On the contrary, States remain the main site of political authority, and beyond them it is formal international institutions – namely international organizations – that have most clearly acquired it.[11] My interest here is, nonetheless, the way public law can be used to address the legitimacy problems that result not from this vertical diffusion of political authority within the realm of public institutions – the main object of analysis of public law approaches – but from the horizontal diffusion to private and informal institutions at each layer, i.e. the problem of justifying the exercise of political authority by private and informal institutions in global governance.[12]

9 For a synthesis of the governance turn at the State, European and international levels, see C. Joerges, 'Juridification Patterns for Social Regulation and the WTO: A Theoretical Framework', TranState Working Papers 2005/17, 16 (sec. III). Focusing on the European Union, see B. Kohler-Koch & B. Rittberger, 'The 'Governance Turn' in EU Studies', 44 *Journal of Common Market Studie*s (2006) 27.

10 See J. N. Rosenau, 'The Relocation of Authority in a Shrinking World' 24 *Comparative Politics* (1992) 3, 253; S. Strange, *The Retreat of the State: The Diffusion of Power in the World Economy* (1996).

11 This applies to global Internet governance, too Drezner, *All Politics is Global: Explaining International Regulatory Regimes* (2007); J. Goldsmith & T. Wu, *Who Controls the Internet? Illusions of a Borderless World* (2006).

12 Describing such shifts in the context of global Internet governance specifically, W. Kleinwächter (ed.), *Multi-Stakeholder Internet Governance: The Role of Governments*, 13, and J. S. Nye Jr., 'Information Technology and Democratic Government', in

The rise of global governance has consisted, to a significant extent, in the *privatization* of authority, or in the authorization of private institutions. This is not a particularity of the post-national constellation.[13] Governance as a distinct model of social ordering or regulation is characterized by non-state, informal or private institutions assuming roles and responsibilities in the regulation of domains of activity that had formerly been situated under the purview of public institutions. Such roles and responsibilities are assumed by top-down delegation from public authorities or by bottom-up, spontaneous self-authorization of social actors, and range from norm development to enforcement. Private autonomy exercised collectively has given rise to a variety of self-regulatory institutions, including organizations or private bureaucracies, which have come to play a significant role in the regulation of many sectors of economic and social life. This not only represents a significant development in the configuration of the relationship between the public and private spheres, between the State and society, but undermines the distinction between the domestic and international realms as well, because the authority of private self-regulatory institutions often transcends borders and gives rise to transnational private regimes.[14] These private self-regulatory regimes, however, tend to be situated within or intertwined with public institutional frameworks.[15] Rather than purely private self-regulation, what characterizes global governance are hybrid, public-private regulatory systems or regimes.[16] Thus, the proliferation and growing weight of private institutions has not entailed a replacement of inter-state institutions, but has generally come to complement them.[17]

E. C. Kamarck and J. S. Nye Jr. (eds) *Democracy.com? Governance in a Networked World*, (1999), 1.

13 C. E. J. Schwöbel, 'Whither the Private in Global Governance?' 10 *International Journal of Constitutional Law* (2012) 4, 1106, 1121.

14 Krisch, *supra* note 7, 976.

15 Applying the idea to Internet governance see J. P. M. Bonnici, *Self-Regulation in Cyberspace* (2007); E. M. Weitzenboeck, 'Hybrid Net: The Regulatory Framework of ICANN and the DNS', 22 *International Journal of Law and Information Technology* (2014) 1, 73.

16 "While purely private regimes are extremely rare, hybrid public-private arrangements are much more common […]", so "[…] the connections between public and private regimes […]" are "[…] extremely widespread in global governance […]" M. DeBellis, 'Public Law and Private Regulators in the Global Legal Space', 9 *International Journal of Constitutional Law* (2011) 2, 425, 426. The same happens in the domestic context, where "[…] [it] is rare […] that a self-regulatory body has no relationship […] [with] the state." M. E. Price & S. G. Verhulst, *Self-Regulation and the Internet* (2005), 12.

17 In Internet governance specifically, complementarity is the norm, although ICANN's authority over Internet unique identifiers is a case of deep privatization, see R. Bendrath

Informalization, understood here as the proliferation of institutional forms other than those of international law, has been as important a dimension of this diffusion of authority as privatization.[18] Most relevant for the purposes of this article is, in the first place, the informalization of regulatory instruments. Beyond the State, both international and transnational institutions resort to non- or quasi-legal instruments to perform their regulatory functions,[19] as reflected in the debate on soft law in international legal scholarship.[20] There has also been, in the second place, an informalization of the organizations themselves, i.e. a proliferation of regulatory entities that lack subjectivity in international law.[21] Third, there has also been an informalization of authority in the related sense that the institutions effectively wielding it not always do so in virtue of a legal basis.[22]

The global governance of the Internet epitomizes both the privatization and the informalization of authority beyond the State. The core of the global Internet governance system is a network of informal and private regulatory institutions that develop and manage the infrastructure of the Internet,[23]

et al. 'Governing the Internet: The Quest for Legitimacy and Effective Rules', in A. Hurrelmann *et al.* (eds), *Transforming the Golden Age Nation-State* (2007), 130, 147.

18 For an overview, see B. Peters & J. K. Schaffer, 'Introduction: The Turn to Authority Beyond States' 4 *Transnational Legal Theory* (2013) 3, 315; J. Pauwelyn, R. Wessel & J. Wouters, *Informal International Lawmaking* (2012) [Pauwelyn, Wessel & Wouters, Lawmaking].

19 "[…] [Even] if one sees traditional international law as 'law', the problem with global governance is that much of its normative production comes in other forms. Informal regulation – through soft law, government networks, private regulation, intra-institutional norms – makes up a large part of transboundary cooperation in many issue areas, and in others it coexists with more established forms of law-making, such as treaties and formal adjudication." see Krisch, *supra* note 7, 976, 982.

20 For an overview, see M. Goldmann, 'Inside Relative Normativity: From Sources to Standard Instruments for the Exercise of International Public Authority' 9 *German Law Journal* (2008) 1865, sec. B.

21 A. Berman & R. Wessel, 'The International Legal Status of Informal International Lawmaking Bodies: Consequences for Accountability', in Pauwelyn, Wessel & Wouters, *Lawmaking*, *supra* note 18, 35.

22 Krisch, *supra* note 7, 976, 979.

23 Analyzing it as network governance, M. Lips & B. Koops, 'Who Regulates and Manages the Internet Infrastructure? Democratic and Legal Risks in Shadow Global Governance' 10 *Information Polity* (2005) 1/2, 117, 126; J. Malcolm, *Multi-Stakeholder Governance and the Internet Governance Forum* (2008); M. L. Mueller, *Networks and States: The Global Politics of Internet Governance* (2010); DeNardis, for example, emphasizes that "[…] Internet protocol design and coordination of critical Internet resources, have historically not been the exclusive purview of governments but of new *transnational institutional*

the authority of which has not been delegated formally by the international community through international law – what Mueller calls, emphasizing their emergence outside the international legal system, *organically developed internet institutions*.[24] In the performance of their regulatory functions, these institutions resort to a variety of non-legal instruments, including technical standards, which are the focus of this article. Combined with each other and with the public elements that make up the rest of the hybrid Internet governance system, these institutions determine the use and evolution of the Internet at the global level. Before embarking on their analysis in a public law perspective, an overview of global Internet governance seems apposite.

II. Global Internet Governance: International, Informal, and Private Institutions

"The Internet is the global data communication capability realized by the interconnection of public and private telecommunication networks using Internet Protocol (IP), Transmission Control Protocol (TCP), and the other protocols required to implement IP internetworking on a global scale, such as DNS [Domain Name System] and packet routing protocols."[25] At the World Summit on the Information Society (WSIS), Internet governance was defined as "[…] the development and application by governments, the private sector and civil society, in their respective roles, of shared principles, norms, rules, decision-making procedures, and programmes that shape the evolution

forms and of private ordering" (emphasis added). In L. DeNardis, 'The Emerging Field of Internet Governance', *Yale Information Society Project Working Paper Series* 2010, 1, 11-13. [DeNardis, Internet Governance]; see also M. J. van Eeten & M. Mueller, 'Where is the Governance in Internet Governance?' *New Media and Society Online Publication* (2012) 1; the reference to the Internet governance *ecosystem* is also commonplace. See, for example, Y. Benkler, 'The Battle Over the Institutional Ecosystem in the Digital Environment' 44 *Communications of the Association for Computing Machinery* (2001) 2, 84.

24 Mueller, *supra* note 23, 217.

25 There are many definitions of the Internet. I choose this one because it emphasizes the constitutive importance of technical standards in global internetworking generally and specifically of the TCP/IP protocol suite for today's Internet see Mathiason, *supra* note 4, 11; see also J. Mathiason *et al.*, 'Internet Governance: The State of Play', *Internet Governance Project Paper* (2004), available at http://www.internetgovernance.org/wordpress/wp-content/uploads/mainreport-final.pdf (last visited 9 May 2016), 6–7.

and use of the Internet."[26] This definition reflects the hybrid and complex character of the global Internet governance system. It combines the idea of governance as a process of social ordering through the concert of public and private, State and non-state actors, with the concept of international regime – understood as conceived in institutionalist international relations theory – as both the framework and the outcome of such process.[27] The governance of the Internet is thus conceptualized as the concerted development and application by State and non-state actors of the legal and, crucially for our purposes, non-legal normative materials that, beyond the State, conform the set of regimes that have come to configure an intricate "Regime Complex for Managing Global Cyber Activities".[28] While there is no international organization or framework convention providing an overarching international legal framework for the Internet, the WSIS did establish some institutional mechanisms – including the global Internet Governance Forum and a set of soft law principles, amongst which that of multi-stakeholder participation itself – for the three categories of actors to coordinate, in the fulfillment of their respective roles, with a view to achieve a set of global public policy goals to be attained within a period of ten years. These encompassing mechanisms loosely bind global Internet governance together and make it possible to reconstruct it as a distributed system of co-regulation.[29]

But what are the respective roles of public and private actors, and more specifically, what are the responsibilities of the public and private organizations

[26] Para. 34 of the World Summit on the Information Society, *Tunis Agenda for the Information Society*, WSIS-05/TUNIS/DOC/6(Rev. 1)-E.

[27] It was developed by a working group that included academics specialized, amongst other disciplines, in international relations and Internet regulation. See W. J. Drake (ed.), Reforming Internet Governance: Perspectives from the Working Group on Internet Governance (WGIG) (2005) available at http://www.wgig.org/docs/book/WGIG_book.pdf (last visited 9 May 2016); *Report of the Working Group on Internet Governance* (2005), available at http://www.wgig.org/docs/WGIGREPORT.pdf (last visited 9 May 2016).

[28] J. Nye, 'The Regime Complex for Managing Global Cyber Activities', *Paper Series by the Global Commission on Internet Governance* (2014).

