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Where is the governance in Internet governance?

Michel JG van Eeten
Delft University of Technology, The Netherlands

Milton Mueller
Syracuse University, USA

Abstract
The governance of the Internet provides one of the most important arenas in which new ideas regarding Internet studies can be applied and tested. This paper critiques the prevailing conceptualization of Internet governance. The label is routinely applied to the study of a few formal global institutions with limited or no impact on governance, but not to studies of the many activities that actually shape and regulate the use and evolution of the Internet, such as Internet service provider interconnection, security incident response or content filtering. Consequently, current conceptualizations of Internet governance inflate the presence and influence of state actors. Furthermore, they undermine efforts to understand how large-scale distributed systems in the global economy can be governed in the absence of formalized international regimes. We conclude by discussing how concepts of networked governance can be applied and extended to illuminate the study of Internet governance.

Keywords
Cyberlaw, Internet Corporation for Assigned Names and Numbers (ICANN), information security, Internet governance, network, state

Introduction

The governance of the Internet provides one of the most important arenas in which new theories regarding Internet studies can be tested. It includes classic issues such as the

Corresponding author:
Michel JG van Eeten, Faculty of Technology, Policy and Management, Delft University of Technology, PO Box 5015, 2600GA Delft, The Netherlands.
Email: m.j.g.vaneeten@tudelft.nl

changing role of the state and the private sector, the security relationships among great powers or the scope of global economic and cultural integration.

In this paper we take issue with the prevailing conceptualization of Internet governance. Our quarrel is not with the verbal definition itself: it is with the way the term 'Internet governance' is used. Currently, the label is routinely applied to the study of a few centralized and formalized institutions such as Internet Corporation for Assigned Names and Numbers (ICANN), the Internet Governance Forum (IGF) and the ongoing process from which it emanated, the World Summit on the Information Society (WSIS). The field's scholarly literature tends to focus almost exclusively on international institutions involved in explicit discussions of the global governance of the Internet. On the other hand, the term 'Internet governance' is not normally applied to studies of many real-world activities that actually shape and regulate the way the Internet works. Interconnection agreements among Internet service providers (ISPs), routing arrangements, content filtering by national governments, or the control of spam, copyright infringement and botnets, for example, are not, for the most part, grouped under the field label.

We perceive this as an interesting puzzle. Common to all definitions of governance is a notion of *steering*. The United Nations Working Group on Internet Governance defined Internet governance 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 programs that shape the evolution and use of the Internet' (WGIG, 2005). Many authors have cited or built on this definition (e.g., Bygrave and Bing, 2009; DeNardis, 2009; Mathiason, 2009) and it suits our purposes as well. Malcolm (2008) has convincingly argued that the definition casts a wide conceptual net to include hierarchy, network and market governance mechanisms. Yet even he boils down the phenomenon under study to an organogram that includes the usual suspects – the ICANN, Internet Assigned Numbers Authority (IANA), Internet Engineering Task Force (IETF) – but none of the actors that actually coordinate to operate the Internet, such as ISPs, search engines, cloud operators or e-commerce providers (Malcolm, 2008: 39). Malcolm's approach typifies the current practice in the field.

While the institutions, actors and processes of governance vary greatly, they all suggest a collective, policy-motivated shaping of a socio-technical system (Bauer, 2005; Kjaer, 2004). Now if we look broadly at the scholarly research on the economics, law, policy, technology and operations of the Internet, we find a huge and continuously growing body of research about conflicts, issues, policies and problems that are shaping it. This work fits within the Working Group definition, but is hardly ever labeled 'Internet governance.' If we look at the growing body of scholarly work that *is* labeled 'Internet governance,' we find that much of it is about a very narrow range of organizations, some of which have limited impact on the governance of Internet operations, and many of which have no discernable impact at all.

This paper is about coming to terms with that disjunction between labels and substance. We believe that it reveals some deeper, conceptual problems. More specifically, it introduces a bias that skews and probably inflates the presence and influence of states and formal institutions in the governance of the Internet.

