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Linking democratic anchorage and regulatory authority: The case of internet regulators

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Abstract

Scholars and practitioners have repeatedly questioned the democraticness and the authority of transnational multi-stakeholder organizations, especially those that regulate the internet. To contribute to this discussion, we studied the "democratic anchorages" and the regulatory authority of 23 internet regulators. In particular, we conducted a fuzzy-set qualitative comparative analysis assessing whether and which anchorages correspond to necessary and/or sufficient conditions for exerting regulatory authority. Our results show that strong anchorage in *democratic procedures* is specifically relevant for this outcome. Further, we find that weak anchorage in *democratically elected politicians* leads to high regulatory authority, confirming the significance of non-state actors in this policy field. More generally, our findings support but also qualify expectations about the compatibility and mutual reinforcement of democratic quality and regulatory authority at the transnational level.

Keywords: democratic quality, internet governance, multi-stakeholder organizations, QCA, regulatory authority.

1. Introduction

Transnational multi-stakeholder organizations are increasingly relevant for the regulation of global policy issues, including labor conditions, environmental sustainability, and many others. These organizations are deemed to exercise regulatory authority namely by drafting, negotiating, adopting, and implementing standards, guidelines, and codes of conduct (Abbott & Snidal 2009; Büthe & Mattli 2011; Cafaggi 2011). The question of the democratic quality of this form of governance has received much academic attention (e.g. Sørensen & Torfing 2005a; Black 2008; Vibert 2011). Compared to national political institutions, transnational multi-stakeholder organizations are usually not representative of a wider *demos*. Further, their transparency to non-members might be weak; they tend to dilute responsibility; and, given their seclusion, they might threaten fundamental democratic values, such as political equality (Koppell 2008; Papadopoulos 2010; Take 2013). These shortcomings are particularly problematic when these organizations can exert a high degree of authority, as power should be rooted in democratic legitimacy.

Governance of the internet infrastructure, in particular, is accomplished by several transnational multi-stakeholder regulators, of which the Internet Corporation for Assigned Names and Numbers (ICANN) is the most prominent. The democraticness of these regulators has been the subject of intense scrutiny, with a special focus on ICANN (Mowery & Simcoe 2012; Hunter 2003; Koppell 2005; Weber & Grosz 2007; Chenou & Radu 2013; DeNardis & Raymond 2013). Acknowledging that standards of representative democracy are not well suited

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to evaluate ICANN (Hunter 2003), other criteria were proposed, including transparency, participation, expertise, or accountability (Weber 2010; Take 2013). These studies are relevant and fruitful, but have a number of limitations. Firstly, other multi-stakeholder regulators in charge of internet governance, which are less frequently examined, need to be integrated more explicitly into a regime-level analysis. Secondly, it is important to acknowledge that the criteria mentioned above contribute to the democratic quality of regulation in different and specific ways. A comprehensive framework should be used that incorporates these various contributions coherently, and that allows researchers to assess possible interactions between them. Such framework, finally, should also provide a way to account for the systematic connections between the democratic quality and the regulatory authority of the multi-stakeholder organizations of this regime.

We contribute to this discussion by focusing not only on individual regulators but use a cross-case analysis that comprises the regulatory regime at large. Furthermore, it is important to remark that we conceive and operationalize democratic quality as an empirical concept. Hence, although democratic quality could affect democratic legitimacy, our study has an empirical, not a normative focus. Our research explores the extent to which systematic variations in various aspects of the democratic quality of internet regulators are associated (or are not) with a variation in their regulatory authority.

The article is structured as follows. The next section details the most relevant internet regulators that operate as transnational multi-stakeholder organizations. Section 3 presents our theoretical arguments. To conceptualize and map the democratic quality of ICANN and other regulators, we adopt the framework of "democratic anchorages" developed by Sørensen and Torfing (2005b). This framework describes whether governors themselves are governed by institutions and principles that can be qualified as democratic – not in a general sense, but according to specific standards. Additionally, we discuss the regulatory authority of internet regulators with the expectation that regulators with higher authority should be more firmly anchored. Section 4 describes our empirical approach. Our sample includes 23 multi-stakeholder regulators. To explore the systematic relationship between democratic anchorage and regulatory authority, we employ a fuzzy-set qualitative comparative analysis (fsQCA). Section 5 presents our findings and highlights that *anchorage in democratic procedures* is of particular relevance for internet governance. Section 6 concludes this paper.