[29] This structure is partly explained by the technical structure of the Internet as it is today: "[…] the Internet's architecture distributes decision making power over the internetworking […] [processes] […].", available at http://www.internetgovernance.org/wordpress/wp-content/uploads/mainreport-final.pdf (last visited 9 May 2016), 8. Emphasizing its distributed structure, W. J. Drake, 'The Distributed Architecture of Network Global Governance', in W. J. Drake & E. J. Wilson (eds), *Governing Global Electronic Networks* (2008), 1 [Drake, Network Global Governance]. Reconstructing global Internet governance in terms of co-regulation; Frydman, Hennebel & Lewkowicz, *supra* note 5, 133.

that regulate the Internet at the global level? An influential account of global Internet governance distinguished three main regulatory functions: *public policy*, *technical coordination* and *technical standardization*.[30] Whereas Internet public policy – including policy formulation, enforcement, and monitoring, as well as dispute resolution – regulates "[…] the conduct of people and organizations […]", the other two regulatory functions deal with "[…] the structure and operation of the technology."[31] Until the WSIS, Internet governance had mainly been conceived narrowly, as the governance of *critical Internet resources or Internet infrastructure*. The main critical or infrastructural issues have traditionally been IP addresses and domain names, root servers, and the data transmission protocols that constitute the Internet (the TCP/IP protocol suite).[32] These issues were generally conceived as *carriage* issues of a markedly technical character.[33] The WSIS, however, consolidated a broader understanding of Internet governance that covered the regulation of the *content* conveyed over electronic networks too – with issues such as freedom of expression, privacy, intellectual property rights or multilingualism, amongst many others – which were perceived as

30 J. Mathiason *et al.*, *supra* note 25; Mathiason, *supra* note 4. I follow authors like Malcolm in calling the second function *technical coordiantion* instead of resource allocation and assignment – which is how Mathiasson *et al.* originally called it – to cover as well with it the operational responsibilities associated with domain name and IP address allocation and assignment, such as the operation of the root servers, see Malcolm, *supra* note 23, 30. DeNardis and Raymond later developed a more nuanced taxonomy of regulatory functions. See L. DeNardis & M. Raymond, 'Thinking Clearly About Multistakeholder Internet Governance', *Paper Presented at Eighth Annual GigaNet Symposium* (2013) available at http://www.phibetaiota.net/wp-content/uploads/2013/11/Multistakeholder-Internet-Governance.pdf (last visited 9 May 2016). Although it can be argued that this threefold functional taxonomy is undermined by the very point of this paper – namely that, just like technical coordination, at least some of the standardization activity that *a priori* should be rather technical qualifies as public policy making and is therefore susceptible of being analyzed in terms of public law – I keep it as a reference because, by separating them from ICANN's technical coordination and resource allocation functions, it puts the institutions involved in Internet standard setting on a par with those performing the other two kinds of governance functions, thus highlighting their relevance and potential as public or functionally equivalent authority.

31 Mathiason *et al.*, *supra* note 25, 10.

32 Bygrave & Michaelsen, *supra* note 2, 3. For a wider account of Internet infrastructure see, however, the report on *Internet Governance and Critical Internet Resources* by the 1st Council of Europe Conference of Ministers Responsible for Media and New Communication Services, (2009).

33 On the distinction between content and carriage issues, see Drake, 'Network Global Governance', *supra* note 29, 10–11.

primarily political.[34] This rough distinction between political and technical regulatory issues and functions is reflected in the kind of institutions that regulate each of them.[35] Whereas content issues and public policy are the realm of States and international organizations, the *a priori* technical-infrastructural issues of standardization and technical coordination are regulated mainly by informal and private organizations.[36] The Geneva Declaration of Principles of the WSIS explicitly establishes that it is "[…] the sovereign right of States […]" to make Internet policy.[37] Beyond the State, at the global level, its place is intergovernmental organizations, many of which – such as the ITU, the WIPO or UNESCO – belong to the United Nations family.[38] These intergovernmental organizations are not centered on Internet-specific regulatory issues – although their mandates comprise issues that have some impact or are impacted by the Internet.[39] In contrast, the other two regulatory functions, resource allocation and assignment and technical standardization, are mainly carried out by an

34 In fact, this broadening of the concept of "Internet governance […] put practically all of the traditional problems of communication and information policy within its frame." Eeten & Mueller, *supra* note 23, 5.

35 "Each function is characterized by different processes and expertise, different methods of 'enforcement,' and is often carried out by different organizations." see Mathiason *et al.*, *supra* note 25, 9.

36 Malcolm provides an alternative way to distinguish public policy governance from the other two functions: "One way in which to usefully distinguish it from technical coordination and standards development is that the problems engaged by public policy governance are more likely to be problems of *regulation*, rather than coordination." Malcolm, *supra* note 23, 30; In general, problems of regulation, i.e. deriving from the production of negative externalities, require hierarchical governance structures in order to neutralize such externalities and, therefore, pose problems of democratic legitimacy. On the distinction between coordinative and regulative problems see B. Holznagel & R. Werle, 'Sectors and Strategies of Global Communications Regulation', 17 *Technology and Policy* (2004) 2, 19. Malcolm is rightly cautious: standardization and resource allocation and assignment are *more likely* to be problems of coordination.

37 Para. 35 (a) of the World Summit on the Information Society, *Tunis Agenda for the Information Society*, WSIS-05/TUNIS/DOC/6(Rev. 1)-E.

38 Y. Schemeil, 'Global Governance: Evolution and Innovation in International Relations', in E. Brousseau, M. Maryouki & C. Méadel (eds), *Governance, Regulation and Powers on the Internet* (2012).

39 That is,"[…] [problems] that arise as a direct consequence of the involved parties' mutual use of the Internet protocols to communicate globally." see Mathiason *et al.*, *supra* note 25, 8; see also L. B. Solum, 'Models of Internet Governance', in Bygrave & Bing, *supra* note 2, 45, sec. B. II.

extensive network of *ad-hoc* institutions, within which private and informal organizations play a leading role.[40]

C. A Public Law Approach to Informal and Private Authority

I. The Public Turn

In response to the governance turn in world politics and law, and to the associated informalization and privatization of authority that global Internet governance epitomizes, a *public turn*, a turn to public authority and law,[41] has arguably taken place in legal scholarship and neighboring disciplines during the last decade.[42] This turn to the public has been prompted, first, by the insight that much of global governance has a highly political character.[43] It has come to constitute a *domain of rule*[44] over States and, increasingly, private entities and individuals.[45] Second, such capacity to rule is often institutionalized in such a way that it is susceptible of being understood in terms of public authority and law.[46] Although the literature becomes ever richer and more complex, there

40 Mathiason, *supra* note 4, 18.

41 Qualifying it as a "public turn" and as a new "paradigm" see Krisch, *supra* note 7, 976, 976–977. Although in a different sense, and referring specifically to IPA, Kadelbach suggests as well that the public law approach of the Heidelberg school entails a "change in paradigm: from private law to public law as a system of reference" for international legal doctrine. S. Kadelbach, 'From Public International Law to International Public Law: A Comment on the 'Public Authority' of International Institutions and the 'Publicness' of their Law' in A. von Bogdandy *et al.* (eds), The Exercise of Public Authority by International Institutions: Advancing International Institutional Law (2010), 33, 42 [Bogdandy et al., The Exercise of Public Authority by International Institutions].

42 Synthetically characterizing it as such are Kohler-Koch & Rittberger, *supra* note 9, 28–31 and K. Dingwerth & P. Pattberg, 'Global Governance as a Perspective on World Politics' 12 *Global Governance* (2006) 2, 185.

43 Krisch, *supra* note 7, page 977.

44 H. Enroth, 'The Concept of Authority Transnationalised' 4 T*ransantional Legal Theory* (2013) 3, 336, 337–338; Peters & Schaffer, *supra* note 18, 315.

45 A. von Bogdandy, A. Dann & M. Goldmann, 'Developing the Publicness of Public International Law: Towards a Legal Framework for Global Governance Activities' in A. von Bogdandy *et al.*, *The Exercise of Public Authority by International Institutions*, *supra* note 41, 3, 4.

46 E.g. "The idea of public authority is powerful as a lens through which to observe and understand emerging structures of global governance." see Krisch, *supra* note 7, 976, 985–

are three leading frameworks for the conceptualization of global governance specifically from the perspective of public law: *postnational constitutionalism, global administrative law* (GAL) and the *international public authority* (IPA) approach.[47] In what follows I focus on IPA because, although it is a distinct theory,[48] it combines administrative and constitutional perspectives, and it incorporates elements of the other two theories.[49] The common purpose of these theories is "[…] understanding, framing and taming […]" global governance

986. In fact, Peters and Schaffer reconstruct the centrality that the concept of authority has acquired in international studies as a *turn to authority*. As they point out, "[…] this turn to authority represents both claims that there has been an empirical shift, with ever more institutions and actors, public and private, expanding their claims to authority over states and other subjects, and a theoretical shift, where adding 'international authority' to the conceptual toolbox available to researchers allows them to see and describe the empirical shift, or dispute such claims." see Peters & Schaffer, *supra* note 18, 315, 318.

47 These are all quite wide and diverse theoretical strands, each rooted on its own precedents. In the case of IPA and GAL, their fundamental tenets can be found in concept papers laying out their theoretical frameworks or research concepts. For the PLA, see Bogdandy *et al.*, *The exercise of Public Authority by International Institutions*, *supra* note 42; With respect to GAL, see B. Kingsbury *et al.*, 'Global Governance as Administration – National and Transnational Approaches to Global Administratie Law', 68 *Law and Contemporary Problems*, (2005) 3, 1; and B. Kingsbury, N. Krisch & R. B. Stewart, 'The Emergence of Global Administrative Law' 68 *Law and Contemporary Problems* (2005) 3–4, 15. Postnational Constitutionalism, on the other hand, has more robust historical roots, and although it can be said to have revived after the end of the Cold War too, it has become such a complex theoretical stream that it is difficult to trace back to any single contribution. For an overview, see C. E. J. Schwöbel, 'Situating the Debate on Global Constitutionalim' 8 *International Journal of Constitutional Law* (2011) 3, 611; A. Wiener, *Global Constitutionalism* (2012). Of the many recent remarkable contributions, see, for example, J. Dunoff & J. Trachtman, *Ruling the World? Constitutionalism, International Law and Global Governance* (2009); J. Klabbers, A. Peters, & G. Ulfstein, *The Constitutionalization of International Law* (2009); N. Krisch, *Beyond Constitutionalism: The Pluralist Structure of Postnational Law* (2010) [Krisch, Beyond Constitutionalism]; M. Loughlin & P. Dobner (eds) *The Twilight of Constitutionalism* (2010) and G. Teubner, *Constitutional Fragments: Societal Constitutionalims and Globalization* (2012).

48 IPA is "[…] not a simple fusion of existing methods, but an alternative system that is firmly rooted in European public domestic law." see S. Leibfreid, 'To Tame and to Frame' in Bogdandy *et al.*, *The exercise of Public Authority by International Institutions*, *supra* note 41, 51, 52. For an explanation of what it means to theorize global governance from the perspective of public law, see M. Goldmann, 'Inside Relative Normativity: From Sources to Standard Instruments for the Exercise of International Public Authority' in A. von Bogdandy *et al.*, *The Exercise of Public Authority by International Institutions: Advancing International Institutional Law*, *supra* note 41, 661 [Goldmann, Inside Relative Normativity, in Bogdandy et al.].

49 Bogdandy, Dann & Goldmann, *supra* note 45, 21–26 (sec. C.III).

through public law.[50] They use public law concepts for descriptive-reconstructive purposes, but also as categories for the critical analysis of the institutions of global governance, and as potential models for the development, respectively, of constitutional, administrative or public law frameworks that ensure their public accountability and, thereby, their legitimacy.[51]

The focus of these approaches is on formal public institutions. But the strong presence of informal and private instutions wielding authority beyond the State has brought these theories to inquire whether and, if so, in what way public law can be used to legitimize such kinds of authority as well. With a view to applying it to the specific context of global Internet governance in the next section, this section examines how one of such theories, IPA, treats the exercise of authority by private and informal institutions. After an overview of IPA as a public law approach (C. II.), the section introduces IPA's understanding of international public authority, before turning to the way IPA expands the scope of its public law analysis to cover not only international public, but also informal (C. III.) and private (C. IV) exercises of authority.

II. IPA as a Public Law Approach to Global Governance

As a public law approach to global governance, IPA addresses the problem of the legitimacy of global governance institutions specifically from the perspective of public law. It proceeds by identifying those institutions of global governance the activity of which can be understood as an exercise of international public authority, and then critically analyzing their legal framework in order to ensure it provides democratic legitimacy.