Recent studies on Internet governance have called for a renewed appreciation of the role of the state with regard to globalized communication networks. Refuting earlier

claims about the marginalization of the state, these studies see the shadow of state power extending across the governance of Internet resources. Some authors argue the state was never really marginalized, only overlooked by simplistic theories that presumed that global networks inevitably implied the decline of state autonomy (e.g., Drezner, 2007; Goldsmith and Wu, 2006). Other authors claim that the state may have been absent at first, but that it has adapted to the new technologies and now asserts a more dominant role (e.g., Christou and Simpson, 2009).

Our paper argues that the debate over the role of the state cannot move forward until we solve the more fundamental problem alluded to above. States naturally flock around these centralized, formalized institutions. If these institutions are – incorrectly – studied as the dominant arrangements for Internet governance, then the presence and influence of states will be grossly inflated, relative to studies that ask how large-scale distributed systems in the global economy are governed in the absence of formalized international regimes.

Our approach to this puzzle is three pronged. Firstly, we wish to explain why so much of the work that currently is not called Internet governance is in fact about Internet governance and should be labeled as such. Secondly, we want to explore why the people who do label their work as Internet governance do not recognize the other, unlabeled work as being part of the same field. Thirdly, we want to explain what has made the self-designated Internet governance field so focused on formalized international institutions, regardless of the fact that their impact on the Internet is limited or even negligible. We explore the implications of the blind spots associated with the current conceptualization of Internet governance, especially for the issue of the role of the state. We conclude the paper by sketching the outlines of a re-conceptualization of Internet governance that encompasses the key processes and actors that shape the Internet. Before we can accurately bring the state back into Internet governance, we must first bring actual governance into Internet governance.

Internet governance, field definition and disciplines

This section presents an overview of Internet governance research based on a broad view of the literature that is relevant to the problem. We find that it is divided into four distinct fields. Only one of these fields labels itself as ‘Internet governance’. Building upon a recent review of the field by Mueller (2010), the scholarly literature on Internet governance can be fitted into four basic categories. Each of these categories can be considered a distinct field of study, with its own conferences, associated journals and its own commonly used field designator. These fields are:

1) Internet governance;
2) telecommunications policy;
3) information security economics;
4) cyberlaw.

Table 1 provides an overview of the literature, mapping field labels to specific topics and to the disciplines used to analyze them. What follows will not be a comprehensive

Table 1. Field labels mapped to topics and disciplines.

Field labels	Topics covered	Disciplines
Internet governance	Internet Corporation for Assigned Names and Numbers (ICANN) and country code Top Level Domains as institutions Domain name policy (domain name – trademark conflicts; standards; regulation/competition in supply) World Summit on the Information Society (WSIS) Internet Governance Forum (IGF) Internet protocol (IP) addressing; Regional Internet Registries (RIRs) as institutions Internet standards, Internet Engineering Task Force (IETF)	Communication Computer science Economics Information science International relations Institutional economics Law Political science
Telecommunications policy	Regulation of telecom and Internet Regulation of broadcast and cable TV Competition policy in telecommunications Radio spectrum allocation policy Net neutrality Mobile telecoms, including mobile Internet Intellectual property Interconnection arrangements Trade in telecom services Privacy and security of networks	Communication Computer science Economics Electronics engineering Information science Institutional economics Law Political science
Information security economics	Security of networks and information systems Cyber crime Critical infrastructure threats Botnets, DDoS attacks, Cyberwarfare	Computer science Economics Information science International relations Political science
Cyberlaw	Jurisdiction in cyberspace Regulation and self-regulation in cyberspace Privacy online Surveillance online Copyright, patents and trademarks as applied to the Internet Censorship of the Internet (techniques and policies)	Law Law and economics Law and technology

review. Our goal is simpler: we want to show that each of these fields includes topics that are central to Internet governance, and that could contribute important forms of analysis and data to the study of Internet governance. Yet (with a few exceptions), only one of the categories is labeled as being *about Internet governance*, both by itself and by the other fields. In other words, this review documents the disjunction between label and substance.