2. Internet governance

In the early days of the internet, its governance structures could be described as "improvised" because they were developed in parallel with research and engineering (Braman 2011). Over time, the technology became more complex and widely used, and internet governance became more sophisticated and formalized (Bygrave & Bing 2009). Today, one part of the internet governance regime focuses on content-related issues, such as security, privacy, or property rights; this part includes many public actors, such as the Organisation for Economic Co-operation and Development (OECD) or governments (van Eeten & Mueller 2013; Nye 2014). The other part of the regime is concerned with the technical infrastructure of the internet, that is, with hardware and software, the address system, and protocols. Our paper is dedicated to the regulators of this infrastructure, which are mainly multi-stakeholder organizations.

In the literature and debates among policy experts (Doria 2013; Raymond & DeNardis 2015), multi-stakeholderism is typically conceived as a governance structure that entails the participation of public, commercial, civil, and academic actors; participation "as equals" is often emphasized (Epstein & Nonnecke 2016, p. 148). Speaking more generally, however, multi-stakeholderism allows in particular those actors affected by a given piece of regulation (the stakeholders) to join the regulator and participate in rulemaking (Cafaggi 2011), following a "logic of empowerment" (Auld *et al.* 2015, p. 109; Sylvain 2015). Hence, multi-stakeholderism is distinct from other regulatory approaches such as (inter-)governmentalism or supranationalism, which encompass more hierarchical governance arrangements (Carr 2015; Sylvain 2015).

In multi-stakeholderism, different actors (or "members") are in charge of the regulatory process. Members come together, negotiate, and decide in accordance with the formal and informal norms and principles enshrined in multi-stakeholder organizations. These organizations can be considered as bearing a regulatory function when they are in charge of any task along the regulatory process, which is not limited to rulemaking *sensu stricto* but includes, for instance, agenda setting, monitoring, and enforcement (Abbott & Snidal 2009). The specificity of

multi-stakeholder organizations is that they serve as "vectors" through which different types of actors participate in the regulatory process. In the case of internet governance, these actors have grown into a global epistemic community who share knowledge, expertise, experience, and other resources (Antonova 2011; Braman 2011).

However, it is important to recognize that the many multi-stakeholder organizations that are active in the regulatory regime of the internet infrastructure differ substantially in their scope, setup, and operations. In the following overview, we categorize these organizations into three clusters. Organizations of each cluster relate to each other as they are closely associated, they are in charge of related or similar issues, and their decisionmaking follows comparable procedures and principles.

The first set of organizations belongs to the "ICANN cluster," a hierarchical superstructure in charge of the internet address system. Alongside the eponymous ICANN, this cluster most notably contains the five Regional Internet Registries (RIR), each with a geographical focus (North America, South and Latin America, Europe, Africa, and Asia and the Pacific). The Number Resource Organization (NRO) is an association of the RIR, the Address Supporting Organisation (ASO) represents the RIR within ICANN. Finally, the IANA Stewardship Transition Coordination Group (ICG) was another organization within this cluster. Unlike the other organizations, however, ICG only had a temporary mandate, and coordinated specific reform proposals related to the internet address system.

The organizations of the second cluster are affiliated with the Internet Society (ISOC) and the Internet Engineering Task Force (IETF). The history of these regulators extends to the various research groups that first developed computer networks and their corresponding protocols, such as the transmission control protocol (TCP) and internet protocol (IP). Generally, participation within the ISOC/IETF cluster is rather informal. The internet standard track – called Request for Comments – is open and transparent, and anyone can comment on protocols in development. Nevertheless, the various organizations in this cluster have different scopes. For example, the Internet Research Task Force (IRTF) is dedicated to long-term, research-related issues, and the Internet Architecture Board (IAB) serves as a supervisory and advisory body. Additionally, the World Wide Web Consortium (W3C) follows a similar bottom-up trajectory. It is not incorporated (similar to some internet network operators' groups [NOG]) and is "hosted" by the Massachusetts Institute of Technology, Keio University, and Beihang University. The institutional links between the bodies of this second cluster are quite tight and exchange between them is common. For example, members of IETF participate in the nominating committee to find and determine the members of the IAB and the Internet Engineering Steering Group (as determined in RfC 2727).