Like the other public law approaches, IPA's understanding of and response to the problem of legitimizing global governance is based on a specific normative conception of the relationship between public authority and public law. IPA's fundamental normative tenet is that, in order for public authority to be legitimate, it must be subjected to a proper public law framework.[52] In other words, although it cannot be regarded as a sufficient condition, a legal framework regulating the exercise of public authority according to the standards of public law is a necessary condition for it to be legitimate.[53] This is a central

50 Ibid., 26.

51 M. Goldmann, 'A Matter of Perspective: Global Governance and the Distinction between Public and Private Authority (and Not Law)' (2013), available at http://ssrn.com/abstract=2260293 (last visited 9 May 2016), 2.

52 Bogdandy, Dann & Goldmann, *supra* note 45, 5.

53 Ibid., 16.

aspect of the rule of law, so it can be said that IPA's purpose is to develop the rule of law in the postnational domain.[54]

In order to legitimize the exercise of public authority beyond the State, IPA proposes to develop international law into a properly public law, as public law is understood in the liberal democratic tradition.[55] In this tradition, public law is conceived as having two functions: the *constitutive function*, according to which only public law can enable the exercise of public authority, and the *limiting function*, which consists in legally establishing substantive and procedural constraints to the exercise of public authority.[56] In its enabling aspect, public law determines the production of public authority as the expression of the collective self-determination of a public. This enabling function not only allows for authority to be effective but is already inherently limiting because it rules out the possibility for any exercise of political authority that is not based on public law to qualify as public. In addition to this positive subjection of public authority to the legal form, the limiting function of public law consists in the establishment of substantive and procedural conditions for authority to be legitimate. The principles or standards that define the liberal democratic idea of public law – such as transparency, participation, legality, etc. – are oriented at establishing the conditions under which the exercise of authority can be conceived as an act of collective self-determination advancing the public interest, simultaneously enabling individual and collective freedom and preserving it against that very authority.[57]

This aspiration situates *international public authority* and *international institutional law* as IPA's most central concerns, the core of its object of analysis. As it has been pointed out, the main sites of authority outside the State in global governance are international organizations and similar autonomous institutions

54 On the rule of law as a gradual institutional ideal, see A. Marmor, 'The Ideal of the Rule of Law' in D. Patterson (ed.), *A Companion to Philosophy of Law and Legal Theory*, 2nd ed. (2010), 666; G. Palombella, 'The Rule of Law as an Instirutional Ideal' in G. Palombella & L. Morlino (eds), *Rule of Law and Democracy: Inquiries into Internal and External Issues* (2010), 3; On the extension of rule of law to global governance, including to non-legal regulatory systems, see M. Kötter & G. F. Schuppert, 'Applying the Rule of Law to Contexts Beyond the State' in J. R. Silkenat, J. E. Hickey & P. D. Barenboim (eds), *The Legal Doctrines of the Rule of Law and the Legal State (Rechtsstaat)* (2014), 71.

55 Bogdandy, Dann & Goldmann, *supra* note 45, 9, 13.

56 Ibid., 9–10.

57 Goldmann roots this functional characterization of public law in Habermas' discourse theory of democracy. See Goldmann, 'A Matter of Perspective', *supra* note 51, 8–9.

of international law.[58] The law regulating such authority is international institutional law, the law of international organizations.[59] Therefore, a critical public law approach to global governance seeking to descriptively reconstruct the legal-institutional framework that frames the exercise of authority beyond the State and to develop it into public law proper will primarily be reconstructing and developing international institutional law – and, thereby, the "[…] publicness of public international law […]" generally.[60] The problem is that, in the current state of development of international institutional law, it is still "[…] very difficult to construe a meaningful argument regarding the legality of an exercise of international public authority."[61] Even in those ambits where such argument can be construed, the legality of public authority does not necessarily entail a strong claim to legitimacy – let alone one that satisfies liberal democratic standards of legitimacy as they are captured in domestic public law.[62] IPA's purpose in developing international institutional law according to the standards of liberal democracy is to enable such assessments of legality to be made with respect to every exercise of public authority beyond the State, and that the authority exercised on the basis and within the limits of international institutional law can be presumed to be legitimate.[63]

58 Highlighting the sources of authority and autonomy of international organizations and some less formal institutions by conceptualizing them as autonomous bureaucracies, I. Venzke, 'Understanding the Authority of International Courts and Tribunals: On Delegation and Discursive Construction' 14 *Theoretical Inquiries in Law* (2013) 2, 381; J. von Bernstorff, 'Procedures in Decision-Making and the Role of Law in International Organizations' in Bogdandy *et al.*, *supra* note 41, 777; Conceptualizing international courts as autonomous actors wielding public authority, see A. von Bogdandy & I. Venzke, 'In Whose Name? An Inversitgation of International Courts' Public Authority and Its Democratic Justification' 23 *European Journal of International Law* (2012) 1, 7.

59 I.e., heuristically, the conception of international law that is synthesized in the list of sources of Art. 38 (1) of the *Statute of the International Court of Justice*, 24 October 1945, 1 UNTS XVI.

60 Bogdandy, Dann & Goldmann, *supra* note 45, 3, 6.

61 Ibid., 3, 19. The problem results, on the one hand, from the absence of a general law of international institutions (see Bernstorff, *supra* note 58, 779) and on the other, from the fact that, in those regimes where public authority is actually exercised, international institutional law is, where available, underdeveloped. Qualifying the available legal standards as "rudimentary", for example, Kadelbach, *supra* note 41, 43.

62 Bogdandy, Dann & Goldmann, *supra* note 45, 20–21.

63 Goldmann, 'A Matter of Perspective', *supra* note 51, 9–10; J. Habermas, *Facticidd y validez. Sobre el derecho y el Estado democrático de derecho en términos de teoría del discurso*, 5th ed. (2008), sec. 1.III.1.

But a critical analysis seeking to legitimize global governance through public law can no longer focus exclusively on formal, international-legal authority. Turning a blind eye on the informal and private forms of authority that characterize governance beyond the State would leave uncovered a significant portion of the regulatory activity that poses the kind of legitimacy problems addressed by public law.[64] This is why the IPA approach broadens the object of public law analysis in a double sense. First, it focuses on the *exercise* of international public authority by *international institutions*, which brings informal exercises of authority within its scope of analysis. Second, it covers the exercise of authority by private institutions, identifying them as an object for *public* law analysis when the authority they exercise qualifies as either public or *functionally equivalent to international public authority*.

III. Bringing the Exercise of Authority by Informal Institutions Under the Scope of International Public Law Analysis

IPA defines the *exercise of public authority by international institutions* as the realization of an international institution's "[…] law-based capacity to legally or factually limit or otherwise affect other persons' or entities' use of their freedom"[65] Authority is conceived, thus, as institutionalized capacity – a competence, right or entitlement – to unilaterally – that is, without the passive subject of authority's direct consent – determine others in a way that qualifies as an affectation of freedom.[66] Such affectation may be positive or negative, concern individual or collective liberty, and the subject of authority may be a private or a public entity.[67]

Crucially for this article's purposes, this concept of international public authority acknowledges that it may be exercised by *formal or informal* international institutions, and that the subjects' freedom may be affected *legally*

64 Bogdandy, Dann & Goldmann, *supra* note 45, 3,11.

65 Goldmann, 'A Matter of Perspective', *supra* note 51, 11, referring to an almost identical formulation in Bogdandy & Venzke, *supra* note 58, 7, 18.

66 I unfold the former definition, which synthesizes and slightly modifies the original one, on the basis of IPA's concept paper, where it was defined as follows: "How exactly do we define the exercise of international public authority? For this project, we define *authority* as the legal capacity to *determine* others and to reduce their freedom, i.e. to unilaterally shape their legal or factual situation. An exercise is the realization of that capacity, in particular by the production of standard instruments such as decisions and regulations, but also by the dissemination of information, like rankings. The determination may or may not be legally binding." see Bogdandy, Dann & Goldmann, *supra* note 45, 11.

67 Ibid., 5.

or factually. In other words, international public authority may be informal from the point of view of international law, be it with respect to the institution exercising it or the instruments through which it is exercised.[68]

Regarding institutional informality, a traditional analysis of international institutional law would cover only *international organizations* as the only organizations established in an instrument of international law and possessing international legal personality.[69] IPA, in contrast, applies public law standards to institutions "[…] in the sense of organizational sociology […],"[70] provided they exercise international public authority. The analysis in terms of public law of informal institutions such as the G20 is possible because "[…] the operation and action of many informal institutions are governed by rules in a similar way to that of formal international organizations."[71] This makes IPA adequate for an analysis of the informal organizations dominating global Internet governance.

The second dimension of the informalization of authority is the diversification of regulatory instruments,[72] understood as "the concrete acts by which institutions intend to reach their policy objectives,"[73] in which the exercise of international public authority is actualized. IPA's conception of authority acknowledges that, just like States, international institutions can affect freedom by means of binding law; that is, by modifying the legal situation of the subject, but also through non-binding *soft law* and even *non-deontic* instruments, which determine the subject's factual situation.[74] Soft law instruments may therefore fall within the scope of IPA's analysis even if they do not qualify as law in any proper sense.[75] It is one of IPA's strengths that it clearly distinguishes the question of the

68 As put in IPA's concept paper: "Research on global governance has […] convincingly demonstrated that constraining effects do not only emanate from binding instruments or legal subjects" Bogdandy, Dann & Goldmann, *supra* note 45, 1381.

69 As well as "[...] institutions with a different legal status, such as treaty regimes and informal regimes (e.g. the OSCE)." see von Bogdandy, Dann & Goldmann, *supra* note 45, 26; on the concept of international organization, see ILC 'Report of the International Law Commission, Fifty-fifth Session' (5 May–6 July and 7 July–8 August 2003) GAOR 58th Session Supp 10, A/3810.

70 Bogdandy, Dann & Goldmann, *supra* note 45, 15 and 16.

71 Ibid.

72 Goldmann, 'A Matter of Perspective', *supra* note 51, 12.

73 See footnote 83 on page 89 in Bogdandy, Dann & Goldmann, *supra* note 45.

74 Ibid., 11.

75 The juridicity of concrete soft law instruments is disputed under the light of the more abstract controversy around the juridicity of soft law. For a synthesis of the debate, see Goldmann, 'Inside Relative Normativity' in Bogdandy *et al.*, *supra* note 48, 671 677 (sec. B.I.); on the relationship between informality and softness in law, see, for example,

legal character of such instruments from that of their authoritativeness. At least in the case of those instruments whose authoritativeness does not stem from their legal character – as it often, but not necessarily, happens with technical standards – both analyses can be conducted separately. Insofar as they effectively condition or constrain the freedom of their addressees, IPA understands soft legal instruments as international public authority. As will be shown, this is the case of Internet standards, the authoritativeness of which does not derive from their being binding legal instruments, be it by reference or incorporation, and regardless of whether they are seen as a form of non-official law, so the question of their legal character can be left open.[76]

In order to facilitate the identification of exercises of authority, i.e to establish whether an instrument affects the freedom of its addressee, Goldmann identifies several "[…] ideal types […] for the determination of authority."[77] He points out, in line with Habermasian discourse theory, that authority requires a mechanism of *extrinsic motivation*, i.e. motivation through events external to the subject of authority. More specifically, authority according to Goldmann requires at least a mechanism that triggers *extrinsic regulation* or *introjection*, which boil down to the possibility of physical enforcement, the capacity to impose positive or negative sanctions, and discursive constraints.[78] This development is important because, on the one hand, it emphasized the behavioral aspect of the exercise of authority, its capacity to determine conduct, which is not so apparent in the abovementioned concept of authority. The concept paper defined authority as the capacity to unilaterally affect the legally or morally conceived freedom of a subject, but did not specify that it needed to *motivate* the subject to adopt any particular course of action. This conceptualization of authority on the basis of reasons for action reflects the importance of motivation-based authority in legal, market, and social norm regulation. As will be seen later,[79] however, technical

Lobel, *supra* note 5, 308–316; J. Pauwelyn, R. Wessel & J. Wouters, 'The Exercise of Public Authority Throught Informal International Law Making: An Accountability Issue?', *Jean Monnet Working Paper*, 2011/6, available at http://doc.utwente.nl/81510/ (last visited 7 May 2016) [Pauwelyn, Wessel & Wouters, Exercise of Public Authority].