Internet governance

The field that currently self-identifies as *Internet governance* has acquired its topics and boundaries through a path-dependent process. The term was originally used to denote the institutional and policy problems related to the global coordination of Internet domain names and addresses. The encounter with those problems culminated in the creation of the ICANN in 1998. The ICANN was a unilateral construction of a global regime by the United States, and was based on a new, non-governmental model. This innovation prompted the development of a research literature that critically assessed the ICANN as an institution (Froomkin, 2000, 2003; Hofmann, 2005; Mueller, 2002; Palfrey, 2004; Pommerening, 2004). A related strand of research focuses on the organizations that have been delegated the responsibility to manage the Top Level Domains, most notably the country code Top Level Domains (ccTLDs) (Christou and Simpson, 2009; McDowell et al., 2008; Park, 2008).

The next step in the evolution of the field was prompted by the United Nations' WSIS – a state-centric series of diplomatic conferences held from 2002 to 2005. The WSIS provided a platform for developing country governments and the European Union to challenge the pre-eminence of the United States; it also mobilized a broad range of civil society advocacy networks around issues of communication-information policy, which included many politically engaged academics (Mueller et al., 2007a; Raboy, 2004; Souter, 2007). Rivalry between the International Telecommunication Union (ITU) and the ICANN also figures prominently in this environment (Klein, 2004; Kleinwachter, 2004a; Mueller et al., 2007b; O'Siochru, 2004).

While the political conflicts underlying the WSIS centered on the ICANN, the process also needed to define Internet governance, academically and politically. A United Nations Working Group was charged with developing a definition of the term, which we cited earlier. The definition moved beyond the ICANN and included a much wider range of policy issues, applying the term to any and all 'shared principles, norms, rules, decision-making procedures, and programs that shape the evolution and use of the Internet' (Drake, 2005; WGIG, 2005). That broader definition noted that these shared processes involve not just governments but business and civil society as well, which both ratified the position of non-state actors in Internet governance and put practically all of the traditional problems of communication and information policy within its frame. Moreover, in the actual politics of the WSIS, the activities of the ICANN (focused on the domain name space and internet protocol (IP) address space) were often conflated with governance of the entire Internet (IGP, 2005).

Few, if any, of the international political conflicts that led to the WSIS were resolved. This led the world's governments to create the United Nations IGF. Thus, the community of discourse that had formed around the ICANN and WSIS was prolonged in the IGF, which was designed to provide a relatively non-threatening, non-binding venue for 'multi-stakeholder dialogue.'

The field of Internet governance studies has been profoundly shaped, if not defined, by this path. From the start, there has been a discrepancy between its label and its substance. Managing the Domain Name System (DNS) is only one narrow function within a much larger set of activities that shapes the evolution and use of the Internet. In performing this function, the role of the ICANN is important but limited, because

of the heavily decentralized infrastructure underlying the DNS. This has produced a misunderstanding that haunts many academic and policy debates to this date: that the Internet is somehow governed by the ICANN. As recent as September 2009, *The Economist* summarized the negotiations over a new contract between the ICANN and the US government as being about 'control over cyberspace' (The Economist, 2009).

The field that designates itself as Internet governance is highly interdisciplinary: it includes work from the perspective of institutional economics, political science and international relations, communication and information studies, sociology, and law. However, most of the work in this field falls into three categories: (a) policy and institutional analysis of the ICANN and the Regional Internet Address Registries; (b) explorations of various aspects of the WSIS and the IGF; and (c) broader, meta-discussions of global governance as it applies to the Internet, especially multi-stakeholderism and the relationship between private sector self-governance and intergovernmental organizations.

Telecommunications policy

This field encompasses policy-oriented research on telecommunications and the electronic mass media. It emerged as an interdisciplinary field early in the 1970s, when the growing importance of communications infrastructure made it necessary to examine law, technology and economics in an integrated fashion (Owen, 2002).