The third cluster contains organizations that do not directly set standards but mostly serve as discussion forums with the ability to promulgate principles and guidelines. The most prominent is the United Nations Internet Governance Forum (IGF). Other bodies are the various NOG, which are organizations that act in a regional or national context. Often, NOG are unincorporated, have neither staff nor a fixed budget, and should be considered more as open series of workshops and conferences than as fully-fledged organizations.

All of these organizations are responsible for very different issues (see Table 1 for an overview; please note that only a choice of NOG are shown as examples). ICANN and its cluster operate and maintain the global address system of the internet. This address system consists of unique identifiers for each connected device. The number of unique identifiers is limited, albeit quite large, and hence the ICANN cluster is in charge of distributing this finite resource (Mueller 2002, p. 217; DeNardis 2009). The ISOC/IETF cluster, on the other hand, consists mostly of standard setters that develop various protocols. These protocols include the fundamental ones, such as the TCP/IP suite, alongside more complementary protocols, such as IMAP and POP3, which are both used for client-server communication. The third cluster is mostly responsible for discussion and exchange, and has a limited policy output.

The next section will discuss which characteristics of these organizations contribute to their democratic quality as multi-stakeholder regulators, and how the different tasks they are responsible for define their regulatory authority.

3. Theoretical framework

To describe and analyze the relationship between the democratic quality of internet regulators and their degree of regulatory authority, we adopt the "democratic anchorages" framework developed by Sørensen and Torfing

Table 1 Multi-stakeholder regulators of the internet

ICANN cluster	
ICANN	Internet Corporation for Assigned Names and Numbers
ICG	IANA Stewardship Transition Coordination Group
ASO	Address Supporting Organisation
NRO	Number Resource Organization
AFRINIC	African Network Information Centre
APNIC	Asia-Pacific Network Information Centre
ARIN	American Registry for Internet Numbers
LACNIC	Latin America and Caribbean Network Information Centre
RIPE NCC	Réseaux IP Européens Network Coordination Centre
ISOC/IETF cluster	
ISOC	Internet Society
IAB	Internet Architecture Board
IETF	Internet Engineering Task Force
IESG	Internet Engineering Steering Group
IRTF	Internet Research Task Force
IRSG	Internet Research Steering Group
W3C	World Wide Web Consortium
Other	
IGF	Internet Governance Forum
AFNOG	African Network Operators Group
DENOG	German Network Operators Group
FRNOG	French Network Operators Group
NANOG	North American Network Operators Group
SANOG	South Asian Network Operators Group
SWINOG	Swiss Network Operators Group

(2005b), adapt it for the case of transnational multi-stakeholder regulation, and combine it with our original conceptualization of regulatory authority.

3.1. Democratic anchorages

Even if a given governance arrangement does not follow the standards of representative democracy that are commonplace in democratic systems located at the level of the nation state, it should be possible to determine, at least in theory, whether this governance arrangement possesses some institutional and procedural features supporting its "democratic quality," and the extent to which it does so (or not). This is the central claim of the democratic anchorages framework originally developed by Sørensen and Torfing (2005b) for the study of governance networks at the domestic level. Fotel *et al.* (2008) applied this framework to the Femern Belt Forum, a multi-level governance regime involving Germany and Denmark. In our article, we take this one step further and adapt the democratic anchorages framework to the case of transnational multi-stakeholder regulators. For this endeavor, some modifications to the original framework are unavoidable. In the remainder of this section, we present the framework in this updated version; that is, we refer to the original framework by Sørensen and Torfing only if there are major differences between their version and ours.

The framework allows researchers to assess the democratic quality of governance arrangements by assuming that governance bodies perform democratically inasmuch as they are well anchored to democratic institutions and principles (Sørensen & Torfing 2005b, p. 201). Indeed, those institutions and principles are assumed to have a deep impact on the governance bodies' operations (Sørensen & Torfing 2005a,b, 2009; Fotel *et al.* 2008). At the same time, the framework acknowledges that representative democracy can be in tension with "new modes of governance" (Héritier & Lehmkuhl 2008), such as networks and multi-stakeholderism. The former recognizes citizens as sovereign and demands that authority must be embedded in a *demos*, while the latter lack a direct "chain

of delegation" of political power (Bergman *et al.* 2000) as they involve actors that are not elected, or because they claim authority that is not derived from public institutions.