76 Saying, for example, that IETF and W3C's standards are not incorporated by reference into international trade law, see S. von Schorlemer, 'Telecommunications, International Regulation' in R. Wolfrum (ed.), *The Max Planck Encyclopedia of Public International Law* (2012), 818, 823, para. 33; for an overview of the ways in which privately produced technical standards are brought into legal systems and of the solutions to the legitimacy problems this comports within and beyond the State see DeBellis, *supra* note 16, 425.

77 Goldmann, 'A Matter of Perspective', *supra* note 51, 11.

78 Ibid., 13.

79 Infra sec. D. II. 2.

standards do not fit easily into any of these traditional categories. They can be conceptualized, instead, as an instrument of *regulation through technology* or, specifically in the Internet and cyberspace, through *code*, which is a distinct model of regulation that is characterized precisely by its capacity to determine technology users' behavior regardless of their motivation. Internet governance can thus enrich IPA by adding them to the motivation-based catalogue of *types for the determination of authority*.

IV. Bringing the Exercise of Authority by Private Institutions Under the Scope of International Public Law Analysis

The second sense in which IPA broadens the focus of public law analysis is by extending it to exercises of authority by private institutions. As explained above, a significant aspect of the turn to governance has been the *privatization* of authority, including both the formal delegation to, and the spontaneous assumption by, private law institutions of regulatory functions formerly reserved to the State, often through private law instruments.

According to IPA's concept paper, for authority to qualify as *public* and *international* it must be "[…] exercised on the basis of a competence instituted by a common international act of public authorities, mostly States, to further a goal which they define, and are authorized to define, as a public interest."[80] Thus, the distinction between public and private authority remains a legal one, although it is not based, again, on the legal basis of the institution, but of the authoritative act or instrument. Those institutions exercising authority in virtue of a competence that has been validly delegated and declared to be of public interest can be said to exercise international public authority proper, even if they are instituted as private law entities or exercise it through private law instruments.[81]

The concept paper proposed a criterion, however, for extending public law analysis even further, to cover the exercise of authority by hybrid and private law institutions and instruments even in the absence of such delegation of competence. As we will see, this is the case of the IETF or the W3C.[82]

[80] Bogdandy, Dann & Goldmann, *supra* note 45, 13.

[81] On the importance of contracts in Internet governance, see L. A. Bygrave, 'Contract Versus Statute in Internet Governance', in I. Brown (ed.), *Research Handbook on Governance of the Internet* (2012).

[82] See *infra*, sec. D. II., and R. A. Wessel, 'Regulating Technological Innovation Through Informal International Law: The Exercise of International Public Authority by Transnational Actors' in M. A. Heldeweg & E. Kica (eds), *Regulating Technological Innovation: A Multidisciplinary Approach* (2011), 77.

These institutions ought to be assessed by and subjected to the same public law standards that apply to public authority if their exercise of authority is *functionally equivalent* to the authority of institutions validly established under international public law for the pursuance of public interests.[83] They would not be exercising international public authority, because this would require that the act or instrument in question had a public law basis, but an authority that should be treated as such because it performs an equivalent function in the public interest. The concept paper mentions a set of examples of regulatory functions typically considered of public interest: measures affecting public goods, global infrastructure management, and the balancing of colliding fundamental interests of different social groups.[84] According to IPA's original account, thus, the public character of an authoritative act can be established either directly, by reference to a basis in public law – beyond the State, international public law – or indirectly, by analogy with the activity of other institutions performing the same regulatory function on a public legal basis declaring its public interest. As an example of such functional equivalence between private and public authority, the concept paper refers to ICANN.[85]

IPA's original conception of public authority suggests that a public law basis is, if not the only conceivable, at least a valid way to establish whether authority is exercised in the name and interest of a public. Indeed, at least as conceived in the liberal democratic tradition, domestic public law enables the formation, determination, and expression of the collective will of a legally constituted political community. It is a means for collective self-determination, for the definition of the public interest. The problem is that international law cannot be described as being the public law of global governance in the same sense as public law is understood within the State. A basis in international law does not suffice to claim representation of a public interest in a postnational order characterized by legal and political pluralism.[86] Neither can, as Goldmann points out, the public interest be defined materially – no set of matters are always of public interest. It is the product of public discourse.[87] Accordingly, the fact that a private law institution exercises authority in fulfillment of a regulatory function that is typically considered of public interest does not suffice on its

83 Bogdandy, Dann & Goldmann, *supra* note 45, 14.
84 Ibid., 14.
85 Ibid., 14. See section D. I.
86 On such pluralism, see, for example Krisch, Beyond Constitutionalism, *supra* note 47; N. Walker, 'Postnational Constitutionalism and Postnational Public Law: A Tale of Two Neologisms', 3 *Transnational Legal Theory* (2012) 1, 61.
87 Goldmann, 'A Matter of Perspective', *supra* note 51, 18.

own to justify the applicability of public law standards. It must qualify as public authority proper. This does not, however, negate a heuristic value of the original functional equivalence criterion, which remains effective in guiding our attention to putative exercises of properly public authority.

Goldmann has recently suggested an alternative reconstruction of the distinction between public and private authority that offers some deeper theoretical ground for IPA's original criterion and contemplates the possibility of private formal and informal organizations exercising public authority proper even in the absence of delegation. Adapting the discourse theory of democracy for the legitimation of public authority in global governance, he suggests that "[…] an authoritative act is to be classified as one of public authority, if […] [in the perspective of the affected person or entity, the actor may reasonably claim] to act on behalf of a community of which the affected person or entity is a member, or a member of such member."[88] Private authority is characterized, in turn, as based on a realization of private autonomy, an act of individual self-determination oriented at advancing individual self-interests – even if it is exercised collectively. The public or private character of an exercise of authority depends, thus, on the relationship between the authority wielder and the community, on the one hand, and between such community and the passive subjects of authority, on the other.

Regarding the first relationship, for authority to qualify as public, the authority wielder must have a *reasonable* claim to represent the community, i.e. to act in its name, and it must be possible to reconstruct the exercise of authority as an act of collective self-determination defining the public, common interest of that community. What renders such a claim to act on behalf of the relevant community reasonable is the existence of a plausible legal basis for doing so.[89] The difference with respect to IPA's original position on the exercise of authority by formally private institutions is that such legal basis need not be one of public law: "[...] [associations] governed by domestic private law such as standardization organizations or professional associations might very well exercise public authority over their members (and even beyond, if acting upon an entitlement by an international institution)."[90]

Regarding the second relationship, for an exercise of authority to qualify as public, its passive subject must be a member of the community in whose name

88 Ibid., 19.
89 Ibid., 23.
90 Ibid., 22.

it is exercised.[91] Community membership is defined by reference to a shared *identity*, understood as "[...] shared elements in the self-understanding of the members of a community on the supranational level."[92] This requirement stems from discourse theory, which conceives this common layer of self-understanding as a necessary condition for communicative action or *arguing*, which is the basis of normative reasoning, and thus of the kind of discourse through which the public interests of a community can be defined.[93] In a nutshell, only a community with a shared identity may qualify as a public. What matters here is that, according to Goldmann's account, the industry or professional groups that engage in transnational self-regulation of their respective sectors through formal, private non-profit corporations – such as ICANN or the Internet Society – or through informal institutions – such as the IETF or the W3C – may indeed be capable of engaging in the kind of public discourse that is necessary for the formation of public interests, and qualify as publics.[94]

According to Goldmann's account, therefore, an exercise of authority may be public for some of its passive subjects and private for others – a matter of perspective. An exercise of authority in the name of a given community is public from the perspective of its members but private from the perspective of the non-members of such community – an externality that, if assessed by legal standards, should be assessed by the standards of private, tort law.[95] If that externality unilaterally affects freedom to an extent that cannot be justified by reference to such standards, i.e. by reference to private autonomy, the regulatory activity in question must be either regulated or directly assumed by a more inclusive public authority.[96] Intermediate solutions consist in hybridizing the institution, for example by allowing for States or public institutions to become members – as exemplified, again, by ICANN's Governmental Advisory Board – or situating it within hybrid regulatory frameworks.[97]

91 Goldmann, 'A Matter of Perspective', *supra* note 51,19.
92 Ibid., 24.
93 Ibid., 20.
94 Ibid., 26–27.
95 Ibid., 21.
96 Ibid., 2.
97 B. Carotti & L. Casini, 'A Hybrid Public Private Regime: The Internet Corporation for Assigned Names and Numbers (ICANN) and the Governance of the Internet' in S. Cassese *et al.* (eds), *Global Administrative Law: Cases, Materials, Issues*, 2nd ed. (2008), 29, 32; Weitzenboeck, *supra* note 15, 73.

D. The Exercise of Authority by Informal and Private Institutions in Global Internet Governance

If Internet governance is conceived broadly, as including any Internet-related public policy issue, then the natural starting point for a public law analysis would be the intergovernmental organizations and institutions that are somehow involved in Internet policy making. It is in these institutions that exercises of international public authority as conceived by the Heidelberg school are most likely to be found. My interest here, however, is on the private and informal institutions that dominate the (in principle) mainly technical aspects of Internet governance, because they provide an opportunity to test IPA's approach to informal and private regulatory authority beyond the State.

As we have seen, there are two distinct Internet governance functions that, at the global level, are performed mainly by informal and private organizations: technical coordination and technical standardization. The first is carried out by ICANN, whereas two non-state organizations stand out as the most important developers of Internet standards globally: the IETF and the W3C.[98] In what follows, I first provide a brief account of ICANN (D. I.) and then turn to consider whether the development of IETF and W3C's main standards can be reconstructed as an exercise of authority (D. II.) of the kind that is relevant from the perspective of public law (D. III.).

I. Technical Coordination: ICANN and Functional Equivalence

The most relevant Internet-specific institution involved in technical coordination is ICANN. It is constituted as an institution of private law – a non-profit corporation under California Law. As such, it has a public interest purpose.[99] ICANN has exclusive global authority over the allocation and assignment of Internet unique identifiers – Internet domain names and IP numeric addresses – which situates it at the apex of one of the core regimes in global Internet governance and makes it the center of control over the global Internet. This authority over top-level domain names and IP addresses derives, in fact, from its control of the root zone file – the Internet Assigned Numbers Authority (IANA) functions – which was delegated to ICANN through a contract with the United States Department of Commerce's National Telecommunications

[98] Lips & Koops, *supra* note 23, 117.

[99] *California Corporate Code*, para. 5111. Available at http://www.leginfo.ca.gov/.html/corp_table_of_contents.html (last visited 8 May 2016).

and Information Administration (NTIA).[100] The organization's claim that it represents the global public is based on the multi-stakeholder model, an institutional structure that represents the diverse constituencies that are affected by its regulatory activity.

The idea that ICANN's activity entails the exercise of public authority underlies much of the abundant literature that has been produced on the organization from its very inception.[101] Many of the critical assessments and proposals to reform ICANN have implicitly or explicitly followed a public law approach.[102] The notion that ICANN poses the kind of legitimacy problems that public law addresses was therefore established well before public law theories of global governance came to provide a theoretical justification for analyzing the legitimacy of institutions of its kind in terms of public law. In this respect, the organization has been analyzed under the lens of the two main theoretical alternatives to IPA: constitutional pluralism and global administrative law (GAL). Regarding the former, some reconstructions of global Internet governance in general, and of ICANN specifically, are based on the thesis that private transnational regimes and organizations are susceptible of developing, and ought to develop, as constitutional legal-political systems.[103] GAL literature, by contrast, sees ICANN's regulatory activity as *administration* and analyzes ICANN's accountability and legal framework in terms of administrative

100 DeNardis, 'Internet Governance', *supra* note 23, 15; Froomkin, *supra* note 100, 839.

101 E.g. H. Klein, 'ICANN and Internet governance: Leveraging technical coordination to realize global public policy.' 18 *The Information Society* (2002) 3, 193; J. Palfrey, 'The End of the Experiment: How ICANN's Foray into Global Internet Democracy Failed', 17 *Harvard Journal of Law & Technologoy* (2003) 409; J. Weinberg, ICANN and the Problem of Legitimacy', 50 *Duke Law Journal* (2000) 1, 187.