While this field includes many studies of telecommunication regulation and broadcasting, such as cable television and the like, a growing portion of the research in this field focuses on Internet-related policy. The net neutrality debate, for example, is quite explicitly about the governance of ISPs and combines discussions of classical telecommunication policy issues with Internet governance issues (Marsden, 2010; Wu, 2003; Yoo, 2006). Conferences and journals in this field frequently cover such topics as interconnection arrangements of ISPs, the market structure of the ISP industry, traffic prioritization or the growth of overlay networks on the Internet. If one examines the titles and keywords associated with this work, however, practically none of it includes the term *Internet governance*. Recently, Internet governance has been included as a recurring panel session in the Telecommunications Policy Research Conference. The papers on those sessions, however, tend to deal with domain names, IP addresses and related issues – in other words, it is confined to the field that self-identifies as Internet governance.

Information security economics

Since about 2001 an interdisciplinary literature has attempted to synthesize knowledge of computer science and information systems with the insights of economics to study problems of cybersecurity. The new field, which designates itself as *information security economics*, is based on the insight that the Internet's security problems are not simply technical but are driven by the economic incentives of actors and firms. (Anderson and Moore, 2006; Moore et al., 2009). Like the previous group, it often spills over into policy analysis and development. It analyzes the cost–benefit tradeoffs of the efforts of ISPs

worldwide to secure their networks and customers, the assignment of liability to software producers or ISPs, the impact of network externalities, and the ways in which markets interact with government action in response to security problems (van Eeten and Bauer, 2008).

Not all of the work on Internet security is grounded in economics. Some of it is more explicitly focused on the national and transnational power implications of the Internet's vulnerabilities. In this literature, the term 'security' means exactly what it does in mainstream international relations research (Deibert and Rohozinski, 2010). It deals with 'cyberwar' or Internet-based attacks on one state by another, the use of the Internet by terrorist groups, and the threat to critical infrastructures that might be posed through network vulnerabilities (Arquilla and Ronfelt, 2001). Some interdisciplinary researchers are also exploring the relationship between governance, states and the development of security-related Internet technical standards (Kuerbis, 2011).

If one examines the titles and keywords associated with this work, almost none of it designates itself as *Internet governance* research.

Cyberlaw

The field of cyberlaw provides the most complex and mixed case. Cyberlaw is a field that developed along with the Internet, and many of its key scholars seem to have conceived of their work as part of a discourse on Internet governance, broadly speaking. This is especially true of the earlier work (1995–1999) when they were engaged in broad discussions of cyberspace and jurisdiction, and raised the more general question of whether the net can be governed by territorial states at all. Lawrence Lessig's 'code is law' meme spoke of a new form of governance native to the cyber world (Lessig, 1999). Important contributors to this literature do explicitly address Internet governance in some of their work (Johnson and Post, 1996, 1997) and some (Froomkin, Johnson) are active participants in and analysts of institutions such as the ICANN.

Two observations can be made that support our thesis, even in this context. Firstly, those who do use the *Internet governance* label typically do so in the context of discussions of the ICANN. Secondly, since those early days the cyberlaw literature has expanded into a far more extensive treatment of the legal, policy and legislative issues associated with the relationship between law and cyberspace. In particular, a very large part of this literature focuses on copyright, privacy and censorship in cyberspace. The literature on copyright often deals with transnational problems, such as free software, the battle over peer-to-peer file sharing and international institutions such as the World Intellectual Property Organization (De Beer and Clemmer, 2009; Litman, 2001; Samuelson, 1996; Urban and Quilter, 2006). An equally large body of cyberlaw literature deals with controversies and technologies associated with privacy (Solove, 2007; Zimmer, 2008). A smaller set of work examines censorship of the Internet (Deibert et al., 2008; Villeneuve, 2007; Zittrain and Edelman, 2003). True to form, almost none of the cyberlaw literature on copyright, privacy and censorship labels itself as being about Internet governance, and not much of it references literature that self-identifies as Internet governance. The only exception is the legal literature on trademarks and domain names – and of course that fits our argument because it pertains to the ICANN.