On the one hand, Sørensen and Torfing (2005b) argue that governance bodies can achieve democratic quality if they make decisions in accordance with democratic principles. These principles include transparency, accountability, and deliberation, among others. In this respect, these principles are in line with previous work on the legitimacy of internet regulation (Hunter 2003; Weber 2010; Take 2013). Take (2013), for example, evaluates representativeness, level of equality, transparency, accountability, expertise, and factual acceptance by other actors. Similarly, Weber (2010) mentions aspects such as fair process (p. 118), transparency (p. 121), or the participation of civil society (p. 162), among others. On the other hand, governance bodies can also obtain democratic quality through other institutions. For example, democratic quality is increased if democratically elected representatives participate in the decisionmaking process. Hence, the framework allows for a consideration of different "types" of democratic quality. For instance, inclusion and participation matter for democratic governance but the participation of democratically elected politicians provides a different type of democraticness than the participation of affected stakeholders. These different types of democratic quality are depicted in Table 2.

Before discussing the four anchorages, two short remarks are in order. First, anchorages vary in their respective strength. Governance bodies – in our case, internet regulators – can be weakly to strongly anchored to democratic institutions and principles. Our empirical analysis, which exemplifies the utilization of this framework, uses fuzzy scores to capture this difference in degrees. Second, anchorages can vary independently from each other. In particular, they are not mutually reinforcing. In addition, there is no trade-off concerning anchorages; strengthening one anchorage does not result in the weakening of others. Hence, an interpretation of empirical results should firstly consider the four anchorages individually before the overall democratic quality is discussed.

Incidentally, it is worth reminding that democraticness is only one form of legitimization. The anchorages do not indicate, for example, how flexible a regulator is when adapting to new situations, or how capable it is in factually solving issues. We will discuss briefly other forms of legitimization, such as flexibility or technical expertise, in the discussion of our findings (Section 5.2).

3.1.1. Anchorage in democratically elected politicians

First of all, governance bodies can be linked to democratic institutions through the inclusion of elected representatives. These representatives (henceforth "politicians") can make sure that the output is (at least formally) aligned with the popular will of the electorate. To do so, politicians must be "capable of controlling the formation, functioning and development" of the governance body (Sørensen & Torfing 2005b, p. 202). In other words, a governance body, such as an internet regulator, is anchored to elected politicians inasmuch as these politicians can influence the founding and establishment of that body, its operations, as well as its future development. Hence, if this anchorage is strong, politicians have plenty of possibilities to carry the electorate's will into the decisionmaking process of the governance body. Contrariwise, if this anchorage is weak, politicians lack such opportunities.

Table 2 Democratic anchorages

Anchorage in	Short name of anchorage	Anchorage based on principle of	Mechanism
Democratically elected politicians	Politicians	Representation	Regulator attached to chain of delegation
Participation of stakeholders	Stakeholders	Being affected	The regulated and beneficiaries can participate in rulemaking
Accountability	Accountability	Institutional control	Transparency and liability toward members
Democratic procedures	Procedures	Procedural quality of decisionmaking	Open deliberation aimed at reaching consensus, strive for democratic improvement

Overview of the underlying principles of the four democratic anchorages. When referring to the anchorages throughout the text and tables, short names are used.

Concerning governance and regulation that take place on the transnational level, this anchorage faces two challenges. Firstly, democratically elected politicians have received their mandates from a specific *demos* that is based on a given territory. Hence, they are assumed to represent "their" electorate. Transnational bodies, on the other hand, run the risk of systematically excluding *demoi* if elected politicians cannot influence decisionmaking. Another related issue concerns politicians that are not democratically elected. Even if these politicians were to participate, they would not properly represent their citizens in transnational governance.

Secondly, elected politicians are rarely involved in transnational governance themselves. Hence, strictly speaking, many transnational bodies are *not* anchored to democratically elected politicians. Therefore, we propose to "soften" this anchorage slightly and also include public officials, who are representing democratic institutions in a more indirect way. Assuming that a "chain of delegation" runs from voters to elected politicians to government and administration (e.g. Bergman *et al.* 2000), we can conclude that politicians as well as public officials are part of the same chain, with politicians being closer to voters than public officials. To accommodate for the greater distance between voters and public officials, we propose to consider the anchorage as weaker if public officials replace politicians.