102 Even if much of this literature is pragmatically oriented and its use of such concepts is rather heuristic. E.g. "In a certain sense ICANN encompasses the classic state functions of the legislative (i.e. the determination of top level domains), executive (allocation of sub-domains), and judiciary branches. However, any separation of powers is missing as is an unambiguous democratic legitimacy." Holznagel & Werle, *supra* note 36, 25.

103 A. C. Jamart, 'Internet Freedom and the Constitutionalization of Internet Governance', in R. Radu, J.-M. Chenou, & R. H. Weber (eds), *The Evolution of Global Internet Governance. Principles and Policies in the Making* (2013), 57; R. H. Weber & R. S. Gunnarson, 'A Constitutional Solution for Internet Governance' 14 *Columbia Science and Technology Law Review* (2012) 3.

law.[104] IPA too has recognized ICANN's importance.[105] It identifies ICANN as the paradigmatic case of private institution whose authority is functionally equivalent to international public authority, and illustrates the articulation of this particular criterion for extending public law analysis beyond public law institutions precisely with ICANN's example.[106] The idea that public law is useful for assessing and improving the legitimacy of ICANN's unique identifiers regime is thus accepted by all three theories.

II. Technical Standardization: The Exercise of Authority by the IETF and the W3C

While critical public law discourse has so far focused on ICANN, authors such as Wessel have already suggested that a more comprehensive approach to global Internet governance should extend beyond the unique identifiers regime and embrace the private and informal institutions that prevail in technical standardization. Although Wessel does advance the idea that the IETF exercises international public authority, an account of such authoritativeness and a justification of its public character remain to be provided.[107] The purpose of this section and the following one is to test the grounds for the thesis that the development of some Internet technical standards qualifies as an exercise of the kind of authority that should be analyzed through the lens and framed by public law. Rather than an exhaustive study of all the institutions involved in Internet technical standardization, this section focuses on the IETF and the W3C as the organizations that develop the most important Internet standards. In order to do so, I first provide a brief account of such standards and institutions. I

104 M. Andjelkovic, *Internet Governance: In the Footsteps of Global Administrative Law* (2006); Carotti & Casini *supra* note 97; B. Carotti, 'Alternative Dispute Resolution: The ICANN's Uniform Dispute Resolution Policy (UDRP)', in Cassese *et al.*, *supra* note 97, 154; B. Carotti, 'New Protection Mechanisms: The ICANN's Reconsideration Committee and the Verio case', in Cassese *et al.*, *supra* note 97, 160.

105 M. Hartwig, 'ICANN – Governance by Technical Necessity' in Bogdandy *et al.*, *supra* note 41, 575, 605.

106 Bogdandy, Dann & Goldmann, *supra* note 45, 14.

107 R. Wessel, 'Regulating Technological Innovation through Informal International Law: The Exercise of International Public Authority by Transnational Actors' in M. A. Heldeweg & E. Kica (eds), Regulating Technological Innovation: A Multidisciplinary Approach (2011), 77, 88; although Wessel does apply IPA's conception of international public authority to several global Internet governance institutions, including the IETF, the main purpose of his analysis is to identify *informal international law* regulating technological innovation in Internet governance.

then introduce the *code thesis* and the economic concept of network effects or externalities, which combined explain how the production of such standards may qualify as an exercise of authority in IPA's sense. Finally, in the last section, I turn to the question whether such authority is public or functionally equivalent to that of technical standards developed by international public organizations, thus requiring a public law analysis.

1. The Development of Technical Standards for the Internet

The Internet is a global network of electronic data networks, a worldwide digital communications system over which an ample variety of ICT-based services and products are offered. These services and products require the diverse technologies in which they are based to be interoperable, and technical standards or communications protocols are what enable such technical interoperability. ICT technical standards or protocols can be defined as published instructions or specifications, i.e. sets of technical rules and conventions, that enable computing devices to exchange information over a given physical infrastructure or hardware.[108]

Although their general function is to provide interoperability among diverse technologies, the operation of the Internet involves a combination of myriad protocols with more specific functions – such as breaking data into packets or switching and routing them over the Internet – which are invisible to the general Internet user. Internet standards broadly conceived comprise any technical standards produced for the Internet,[109] but the most important

[108] Mathiason *et al*., *supra* note 25, 6; Solum, *supra* note 39, 67. As L. DeNardis explains, ICT technical standards or protocols "are not software code nor material products but are language – textual and numerical language. They are the blueprints that enable technical interoperability among heterogeneous technology products." In general, they "[…] provide order to the binary streams (0s and 1s) that represent information and that digital computing devices use to specify common data formats, interfaces, networking conventions, and procedures for enabling interoperability among devices that adhere to these protocols, regardless of geographical location or manufacturer." In DeNardis, ‚Internet Governance', *supra* note 23, 6. *Network* protocols are in fact a subset of ICT technical standards, those that operate at the network layer of an electronic communications system such as the Internet – the technical standards for internetworking proper – but the term is often used in reference to ICT standards generally.

[109] Internet standards narrowly conceived are associated with the IETF, which defines them as follows: "a specification of a protocol, system behaviour or procedure that has a unique identifier, and where the IETF has agreed that 'if you want to do this thing, this is the description of how to do it'. I take the distinction between broad and narrow conceptions of Internet standards from Malcolm, but widen it to cover also non-committee standards

Internet standards are a set of standards known as the *Transmission Control Protocol/Internet Protocol (TCP/IP) suite*. These are the protocols that constitute the logical backbone of the Internet.[110] Some of them are necessary for virtually any end-to-end communication over the Internet,[111] and others for the most common modalities of Internet use.

TCP/IP is also a model that classifies protocols according to their function.[112] The TCP/IP model is divided into four functional layers. Each layer provides service to the layer on top of it, and is a client for the layers under it. The most fundamental functional layer of the TCP/IP model is the *link layer*, and it includes all those protocols enabling communication between computing devices and transmission media, such as Ethernet, Digital Subscriber Line (DSL) or Wi-Fi. On top of it, we find the *internet layer*, where the Internet Protocol (IP) suite – including both the IPv4 and IPv6 versions – itself operates, and which allows for *internetworking* proper, i.e. for the addressing and routing of data packets among different networks. On top of the Internet layer, the transport layer of functional abstraction includes protocols such as the Transmission Control Protocol (TCP) and User Datagram Protocol (UDP), which break and reassemble data into packets and control errors in their delivery. The highest layer of functional abstraction, finally, is the *application layer*, which includes all those protocols regulating the interaction between the Internet and programs using the Internet (software or applications), including Hypertext Transfer Protocol (HTTP), Domain Name System (DNS), Simple Mail Transport Protocol (SMTP), and File Transport Protocol (FTP). From the original two protocols, the TCP/IP suite has gradually expanded to include those that enable what have become mainstream modalities of Internet communication, such as those enabling the exchange of sound, image, and video – like MP3, JEPG, or MPEG – Voice over IP (VoIP) protocols, or Internet access standards.[113]

– standards developed outside standard setting organizations, or market standards; Malcolm, *supra* note 25, 51.

110 Mathiason, *supra* note 4, 11; Mathiason *et al.*, *supra* note 25, 6–7.

111 R. Braden (ed.), 'Requirements for Internet Hosts -- Communication Layers' (1989), available at http://tools.ietf.org/html/rfc1122 (last visited 8 May 2016).

112 L. Lessig, *Code and Other Laws of Cyberspace. Version 2.0*, (2006), 143–145 [Lessig, Code: Version 2.0].

113 DeNardis, 'Internet Governance', *supra* note 23, 7–8. Although in practice they are necessary not only for the Internet but for any communications system, the standards that operate at the lower layer of the OSI model – the physical layer of the OSI model – fall out of the scope of the TCP/IP model and cannot, therefore, qualify as Internet standards. The Internet is just one of the communications systems running on telecommunications networks, and it is compatible with any physical infrastructure or hardware. See, for a

The standards of the TCP/IP suite are committee standards, i.e. standards developed and maintained in standard setting organizations.[114] Until the Internet became the global communications facility it is today, the technical standards that enabled telecommunications across borders were developed essentially at the ITU, an international organization with an explicit international legal mandate for it. Its standards may have legal character, as is the case of the standards incorporated in the International Telecommunications Regulations, an international treaty, or quasi-legal character, as is the case of ITU Telecommunications Sector's (ITU-T) Recommendations.[115] The ITU and the international telecommunications regime constituted the international public law layer of a mainly public and heavily regulated system of information and communication networks.[116] Since the 1980s, however, the privatization of national public service monopolies and the liberalization of information and communication goods and services markets have gradually situated the ITU and the international telecommunications regime within a growing, hybrid regime complex and, especially since the emergence of the Internet, exposed it to regulatory competition from other organizations.[117] Whereas public international organizations such as the WTO or the WIPO have come to play a significant role in a variety of global Internet-related policy domains, the convergence of information and communication services over the Internet

synthetic account of the functionally layered structure of the Internet, including both the seven-layer model of the OSI model and the four-level TCP/IP model, Mathiason *et al.*, *supra* note 25, 6. On the regulatory implications of the layered structure of the Internet, see L. B. Solum & M. Chung, 'The Layers Principle: Internet Architecture and the Law (No. 55)' (2003), available at http://ssrn.com/paper=416263 (last visited 8 May 2016); K. Werbach, 'A Layered Model for Internet Policy', 1 *Journal on Telecommunications & High Technology Law* (2002), 37.

114 As opposed to *market* standards, which are developed by private companies and become *de facto* standards if widely adopted in the market. On the distinction between *committee* and *market* as modalities of standards development, see R. Werle & E. Iversen, 'Promoting Legitimacy in Technical Standardization', 2 *Innovation* (2006) 19, 22 [Werle & Iversen, Promoting Legitimacy]. In fact, "[the] market is the ultimate selection environment for technologies and this is the default situation for the diffusion of standards incorporated in the technology", ibid., 21.

115 Malcolm, *supra* note 23, 51; J. Hinricher, 'The Law-Making of the International Telecommunication Union (ITU) – Providing a New Source of International Law?' 64 *Zeitschrift für ausländisches öffentliches Rechts* (2004) 489, 490, 495.

116 Drake, 'Network Global Governance', *supra* note 29, 32; Werle & Iversen, Promoting Legitimacy, *supra* note 113, 22–24.

117 Reconstructing the relationships between ITU-T and the IETF in terms of regulatory competition, for example, Mathiason *et al.*, *supra* note 25, 17.

has also exposed ITU-T's standard-setting activities to competition from dozens of (often ephemeral, *ad-hoc*) industry consortia and a few major informal and private organizations.[118] In fact, the ITU remains the main public international organization involved in this regulatory function,[119] but the development and maintenance of the TCP/IP suite of standards is concentrated in two main venues: the IETF and the W3C.[120]

The IETF has historically had and continues to have, *de facto* authority to develop and maintain the bulk and core of Internet standards, including most of the TCP/IP protocol suite.[121] It has "general responsibility for making the Internet work and for the resolution of all short- and mid-range protocol and architectural issues required to make the Internet function effectively."[122] The W3C, in turn, develops the standards of the World Wide Web. Thus, whereas the IETF produces standards for every functional level or layer of the Internet model, the standards developed by the W3C operate at the application layer, because that is where the Web is functionally situated. This renders W3C standards less fundamental than those produced by IETF, but it is nonetheless widely regarded as one of the governors of the Internet because the World Wide Web is one of the most important applications running on the Internet. Both

118 Industry, academy, and technical experts form groups to solve shared technical or regulatory problems through technical standards – often involving representatives from public actors too – be it with a view to implementing State legislation through standards or in response to a purely private, autonomous regulatory initiative, "to assuage specific interests of private groups". See J. P. M. Bonnici, *Self-Regualtion in the Cyberspace* (2008) *supra* note 15, 119, 121.