Shared assumptions and blind spots

The literature review reveals a distinctive fact pattern. The field designator 'Internet governance' is strongly linked to research on the ICANN, ccTLDs, the WSIS and the IGF. The three other fields deal extensively with issues that strongly affect Internet governance, yet only one of them (Cyberlaw) explicitly uses the term Internet governance for a subset of its domain. It is also clear that the disjunction has little to do with disciplinary boundaries. All of the fields are interdisciplinary and there is substantial disciplinary overlap across them.

An especially stunning illustration of the gap between label and substance can be found in a recent and much-cited book by Jonathan Zittrain (2008), entitled 'The Future of the Internet – And How to Stop It'. A quick summary of its argument is that the security problems currently plaguing the Internet may trigger a set of technical and economic reactions that will fundamentally change the way the Internet is governed and by whom, destroying its power of innovation in the process. A book could hardly address the governance of the Internet more directly. Yet 'Internet governance' is never used as a descriptor of the book's subject, and its index has no entry for the term. In the body of the book, the label only appears once, in a sentence about the IGF – an institution that Zittrain dismisses as a 'talk-shop initiative' that produces little else than 'bland consensus pronouncements' instead of getting at the 'nuts and bolts' of the problems it identifies (Zittrain, 2008: 242). Why do popular scholars like Zittrain research Internet governance but refuse to call it that?

In this section we attempt to explain this fact pattern by characterizing the thinking that produces the boundaries between Internet governance and the other fields. Three basic assumptions that prevail across these fields can be identified.

Firstly, participants in the Internet governance field take a distinctively global governance perspective on the topic. They look at the Internet holistically as a globally interoperable system and think of governance as something characteristic of it *as a system*. Participants in the telecommunication policy and cyberlaw fields, in contrast, are more rooted in national perspectives, or in specific bodies of law that are still state-centric, even if some of them are international in nature. Scholars who are habituated to thinking of governance and regulation as something that occurs at the national level may have trouble coping with the new global institutions, and vice versa.

This disjunction is reinforced by the tendency to think of governance as being produced by, or taking place in, formal organizations with explicitly institutionalized rules and procedures. This is the second key assumption that maintains the divide. Global governance of the Internet, in this view, must be associated with clearly identified institutional venues where people come together for collective action and Internet governance is explicitly the topic of discussion. Thus, venues such as the ICANN, the Regional Internet Address Registries, the WSIS or the IGF become valorized as the key sites of Internet governance. The aggregate effect of decentralized decisions and adjustments made by ISPs, other organizations that operate networks and various jurisdictions, are not classified as part of the same process – even though the latter often have much more profound effects on the evolution and use of the Internet than the ICANN or IGF.

A third assumption is the idea that if one formally designates a venue for Internet governance and makes it open to all stakeholders, then it constitutes a form of Internet governance – regardless of how much actual authority over Internet operations its participants have. A corollary assumption is that a formally designated venue for Internet governance discussions will automatically include all relevant players in Internet governance. If some parties are missing, one must simply urge them to participate. The more participation, the better. This perspective seems to be rooted in an idealistic notion of governance based on participatory democracy norms and ideas of multi-stakeholderism. It ignores the strategic decisions actors make about what venues they will participate in and which ones they will ignore, avoid or boycott. These calculations, rooted in basic self-interest, become extremely important when actors have real control over resources and there are real gains or losses to be had from collectively binding decisions. Real governance is based on bargaining scenarios, where parties come together because they have something to gain by interacting and agreeing.

In some extreme cases of this assumption, there is practically an equation of governance with discourse about governance. The UN IGF, for example, is assumed to be relevant to the governance of the Internet because that is where people come together to talk about Internet governance. This obscures the rather painful fact that most of the actors with operational control over Internet resources are absent from it – except, once again, the ICANN. To the extent that they do participate, they seem to treat it as part of their public relations efforts and not as a collaborative/bargaining process where the management of their resources is modified and coordinated with others to achieve effective forms of collective action.