3.1.2. Anchorage in the participation of stakeholders

Governance bodies are also anchored to democratic institutions insofar as they include stakeholders who are affected by their regulatory activity (cf. Brighouse & Fleurbaey 2010; Cafaggi 2011, p. 35). If decisionmaking is inclusive, stakeholders can express their interests and preferences, and hence the democratic quality of the governance body is increased. Here, we explicitly distinguish between participation that is based on membership, and participation that is based on other principles (for the latter, see 3.1.4.). Members – of multi-stakeholder organizations, for example – can directly express their preferences concerning the decisionmaking process of the regulator. In addition, members might receive additional benefits such as access to relevant information, a forum in which they exchange with each other, and the promotion of community building (cf. Antonova 2011). In this regard, this anchorage indicates whether stakeholders are formally represented in the decisionmaking process.

The literature on internet regulation, as well as practitioners in this policy field, mention different types of stakeholders, such as governments, civil society, commercial actors, and so on (Doria 2013; Raymond & DeNardis 2015). Sørensen and Torfing consider "directly affected people" as stakeholders (2005b, p. 205). Similarly, Cafaggi argues that stakeholders correspond to those being regulated and to the beneficiaries of regulation (2011, p. 35). We adopt the latter definition, which is based on the roles that different actors perform in the regulatory process.

Hence for internet regulation, stakeholders correspond to the direct users of technical standards and protocols. To a large extent, these are commercial actors, such as device manufacturers, service providers, and developers (Bygrave & Bing 2009; Weber & Grosz 2009, p. 325). However, non-commercial actors use the same standards and protocols to provide goods and services. In addition, internet regulation can also be of interest to the wider public (i.e. internet users), as the management of internet resources has substantial political, economic, and social implications (Kleinwächter 2003; Weber & Grosz 2009).[1]

3.1.3. Anchorage in accountability

The third anchorage in the original framework links governance bodies with a territorially defined citizenry. Their decisions might indirectly affect this citizenry, which, hence, should be able to hold the governance bodies accountable. Sørensen and Torfing (2005b) distinguish explicitly between the directly affected (see above), to whom they attribute a right of participation, and the indirectly affected, to whom the governance body should be accountable. It is noteworthy that accountability here refers to direct accountability to citizens; they themselves must be able to hold governance bodies accountable, independently of whatever accountability democratic representatives might claim on the citizens' behalf.

Regarding internet infrastructure, the regulatory regime is mostly global; thus, following the argument made above, it is the global public who should have a right to hold regulators accountable. However, these regulators are established as multi-stakeholder organizations, meaning that their respective members shape the output of the regulators. In other words, internet regulators serve as vectors through which members establish regulation. Therefore, the regulator and its members share responsibility for the regulatory output. Our research focuses on the former, which is the most problematic with respect to accountability.

Previous research has highlighted the general difficulty of establishing accountability at transnational levels (cf. Rubenstein 2007; Papadopoulos 2010). In our case, too, few accountability mechanisms (Bovens 2007) exist for citizens regarding internet regulation. In addition, it is questionable whether ordinary citizens have the necessary knowledge and expertise to exert control over internet regulation. Hence, our first assessment is that internet regulators are not directly anchored in accountability to the public.

We propose to adapt this framework to fit with the case of transnational multi-stakeholder organizations. In particular, we understand accountability as a mechanism through which the regulator provides information and justification to an audience or forum, which, in turn, has the ability to impose consequences on that regulator (e.g. Koppell 2005; Bovens 2007). Thus, to be accountable means that the regulator is, to a certain extent, transparent and liable, and as such is expected to be controlled by an external actor, to whom it is accountable. Further, the regulator might also be responsive to the needs and demands of that actor, and might be in compliance with rules and principles given to it (Koppell 2005).

Acknowledging them as multi-stakeholder organizations, we expect internet regulators to be mostly accountable to their members. Hence, accountability mechanisms must be activated from within the organization, such as through the threat of budget cuts or governance reforms. Our argument is that multi-stakeholder organizations serve as vectors through which their members participate in regulatory regimes. The first and second anchorages describe who can become involved as a member and hence shape regulation. This third anchorage, however, indicates whether the multi-stakeholder organization itself is accountable to its members.