119 It has developed standards of importance for the Internet, such as certain IP-based voice service and security standards. DeNardis, 'Internet Governance', *supra* note 23, 9.

120 See, for a detailed account of both organizations: H. Alvestrand & H. V. L. Lie, 'Development of core Internet standards: The work of IETF and W3C', in Bygrave & Bing, *supra* note 2, 126. Worth mentioning as well is the International Standards Organization (ISO), which developed its own Open System Interconnection model (OSI Model, defined in ISO/IEC standard 7498-1:1994) as an alternative to TCP/IP. Other informal standard setting organizations usually included in accounts of technical standardization as a global Internet governance function are the Institute of Electrical and Electronics Engineers (IEEE), which is the developer of the Ethernet Local Area Network (LAN) and Wi-Fi (or 802.11 wireless LAN) standards, and the European Telecommunications Standards Institute (ETSI). For an overview including other private industry consortia too, see e.g. Malcolm, *supra* note 23, Chapter 2.2. Comparing several of these institutions, see Werle & Iversen, *supra* note 114.

121 DeNardis, 'Internet Governance', *supra* note 23, 8.

122 V. Cerf, 'The Internet Activities Board. Request for Comments', Network Working Group (1990) available at https://tools.ietf.org/html/rfc1160 (last visited 9 May 2016).

organizations cooperate closely in the development of their respective standards, but the IETF has deferred Web standards development to the W3C.[123]

What matters for our purposes is that, unlike ICANN – which exercised legally delegated authority – neither the authority of the IETF nor that of the W3C have a legal basis.[124] Although the standards they produce are not only transnational but, especially in the case of those of the IETF, precisely what confer the Internet its worldwide unity, both institutions are informal from the perspective of international law. In fact, neither of them is incorporated as a legally autonomous entity.[125] They both rely, however, on distinct private law institutions in order to carry out certain activities.[126]

The IETF is an "unincorporated, freestanding organization" without legal personality of its own.[127] It defines itself as the organizational incarnation of a functionally defined community: "an open global community of network designers, operators, vendors, and researchers producing technical specifications for the evolution of the Internet architecture and the smooth operation of the Internet."[128] It has no formal membership, and there are no formal requirements to participate in IETF's working groups, where most of the work is done – for free in the case of its all-important mailing lists, for a fee in the case of IETF's physical meetings. IETF's legal informality should not be mistaken, however, for informality in a wider, socio-institutional sense. In fact, as the venue and process through which the Internet community develops and maintains Internet technical standards, the IETF is a remarkably formal institution "in the sense of organizational sociology."[129] The organic structure and norm development process of the organization are laid out in a complex institutional normative order, systematically documented and published – rather than in bylaws or

123 D. W. Connolly & L. Masinter, 'The 'text/html' Media Type. *Request for Comments*', (2000) available at https://tools.ietf.org/html/rfc2854 (last visited 21 April 2016); Malcolm, *supra* note 23.

124 For a synthesis of the legal bounds between the US and ICANN, see Etten & Mueller, *supra* note 23, 61–63.

125 Bygrave & Michaelsen, *supra* note 2, 98, 101; Malcolm, *supra* note 23, 52, 56.

126 Bonnici, *supra* note 15, Chapter 7; Price & Verhulst, *supra* note 16.

127 P. Hoffman & S. Bradner, 'Defining the IETF. *Request For Comments*' (2002), 2, available at https://tools.ietf.org/html/rfc3233 (last visited 9 May 2016). It "exists as a collection of happenings, […] and has no board of directors, no members, and no dues." Ibid.

128 H. T. Alvestrand, 'A Mission Statement for the IETF. *Request for Comments*' (2004), available at https://tools.ietf.org/html/rfc3935 (last visited 09 May 2016), sec. 3.1.

129 Bogdandy, Dann & Goldmann, *supra* note 45, 15.

articles of incorporation – in a series of documents called Requests for Comments (RFC).[130]

IETF's links with private legal entities further qualify such informality. The most important of such links is with the Internet Society (ISOC). Internet standards development is an organized activity of ISOC.[131] Unlike the IETF, ISOC is a non-profit corporation, legally constituted under the District of Columbia Non-Profit Corporation Act, and registered in Washington, D.C.[132] As such, ISOC's public interest purposes include, among others, to support Internet standardization by providing funds, logistical support, legal assistance, and civil responsibility insurance for standards development.[133] Its establishment in 1992, several years after IETF's creation in 1986, aimed precisely at the institutionalization of responsibility for standards development:[134] it "serves as the organizational backstop for the IETF whenever a formally recognizable organization is required."[135] Besides the IETF, ISOC provides an institutional umbrella for other informal organizations involved in the production of Internet standards, the most important one being the Internet Architecture Board (IAB), which oversees IETF's work and is constituted both as a committee of the IETF and as an advisory body of ISOC.[136] In fact, although it is a distinct organization,

130 IETF's purposes, structure and standard development process are laid out mainly in J. Galvin, 'A Mission Statement for the IETF', RFC 3935, June 2004; S. Bradner, 'The Internet Standards Process-Revision 3', BCP 9, RFC 2026, October 1996; J. Galvin, 'IAB and IESG Selection, Confirmation, and Recall Process: Operation of the Nominating and Recall Committees', BCP 10, RFC 2727, February 2000; R. Hovey & S. Bradner, 'The Organizations Involved in the IETF Standards Process', *Network Working Group* (1996) available at https://tools.ietf.org/html/rfc2028 (last visited 9 May 2016); Hoffman & Bradner, *supra* note 127; IETF, 'The IETF in the Large: Administration and Execution', *Network Working Group* (2004). *Request For Comments*, available at https://tools.ietf.org/html/rfc3716 (last visited 9 May 2016).

131 Alvestrand & Lie, *supra* note 120, 130.

132 See ISOC's Articles of Incorporation, Arts 3 and 8.

133 Hoffman & Bradner, *supra* note 127.

134 Bygrave & Michaelsen, *supra* note 2, 95. Intellectual property rights infringement is one of the kinds of legal responsibility the IETF may incur. By owning a standard, the IETF assumes responsibility for it. This is why in 2005 an IETF Trust was created, in order to hold and manage IETF's intellectual property (RFC 5378, para. 1.h).

135 Alverstrand & Lie, *supra* note 120, 130.

136 Bygrave & Michaelsen, *supra* note 2; The Internet Engineering Steering Group (IESG) – the Internet Research Task Force (IRTF) and the Request for Comments Editor complete this family of institutions. Although they are sometimes analyzed separately, the first is in fact an organ of the IETF, composed of the area directors and the chair of the IETF, the second is not directly involved in the development of particular Internet standards,

the IETF is so closely interwoven with ISOC and, through it, with the rest of the organizations involved in the technical development and management of the Internet that some consider them as one, or capture the entire set of actors as a network.[137] Nonetheless, its authority can be analyzed separately because the *Internet Standards Track* – the process by which Internet standards come into being – takes place entirely within the IETF.[138] ISOC and IAB do have, however, significant influence over that process. ISOC was established with a claim of authority for "ratifying the procedures and rules of the Internet standards process."[139] In practice it has simply recognized the procedures developed by the IETF, though. Whereas ISOC is not directly involved in the development of particular standards,[140] the IAB approves new Working Groups, which shoulder the bulk of the work in the development of an Internet standard. It also appoints individuals occupying various key positions within the IETF, and it is the final appeals authority for decisions of lower IETF organs – i.e. Working Group Chairs, Area Directors, and the Internet Engineering Steering Group – in disputes over technical issues.[141] The final authority over procedural disputes lies in ISOC's Board of Trustees.[142] In sum, although the IETF is not legally incorporated as such, it relies on several private-law institutions to carry out those aspects of its activity that require a legal personality, and is closely tied with other informal institutions. It should not be conflated, however, with

and the third is responsible for editing, publishing and registering RFCs. Bygrave & Michaelsen, *supra* note 2, 95; Malcolm, *supra* note 23, 32. It is also worth mentioning the Internet Assigned Names Authority (IANA), currently contracted to ICANN, which acts as a registry for protocol parameters. As Malcolm points out: "In general, the interrelationships between these organizations [are] not lines of authority but merely of informal oversight or 'guidance,' mostly as posited in RFCs rather than in agreements or international instruments." Malcolm, *supra* note 23, 38. On the relationship between the IETF and these other organizations, see Hovey & Bradner, *supra* note 130.

137 Wessel, for example, presents it together with ISOC in Pauwelyn, Wessel & Wouters, 'Exercise of Public Authority', *supra* note 75; for a network analysis, see Eeten & Mueller, *supra* note 23, 217. The IETF is often regarded, however, as distinct and autonomous enough so as to be analyzed separately. Alverstrand & Lie, *supra* note 120, 135; Malcolm, *supra* note 23, 52–55.

138 The Internet Standards Track is defined in RFC 2026; see also Hovey & Bradner, *supra* note 130.

139 Hoffman & Bradner, *supra* note 127, 2.

140 Alverstrand & Lie, *supra* note 120, 135.

141 See B. Carpenter (ed.), Charter of the Internet Architecture Board. RFC 2850, BCP 39, May 2000. Section 2.

142 Alverstrand & Lie, *supra* note 120, 131.

either of such organizations. At most, one can regard it as a partially juridified organization, informal but with private law tentacles.

The same can be said of the W3C, with a few differences. The W3C was established in 1994 and is also unincorporated. Like the IETF, it has no bylaws, but a *W3C Process Document*, which members sign upon entrance and remain bound by. Unlike the IETF, which does not have permanent members but only participants, the W3C does have formal membership. It comprises different organizations – including public and private ones, such as academic or research institutions, Web industry corporations, etc. – as well as individuals, which pay different fees in function of the Gross Domestic Product of their country. Just like the IETF, the W3C relies on legally formal institutions to support its activity: the Massachusetts Institute of Technology, Laboratory for Computer Science (MIT/LCS), Keio University of Japan; the European Research Consortium in Informatics and Mathematics (ERCIM); and Beihang University. The process by which the W3C develops its Recommendations is also very similar to that of the IETF: open and based on *rough consensus* – declared by W3C director Tim Berners Lee. Participation is open to the public, although participants are required to be not only interested but also *informed*.[143]

Like the organizations themselves, IETF and W3C standards are also legally informal. They are *voluntary* – as opposed to legally or politically *mandatory* – standards.[144] There is no international legal obligation to adopt them, and their normative content is not legally binding – they are not incorporated into the international legal system. Neither are they intended to be obligatory in any other sense. This is explicitly recognized, for example, in RFC 3935, Section 2: Internet standards do "not imply any attempt by the IETF to mandate its use, or any attempt to police its usage – only that 'if you say that you are doing this according to this standard, do it this way.'" To put it differently, unlike the authority to *develop and maintain* the TCP/IP suite, which is concentrated, as a matter of fact, in the IETF and W3C, standards adoption is coordinated in a distributed way, left to the market itself.[145] Whether a given protocol is adopted

143 Malcolm, *supra* note 23, 56.

144 On the distinction between voluntary and mandatory standards, see Werle & Iversen, *supra* note 114, 21–23.

145 As we have seen the market is the "ultimate selection environment" for technology standards generally. Werle & Iversen, *supra* note 114, 21. Protocol adoption or implementation is different from protocol development and management, and their institutionalization differs significantly too: "Areas of centralized coordination exist in the development and administration of technical protocols, but decisions about protocol adoption are decentralized and involve the coordinated action of Internet operators and service providers,

depends on whether network operators, vendors of software and hardware, and Internet users choose to implement and use it. In consequence, not all standards developed at the IETF achieve the same degree of market penetration. As Liu explains:[146]

> "The central and salient fact about the Internet coordination process is that no central body has the de jure authority to mandate adoption of the standards published in the RFCs. The Internet is a network with distributed intelligence. Because no single computer controls the Internet, the adoption of a given standard cannot be made at a single locus but, instead, must be adopted in a distributed fashion by all of the computers on the Internet. The miraculous part is that this occurs without any formal mandate or legal obligation. With a surprising degree of non-centralized coordination, the standards are voluntarily adopted by thousands of system operators all throughout the Internet."