To summarize, there is a remarkable absence of governance in what is commonly called Internet governance. Any conventional definition of governance, including the one proposed by the United Nations Working Group, quickly demonstrates that the WSIS and IGF provide very little, if any, actual governance. Although the WSIS involved potentially influential and powerful state actors, they simply did not agree on how to alter or institutionalize any governance practices or rules for the Internet, other than to create the IGF. The IGF has produced no collective resolutions, let alone binding agreements or decisions, and even if it did, these would have had no commitment power over the actors actually operating the Internet. More importantly, most of the stakeholders with actual control over Internet resources are not participating in the IGF. The ICANN and the Regional Internet Registries (RIRs) are the main actors for which a plausible claim can be made that they shape the evolution and use of the Internet, but the governance of Internet identifiers has only a limited impact on such matters as content regulation, security, intellectual property and e-commerce. All in all, it is very strange that a field which organizes itself under the heading of Internet governance hardly ever ventures outside these institutions.

Blind spots and the role of the state

Why have Internet governance researchers failed to acknowledge that most governance is taking place elsewhere and adapt their approaches accordingly? The short answer is because their myopic focus has certain advantages.

For empirical work, studying a centralized institution is a lot more convenient than having to identify and study a wealth of disjointed, messy and globally distributed processes that together produce governance. The interactions of people and stakeholders at the ICANN or IGF meetings around, say, security are much easier to observe than the interactions among thousands of ISPs in their daily fights against botnets and spam.

In addition, formalized institutions have explicit rules and procedures. This renders the object of study readily available for (certain types of) empirical analysis. In virtually all other areas of the Internet, relevant rules and procedures are often informal and thus more difficult to identify. Where they are formal, they are more fragmented and often less accessible, such as the thousands of private interconnection contracts that govern the ways in which ISPs route traffic and extract value from their network. These contracts greatly impact the price of access in developing economies, to name but one key governance issue.

These two advantages combine to form an example of what one could call lamppost science, after the parable of the man who lost his keys at night and only searches for them under illuminated lampposts, not because he lost them there, but because that is where light is available.

The myopic focus has advantages, but this does not explain why empirical realities of the Internet have not forced researchers to recognize that more important governance processes are taking place elsewhere. We would argue that, lacking a coherent conceptualization of Internet governance, these researchers have confined themselves to asking questions about the institutions themselves and the way they work, rather than about actual governance. For example, there are numerous studies of civil society participation in the WSIS, of how state and non-state actors share power in the IGF, and of the ICANN's structure and processes (Froomkin, 2003; Klein, 2004; Kleinwachter, 2004b; Koppell, 2005; Palfrey, 2004; Pavane and Diani, 2008). In other words, the field *assumes* Internet governance to take place at these institutions and then asks questions about the institutions themselves, rather than conceptualizing Internet governance and studying where and how it is actually taking place.

Overcoming these blind spots will have important implications for our understanding of the role of the state in Internet governance. Here we refer to recent studies that have called for a renewed appreciation of the role of the state (Christou and Simpson, 2009; Drezner, 2007; Goldsmith and Wu, 2006). Disputing earlier claims about the marginalization of the state, they see the shadow of state power extending across the governance of the Internet resources. Drezner (2004: 479) argued that non-state actors 'often... act as the agents of state interests.' Christou and Simpson (2009: 600) concluded that 'state-shadowed private interest governance is the order of the day.' Again, these researchers focus by and large on the same set of institutions, such as the ICANN, IGF and ccTLDs.

Governments, for reasons similar to those of academic researchers, have developed the same focus. The attempt by China and some Arab states to make the IGF more state-centric, or to have the intergovernmental ITU take over the ICANN's functions, reveals the same myopia. This happens because centralized and formalized institutions are amenable to the repertoire of state power. For governments – as for non-governmental organizations (NGOs) and other stakeholders – there seem to be no other institutions they can address with their concerns, hold accountable where needed and propose to

reform when their objectives are not being met. Given the increasing importance of the Internet to our societies, there is a growing need for accountability and some semblance of control over this critical infrastructure. This need is channeled into an almost desperate focus on the few institutional straws at which to clutch.

The implication seems clear: the study of these formalized institutions that are officially designated as sites of 'Internet governance' presents us with a biased sample. Focusing exclusively on them would lead us to overestimate the presence and influence of states in Internet governance. In most areas, governance of the Internet takes place under very different conditions: low formalization, heterogeneous organizational forms and technological architectures, large numbers of actors and massively distributed authority and decision-making power. Whatever governance emerges under these conditions, it will be a lot less amenable to state intervention, even to modest arrangements such as 'state shadowed self-regulation' (Christou and Simpson, 2009). To really appreciate the role of the state in Internet governance, we need to re-conceptualize 'Internet governance' and bring together a set of disparate fields that until now have been kept separated by the current use of that label.

Bringing governance into Internet governance

The peculiar disjunction between the label Internet governance and its substance has kept a variety of fields disconnected from each other. The rift is sustained by those on both sides of the label. Researchers in fields that substantively *are* studying Internet governance have consistently shunned the term. Researchers that self-identify their work as Internet governance have not seen the need to expose themselves to work on actual Internet governance.

Clearly, use of the label 'Internet governance' needs to be re-thought and changed. The field would benefit greatly from expanding to include innovative areas such as the economics of cybersecurity, network neutrality, content filtering and regulation, copyright policing and file sharing, and interconnection arrangements among ISPs. A great deal of the political and economic action in governance of the Internet is taking place in these arenas. Many security issues, for example, are being dealt with through collaborative efforts among ISPs and others – not because of regulatory requirements or some other top-down forces, but because the ISPs operate in an incentive structure that allows for the emergence of certain types of collaboration (Bauer and van Eeten, 2009; van Eeten et al., 2010).

To bring these separate fields together, we need a new conceptualization of governance that 'shapes the use and evolution of the Internet,' to paraphrase the definition of the United Nations Working Group. Ideally, the conceptualization would accommodate the diversity of governance on the Internet, from centralized, formal global institutions such as the ICANN all the way to the emergent order that arises from the interactions among thousands of ISPs and their users. It would also be able to conceptualize governance in environments with low formalization, heterogeneous organizational forms, large numbers of actors and massively distributed authority and decision-making power.

Within the constraints of this paper, we can only begin to outline how Internet governance could be conceptualized more comprehensively. The point of departure for

discussing and analyzing diverse forms of governance still seems to be transaction cost economics (TCE). But TCE and its sociological critique (Granovetter, 1985; Powell, 1990) both involve an analysis of governance and coordination that focuses exclusively on the organization of economic production. Jones et al. (1997), for example, attempt to synthesize transaction cost theory and social network analysis into a 'general theory of network governance.' While their approach is useful, their 'general theory' seems to be limited to the problem of 'interfirm coordination' within a single national political economy. The problem of Internet governance is much larger, and requires extending the theory. Political scientists have recently begun to extend the concept of network governance to politics (Kahler, 2009; Sørenson and Torfing, 2007). When the term is used in a context dealing with politics and policy, however, it tends to be narrowly focused on a specific sector of industry or a specific policy domain or government agency. There is little precedent for applying the term to a very large-scale, fully globalized socio-technical system such as the Internet.