To sum up, the IETF and the W3C are informal from the perspective of international law, both in the sense that they are not incorporated as international legal entities, and in the sense that their standards are not legally binding. They rely, however, on formal, including private law institutions to perform their functions – which as we have seen does not entail that the authority they exercise is private. If the production of Internet technical standards is to qualify as an exercise of authority of the kind that are the object of public law, it must be in virtue of some non-legal ground.

governments, and individuals overseeing countless network components and segments that comprise the global Internet." DeNardis, 'Internet Governance', *supra* note 23, 5. The different ways in which the development, administration and adoption of protocols can be organized can be reconstructed by reference to the distinction between *open* and closed or *proprietary* standards. The core protocols of the Internet are "open and non-proprietary standards that can be freely adopted by anyone." Mathiason *et al.*, *supra* note 25, 7. However, many of the standards that operate on the Internet are closed or proprietary, i.e. developed by private companies or consortia with a commercial interest, protected by intellectual property rights, and thus not available for other technology developers to create interoperable systems. For a synthetic account of the much discussed distinction between open and closed/proprietary standards, see DeNardis, 'Open Standard', *supra* note 30, 171.

146 J. P. Liu, 'Legitimacy and Authority in Internet Coordination: A Domain Name Case Study', 74 *Indiana Law Journal* (1999) 2, 587, 596.

2. Internet Technical Standardization as an Exercise of Authority

Just as in ICANN's case, the idea that Internet standards development involves the exercise of authority underlies much of the literature on Internet standards. It is widely recognized that Internet technical standards have "behavioural" or "regulatory effects,"[147] i.e. that they constrain conduct and may be used to induce general behavioural patterns. In fact, the actors and institutions involved in Internet standards development are well aware of these effects. IETF's mission statement, for example, explicitly acknowledges the organizations' regulatory purpose.[148] But how is it that Internet standards modify the factual situation of actors so as to affect a legally or morally defined conception of freedom? In order to understand their authoritativeness, it is useful to distinguish the mechanisms by which Internet technical standards regulate two different sets of conduct: the operation and use of such technology, on the one hand, and the decision to adopt or implement a standard and to use the technology based on it, on the other. There are two main explanations for such regulatory effects in the literature on Internet governance, which combined may justify regarding at least some of the standards in the TCP/IP suite as authoritative in IPA's robust sense: Internet technical standards, and the organizations that produce them, may be regarded as authoritative because they constitute the *code* of the Internet a) and because network externalities may render them economically compulsory b).

a) A first factor explaining why technical standards may qualify as instruments for the exercise of authority is their capacity to directly determine the way in which the technology based on them operates and, thereby, to indirectly constrain the way in which such technology can be used. In the case of the Internet, and of cyberspace in general, these complex regulatory effects have been theorized as the *code thesis*. The code of the Internet is the set of technical standards that constitutes it logically and defines its technical architecture. In its current form, the code of the Internet is the TCP/IP protocol suite.[149] The code thesis is that "[...] the software and hardware (i.e. the "code" of the Internet) that

147 E.g. Bonnici, *supra* note 15, 117–118.

148 "The mission of the IETF is to produce high quality, relevant technical and engineering documents *that influence the way people design, use, and manage the Internet* in such a way as to make the Internet work better."(Emphasis added) Alvestrand, *supra* note 128, 1.

149 Solum, *supra* note 39, 67–68. On Internet architecture, see RFC 1958, "Architectural Principles of the Internet" (June 1996) (describing Internet's technical architecture as layered and based on the end to end principle).

make cyberspace what it is also regulate cyberspace as it is".[150] The technical architecture of the Internet regulates the Internet by determining the functions it performs and the way it performs them, by enabling certain behaviours and disabling others.

The code of the Internet regulates not only the activity of network operators or Internet service providers, but also, indirectly, the behaviour of Internet users understood broadly – from individuals playing online games to private corporations using instant messaging for internal communications or States offering public health services through e-health applications over mobile devices.[151] In other words, code regulates what has traditionally been conceptualized as *carriage* activities, but it may have regulatory effects over the *content* carried over the networks as well, and freedom can be affected in both of these domains.[152] It can be used both as an instrument for the regulation *of* technology and as an instrument for regulation *through* technology. And because it defines what is feasible on the Internet and modulates the way it can be done, the design of code may involve what can be qualified as regulatory choices. Engineering choices may have a normative-political dimension.[153] This is why the capacity to develop the TCP/IP protocol suite is an important *point of control* over the Internet.[154]

Perhaps the clearest examples of technical standards affecting freedom are those protocols developed explicitly to protect fundamental rights, such as privacy or freedom of expression. In the case of the W3C, there are two standards that are commonly referred to as examples of self-regulation of freedom of expression and privacy: the Platform for Internet Content Selection (PICS), which sought to allow parents and educators to prevent children from accessing certain content by rating websites with a meta-tag system, and the Platform for Privacy Preferences (P3P), which enabled users to control what personal information

150 Lessig, *Code: Version 2.0*, *supra* note 112, 5. In Lessig's words, "[life] in cyberspace is regulated primarily through the code of cyberspace […] Code is a regulator in cyberspace because it identifies the terms upon which cyberspace is offered. And those who set those terms increasingly recognize code as a means to achieving the behaviors that benefit them best." Lessig, *Code: Version 2.0*, *supra* note 113, 83–84.

151 On the increasing use of technical standards to regulate user behaviour in network environments, see D. Benoliel, 'Technological standards, inc.: Rethinking cyberspace regulatory epistemology' 92 *California Law Review* (2004) 4, 1069–116.

152 Bonnici, *supra* note 15, 117; Holznagel & Werle, *supra* note 36.

153 "In cyberspace in particular, but across the Internet in general, code embeds values" Lessig, *Code: Version 2.0*, *supra* note 112, 114.

154 DeNardis, 'Open Standard', *supra* note 30, 190–191.

is available to websites, and thus the degree to which their online behaviour is exposed.[155] IETF's Internet Protocol Version 6 (IPv6) standard is perhaps the most important example of how protocols below the application layer affect fundamental rights and freedoms. IPv6 was developed to regulate Internet access. It sought, more specifically, to solve the problem of IPv – 4the previous version – and address space exhaustion, but its design involved the possibility to maintain or modify aspects of the technical architecture of the Internet that had been coded on the previous versions of the protocol. As DeNardis explains, "Internet engineers chose to architect some privacy protections into the design of IPv6 addresses."[156]

Within legal scholarship, the conceptualization of code as a regulator of behaviour in cyberspace and on the Internet opened up a debate about its legal status. Reidenberg famously referred to the rules imposed through the technical architecture of the Internet as *lex informatica*.[157] Building on Reidenberg, Lessig metaphorically asserted that, in cyberspace generally and in the Internet in particular, "code is law."[158] One of IPA's insights, however, is that the legal status of a regulatory instrument can be analyzed separately from its authoritativeness, and that only the latter needs to be established for public law standards to be applicable to the instrument in question. Lessig's metaphorical equation between code and law remains valuable precisely for this latter purpose. It highlights that, in cyberspace and on the Internet, technical standards can be as effective a regulatory instrument as legal instruments are, if not more so. Indeed, one of the main commonalities between code and law is precisely their efficacy as means

155 Bonnici, *supra* note 15, 124–127; Malcolm, *supra* note 23, 83–84.

156 DeNardis, 'Open Standard', *supra* note 30, 191.

157 J. R. Reidenberg, 'Lex informatica: The formulation of information policy rules through technology', 76 *Texas Law Review* (1998) 3, 553.

158 Lessig, *Code: Version 2.0*, *supra* note 112, Chapter 1. In fact, Lessig refers the idea to William Mitchell. W. Mitchell, *City of bits: Space, Place, and the Infobahn* (1995), 111. In response to criticism based on literal readings of this equation of code and law, Lessig later underlined its metaphorical character. See, from a rich literature, E. J. Dommering, 'Regulating Technology: Code is not Law' in E. J. Dommering & L. F. Asscher (eds), *Coding Regulation: Essays on the Normative Role of Information Technology*, (2006), 1; P. Kleve & R. De Mulder, 'Code is Murphy's Law', 19 *International Review of Law, Computers & Technology* (2006) 3, 317; Lessig, *Code: Version 2.0*, *supra* note 112; T. Wu, 'When Code Isn't Law', 89 *Virginia Law Review* (2003), 679. For an example of a legal pluralist perspective on the legal character of code, see V. Karavas & G. Teubner, 'http://www.CompanyNameSucks.com: The Horizontal Effect of Fundamental Rights on Private Parties within Autonomous Internet Law' *bepress Legal Series Working Paper* 23 (2003), available at http://law.bepress.com/expresso/eps/23 (last visited 9 May 2016).

to constrain behaviour. In fact, as a modality of *techno-regulation*,[159] regulation through code can be more compelling, more irresistible than legal regulation because of "its capacity to eliminate the possibility of violation and to by-pass practical reason in its entirety."[160] The fact that, from the perspective of the user or the operator of a technology, it is not a motivation-based regulatory technique, its self-enforcing character,[161] sets regulation through code apart from the traditional modalities of regulation. This makes an interesting addition to Goldmann's so far motivation-based typology of authority.

b) Technical standards are, thus, a particularly compelling regulatory technique, because they exclude the possibility of disobedience, leaving no choice to those subject to them. But protocols can deploy their regulatory effects only over the conduct of those who *choose* to implement the standard or to use the technology on which it is based. Insofar as such choice is not compulsory, the capacity to create technical standards cannot be regarded as an exercise of authority in IPA's sense.[162] As we have seen, however, IETF and W3C's standards are not legally mandatory. What is it, then, that brings the actors controlling the myriad networks and computing devices that make up the Internet to rely on IETF's Internet standards and W3C's Recommendations? Two sets of reasons explain their observance: social forces and market forces.[163]

From a social perspective, a number of factors confer the organizations with *de facto* legitimacy within the Internet community. The IETF is, in the first place, the customary standard setting organization for the Internet,[164] and

159 "[…] [We] can express the distinctive nature of techno-regulation in the following way. Where the ideal-type of techno-regulation is instantiated by regulators, having identified a desired pattern of behaviour (whether morally compliant or not), secure that pattern of behaviour by designing out any option of non-conforming behaviour. Such measures might involve designing regulatees themselves, their environments, or the products that they use in their environments, or a combination of these elements. Where techno-regulation is perfectly instantiated there is no need for either correction or enforcement." Brownswood, 2005, *Code, Control and Choice: Why East is East and West is West*", as cited in: B. Morgan & K. Yeung, *An Introduction to Law and Regulation* (2007), 104.

160 In other words: "While communication-based techniques appeal to rational human reasoning in seeking to bring about behavioural change, code-based (or architecture-based) techniques operate in direct contrast, seeking instead to eliminate undesirable behaviour by designing out the possibility for its occurrence." Ibid., 102.

161 Karavas & Teubner, *supra* note 158.

162 "*Once accepted and adopted*, technical standards have an absolute and automatic binding effect on the parties using the standards." (Emphasis added) Bonnici, *supra* note 15, 118.

163 Alverstrand & Lie, *supra* note 122, 135; Froomkin, *supra* note 100, 837.

164 Liu, *supra* note 146, 596.

so is the W3C with respect to the Web. In addition, its standards are widely presumed to be not only functional but of technical quality. This confidence is based on the way the *Internet standards track* blends technical expertise with inclusiveness – it is an open process, based on a technically informed consensus, and it incorporates practical testing – and on the experience of standards implementers with generally well-working IETF standards.[165] Since the process by which it develops its Recommendations is very similar,[166] the same can be said of the W3C. Last but not least, participation in these institutions is well-regarded in the Internet community: "the people who do the engineering take pride in making and implementing those standards."[167]

But what renders at least some IETF and W3C standards authoritative in IPA's sense are economic factors.[168] Even if they are not legally binding, voluntary standards may come to qualify as instruments for the unilateral affectation of freedom because of certain market forces: the *network effects or externalities* that characterize network industries like the Internet.[169] In such industries, the wider a standard is adopted, the more valuable become the technologies implementing it. But the more pervasive its adoption, the higher become the costs of not implementing the standard in question, which may rise to an extent that effectively excludes the possibility of not implementing the standard or using the technology based on it. Due to these network externalities, opting out of some of the standards in the TCP/IP suite comes at an impossible cost.[170] Not every IETF and W3C standard is authoritative, however. Only if they reach a certain critical mass of implementers and users may certain standards become economically compulsory. This underscores the importance of the abovementioned social factors, since they motivate standard adoption before such tipping point is reached.[171]

165 Ibid.; As Malcolm puts it: "Internet standards are complied with not because Internet users are compelled by hierarchically-imposed authority to do so, but because they are of high quality, are timely, widely supported, and represent a high level of technical consensus amongst a broad group of experts and users." in Malcolm, *supra* note 23, 51.

166 Malcolm, *supra* note 23, 56.

167 Alverstrand & Lie, *supra* note 120, 135.

168 As Froomkin puts it: "[there] is no question that some Internet Standards, primarily those with network effects, are coercive." in Froomkin, *supra* note 100, 837.

169 M. A. Lemley & D. McGowan, 'Legal implications of network economic effects', 86 *California Law Review* (1998) 3, 479, 483–484.

170 Liu, *supra* note 146, 596–598; O. Shy, *The Economics of Network Industries* (2001).

171 In fact, the point can be made, as Liu does, that the combination of IETF's *de facto* legitimacy and network effects render binding not specific standards but IETF standards generally, and thus the organization itself: "The existing custom of technical coordination

Even protocols that are formally voluntary may become effectively mandatory when network effects neutralize any exit option, i.e. when resorting to alternative protocols would imply a significant loss of value in the function that the standard fulfils. This is the case of the standards necessarily involved in any Internet-based communication, on the one hand, and of those necessary for the most common modalities of Internet use, on the other. The clearest example of the first kind is the IP protocol itself, which falls under the purview of the IETF. IP is "a necessary precondition for being on the Internet", or "the least common denominator for connectivity over the Internet and the protocol used in every instance of Internet connectivity" for which "there are no protocol alternatives at the network layer."[172] There are, however, a number of candidates for authoritativeness in this sense on each of the functional layers of the TCP/IP model, because in order to communicate, Internet hosts "typically must implement at least one protocol from each layer" of the model.[173] Examples of the second kind are HTTP, which is necessary for web-based communications, or SMTP, on which email is based.[174] If one wants to be on the Internet, or if one wants to use the World Wide Web or email, one needs to implement or use these standards; any alternative entails the loss of the value that derives from these technologies' billions of users.

To sum it up in IPA's terms, Internet technical standards can be seen as an instrument for the exercise of authority. The authoritativeness of Internet technical standards derives from the combination of the capacity of standards to determine technology operation and use and the economic network effects that may make their adoption compulsory. In virtue of their *de facto* legitimacy – and of technological path dependence – a significant number of actors implement IETF and W3C standards. If their adoption is wide enough, network externalities obtain and implementation becomes economically binding. Once they are adopted, they automatically determine the way in which the Internet

gives rise to a powerful network externality. Those who fail to adopt a standard widely adopted by others will effectively be severed from the Internet." Liu, *supra* note 146, 596–597.

172 DeNardis, 'Internet Governance', *supra* note 23, 9; "The Internet protocol is only one of thousands of information technology standards, but it is the central protocol required in nearly every instance of Internet use. Computing devices that use IP are on the 'Net'" ibid., 5.

173 "To communicate using the Internet system, a host must implement the layered set of protocols comprising the Internet protocol suite. A host typically must implement at least one protocol from each layer." in Braden, *supra* note 111.

174 Solum & Chung, *supra* note 113, 17.

functions and can be used. This is why creating a standard is at the same time an exercise of authority over standards implementers and over the users of the technology implementing them, even if they are each constrained by different mechanisms. In so doing, they affect the public interest and impact the growing number of rights the effectiveness of which relies on the Internet.

3. The Development of Internet Technical Standards as an Exercise of Public or Functionally Equivalent Authority

Having established the authoritativeness of – at least some – Internet standards, we can now turn to qualify such authority as public or private according to IPA. Technical standards may be instrumental in the exercise of either public or private authority. The IETF and W3C, as well as their standards are usually conceptualized as self-regulatory organizations and instruments, exercising private self-regulatory authority.[175] IPA's original functional equivalence criterion justifies the subjection of private authority to public law principles insofar as it is functionally equivalent to public authority. Establishing the functional equivalence between the authority of the IETF and W3C and that of international public organizations is relatively straightforward. There is a classical international organization, the ITU, which performs exactly the same regulatory activity on a public legal basis. Just like ICANN's allocation and assignment of Internet unique identifiers is functionally equivalent to ITU's allocation of radio spectrum or satellite orbits – both of which are scarce resources whose use requires global coordination – so IETF's and W3C's technical standardization functions are equivalent to the technical standardization activities of ITU's telecommunication or radiocommunication sectors. Moreover, the standards developed at the IETF or the W3C are the logical backbone that constitutes a vital global telecommunications infrastructure. The capacity to develop this logical backbone qualifies as an instance of *global public good direct affectation* and of *global infrastructure management* as much as ICANN's capacity to modify the root zone file or to register protocol parameters.[176] In other words, if ICANN's activity is functionally equivalent to an exercise of public authority, so is that of the IETF and the W3C.

Goldmann's criterion for qualifying authority as public or private requires some further analysis that can only be sketched here. First, regarding the relationship between the authority wielder and the community that it claims

[175] See generally, Bonnici, *supra* note 15, Chapter 6.
[176] Bogdandy, Dann & Goldmann, *supra* note 45, 14.

to represent, it is not clear whether the IETF and the W3C have good enough a claim to represent the Internet community – a very vague notion that can roughly be read as the Internet sector as a whole or, more restrictively, as the community of technical experts that has historically been involved in the governance of Internet infrastructure – or the global public – be it understood as a whole or as the sum of the multiple communities that have an interest on the Internet, including but possibly extending beyond state-publics, to cover other related supra- or sub-state publics, and perhaps functional publics distinct from the Internet community or sector. The lack of a legal basis in international law for either the IETF or W3C certainly renders any claim to represent the interest of the international community of States unreasonable. As for the possibility of claiming to represent the Internet community as a sectoral polity, the W3C seems to be in a position to make it at least with respect to its members, because it has formal membership and the signature of the W3C Process Document may be interpreted as a delegation of authority – they do not bind themselves, legally or otherwise, to implement W3C standards, but its signature does entail an acknowledgement of the competence to produce technical standards for the Web. Yet the fact that it has formal membership and, very importantly, that members are obliged to pay a fee, may limit the capacity of at least those interested parties that cannot afford such payment to participate fully. The openness to public participation compensates this exclusionary effect to a certain extent, allowing for anyone with a stake, i.e. anyone potentially or actually affected by W3C recommendations, to partake at least to some extent in their development. The opposite can be said of the IETF. Given IETF's informal membership, there is nothing like the signature of the W3C Process Document that can be interpreted as a formal delegation of authority by any community, however defined, to the IETF. Yet its radical openness to participate in its deliberations renders it as inclusive as it gets: anyone willing to do so may contribute, and at least in the case of its working groups, without economic barriers other than those of Internet access. The openness of IETF and W3C standard setting processes seeks to facilitate a correspondence between those affected by their activity – including not only the usual technically expert industry and academic actors but also the global community of Internet users, directly and through their public representatives, associations, and advocacy groups – and those involved in the taking of the regulatory decisions. The question is, however, whether such openness compensates factors such as cultural and linguistic diversity, digital illiteracy or economic inequality, which obstruct meaningful participation in the deliberative processes of the Internet community, and limit their claim to representativeness.

Neither is it clear, in the second place, whether either of those putative publics – the international community, the Internet community or other territorially or functionally defined publics – do actually qualify as such according to discourse theory of democracy. Regarding the Internet community, and assuming the IETF and the W3C have a reasonable claim to represent it, establishing whether this is so would require finding out the extent to which it shares a common identity enabling its members to engage in arguing and thus for the formation of a public interest. Froomkin famously analysed the IETF through the prism of Habermasian discourse theory, and found that the IETF does not merely allow for *arguing* but comes as close as it gets to qualifying as a realization of what he calls the *best practical discourse* – a discourse capable of legitimizing its outcomes because it is open to participation in rational terms by all those affected by the decision in question.[177] Given the similarity of their standard setting processes, the point can *a priori* be extended to the W3C. If this is the case – and provided, again, that their claim to represent such communities was reasonable – then IETF's and W3C's authority could be qualified as public at least from the perspective of those members and participants – those who actually engage in the discourse – that are affected by Internet standards, and therefore as a proper object of public law analysis in this sense. In fact, their virtually unconditional openness to public participation tends to make the community of those that are entitled to participate in IETF and W3C standardization process coextensive with the community of those potentially affected by it. Given the current importance of the Internet as a global communications facility, this may even justify a claim to represent *the global public*, because everyone has a direct or indirect stake on the Internet, and everyone can participate. However, even if IETF and W3C channels facilitate arguing, the wild diversity of the global public – which stands in contrast to the relatively homogenous community of technically, economically and culturally capable usual suspects – limits the extent to which it can be said to engage in arguing to the confines of the two organizations themselves, which may not be enough to sustain the thesis that it qualifies as a proper public.

If these two organizations and the standards they produce are indeed to be considered public authority, then from this theoretical perspective, the IETF and the W3C would be more legitimate than public law systems which, at least as they exist in the real world, do not live up to the high standards of the best practical discourse, and would thus provide a model for IPA's project of developing a proper public law beyond the State.

[177] Froomkin, *supra* note 100, 796.

E. Conclusion

This paper has laid the foundation for a comprehensive public law approach to the problem of legitimizing global Internet governance. An analysis of this domain through the prism of the IPA approach seems indeed to confirm the value of public law as a normative reference for legitimizing the exercise of authority by informal and private institutions that is often assumed by the governance literature in this domain. Authority of the kind that is the object of public law analysis can be found beyond the public international component of this domain and beyond ICANN's unique identifiers regime, which have concentrated public and academic attention so far. The development by two informal and private institutions, the IETF and the W3C, of Internet's core technical standards, the TCP/IP protocol suite, can also be reconstructed as an exercise of authority because they constitute the code of the Internet and because economic network effects render them economically obligatory. Whereas technical standardization meets IPA's original functional equivalence criterion for identifying those instances where private authority should be assessed and subjected to public law standards, the extent to which it qualifies as public authority according to Goldmann's more demanding re-conception of it remains an aspect to be clarified in further research. The expansion of the focus of public law analysis in global Internet governance enriches IPA in turn by incorporating code into its catalogue of authority instruments and modalities.