The conditions we described as applicable to Internet governance – low formalization, heterogeneous organizational forms, large numbers of actors and massively distributed decision-making power – usually point to market and network governance. Market governance can facilitate interactions among large numbers of autonomous actors without the need for collective agreements, although it does require some kind of mutual recognition of property rights and media of exchange. Areas that rely heavily on the use of contracts, such as ISP interconnection arrangements, seem to fit with this model. However, in other areas of Internet governance, formal contracting or market exchanges are not the dominant force. Internet security governance, for example, often relies on networks of collaboration. The interpersonal and inter-organizational networks among security professionals that provide incident response and abuse management conform to the conventional understanding of network governance, in which trust, reputation and reciprocity are critical elements (Powell, 1990). A group of legal scholars (Johnson et al., 2004) have advanced a model of Internet security governance through the use of disconnection or 'ostracism' by ISPs as an alternative to more hierarchical exercises of regulatory power that might damage the Internet's innovative and open nature. There are several extant examples of such actions playing an important role in Internet security governance (Krebs, 2009). These approaches conform to the use of collective sanctions and reputation effects in social networks, as described in Jones et al.'s general model of network governance (Jones et al., 1997).

However, as computer scientists are fond of saying, this solution 'does not scale.' In the conventional model, trust and reciprocity are the outcomes of repeated interactions among known actors (Axelrod, 2006). In Internet security governance, the number of actors and incidents is simply too large and their interactions often too anonymous to sustain what is normally thought of as network governance. In these cases, the rise of the Internet has led to the emergence of a 'scaled-up' form of network governance. Governance can be based on what Benkler (2006) calls 'peer production' or others call 'crowd-sourcing.' These are forms of production based on many small, anonymous and voluntary contributions of large numbers of people. This type of cooperation is predicated on the existence of a ubiquitous infrastructure of high-speed networks and powerful information devices, which facilitate social organization without

the need for formal organizational hierarchies or market exchanges. This kind of governance is used in a variety of areas, ranging from spam control to content regulation through hotlines (Mueller, 2010).

While it is too early to converge on a specific solution to the problem of conceptualizing governance on the Internet, it seems clear that we have to move beyond the state-centric dyad of hierarchical versus non-hierarchical governance. Prices and markets, traditional hierarchical firms, hierarchical state power, interpersonal and inter-organizational networks and new, scaled-up forms of peer production are all present in Internet governance.

Conclusion

The task of conceptualizing Internet governance has just begun, and needs to be prioritized. Once the assumption is dropped that the IGF and similar institutions actually provide much in the way of governance, research questions shift as well. What do actors gain from participating in these fora? What objectives are they pursuing, if it cannot be 'control over the Internet'? These questions point towards symbolic politics, rather than power struggles. Dropping the assumption would also lead to more accurate assessments of the role of states in the actual governance of the Internet and help correct the myopic focus of the states themselves on institutions such as the ICANN and IGF.

The benefits of expanding Internet governance to include work from other fields would flow in both directions. The field of information security economics, for example, would benefit from interacting with perspectives on Internet governance derived from more institutionalized arenas, and from a more sophisticated understanding of the way inter-state politics play a role in establishing the pressures and constraints of security policy. Their exclusive focus on economic forces and operational actors often causes them to overlook the formal institutions that come into play as soon as the need for interventions arises. They would benefit, for example, from a more critical understanding of the way security claims can be exploited strategically to advance the interests of military and governmental actors.

The need to revise the concept of Internet governance is more than an academic problem. Governments, NGOs and other stakeholders often are misled by the assumption that Internet governance is what happens at the IGF. It is perhaps most visible in the fact that the range of issues stakeholders try to put on the agenda at the ICANN and IGF keeps expanding, notwithstanding the actual mandates of those institutions. This misconception is being reinforced by much of the academic work being done under that heading. A better understanding of Internet governance would benefit the research communities on either side of the label of Internet governance to take note of each other's work, as well as help governments and other stakeholders understand how the Internet is actually governed and what this implies for fulfilling their mandates and objectives.

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Author biographies

Michel JG van Eeten is professor of Public Administration, with a focus on the governance of infrastructures, at Delft University of Technology and does research on the economics of Internet security.

Milton Mueller is a professor at the Syracuse University School of Information. He is the author of two books on Internet governance, and is currently doing research on IP addressing policy, the policy implications of Deep Packet Inspection and the security governance practices of ISPs.