3.1.4. Anchorage in democratic procedures

While the first three anchorages connect regulators to different constituencies, Sørensen and Torfing (2005b) argue that governance bodies should also respect democratic norms and rules for making decisions and in their internal procedures. The authors also argue that there might be diverging understandings of which democratic ideals are relevant; hence "the attempt to draw up a complete or unbiased list of democratic norms and rules is doomed to fail" (Sørensen and Torfing 2005b, p. 212). Nevertheless, they propose some norms and rules for assessing the democratic anchorage of governance bodies. We have followed their recommendation.

There are, in particular, three types of democratic norms and rules. First, as multi-stakeholder organizations, internet regulators are run by their respective members. In addition, there might be actors that are affected by a given regulator but are not members of it. Based on the principle of affection (Brighouse & Fleurbaey 2010), we expect that internet regulators are more anchored in *democratic procedures* if they allow affected non-members to participate as well. Members of a regulator can still hold more power and influence than non-members, but the potential for non-members to participate would at least allow all affected actors to voice their concerns.

Second, decisions should be made following a deliberative process. In particular, all members of a multi-stakeholder organization should be able to express themselves and comment on decisionmaking; discussions should be reasonable and civilized; actors should show respect to each other, even if they have different opinions; and decisions should be reached in a transparent manner. Hence, members should have a "voice" in decisionmaking. Third, decisionmakers should strive for the democratic improvement of society and governance *in addition* to finding and improving standards and protocols. "Democracy never reaches a final form, neither as a perfect set of institutions nor as a regulative idea" (Sørensen & Torfing 2005b, p. 214). Hence, the democratic quality of decisionmaking itself should be treated as a value or ideal by regulators. In the community of internet regulation this can be found, for example, in the early Request for Comments. Therein, it is argued that laypersons should be able to use computer networks, such as the internet, alongside experts, or that access to these networks should be enabled with various equipment ("technological democracy," Braman 2011, p. 305).

3.2. Regulatory authority

In this study, our main research question concerns the systematic connections between the abovementioned democratic anchorages and regulatory authority. More specifically, we examine whether and which anchorages are necessary and/or sufficient for exerting high regulatory authority. This is an empirical question with normative implications as the need for democratic anchorages is expected to grow as authority increases, whereas a lack of anchorages would involve the risk of a democratic deficit, especially for powerful regulators.

We form the concept of regulatory authority by combining two dimensions, that is, the hardness of the regulatory output and the regulator's position within the overall regime. Regarding the first, regulatory authority in internet governance is mainly executed through the creation and maintenance of various protocols and standards (DeNardis 2009), but also legal contracts. Some regulators are able to enact decisions without the consent or "ratification" of regulatory targets, and therefore possess higher authority (Hooghe & Marks 2015). Other regulators' decisions are adopted on a case-by-case basis, which means that these regulators have less authority. Furthermore, decisions and contracts, once adopted, may be more or less binding in nature. Typically, guidelines and best practices are non-binding and their regulatory targets enjoy a certain leeway in implementation. On the other hand, more binding decisions must be implemented exactly as prescribed (Zürn *et al.* 2012). Additionally, compliance with some decisions may be enforced through sanctions (Zürn *et al.* 2012).

Concerning the second dimension, regulatory authority in internet governance also relates to regulators' roles and positions within the overall regime. Authority reflects the centrality of a given regulator and whether it is a focal point of regulation (Büthe & Mattli 2011). It is worth noting that, in internet governance, alternatives, in the sense of "competing" protocols or standards, are scarce and negligible. For example, there is one – and only one – viable address system.[2] However, some regulators have a wider scope of regulation, meaning that they are responsible for making decisions on multiple issues. Other regulators have a narrower focus, concentrating their work on fewer topics (Hooghe & Marks 2015). In addition, some decisions are required at a higher level and thus are more important (DeNardis 2009). For example, the system of unique identifiers is a high-level protocol because the logical first step of any communication between two devices is the attempt to find and address each other. Responsibility for higher-level decisions implies higher authority. Finally, authority also depends on regulatory function (Abbott & Snidal 2009). Regulators that make and enact decisions are more relevant than those that merely serve as forums for discussion and negotiation.

To summarize, regulatory authority is a combination of both dimensions. A regulator possessing high regulatory authority is typically in charge of reaching relatively "hard" decisions, which come into force without ratification *while* being responsible for many high-level decisions. Contrariwise, a regulator with low authority typically issues non-binding and unenforced guidelines (if any at all) *and* is mostly concerned with discussing few low-level decisions. Intermediary degrees lie in between. Finally, we acknowledge that alternative conceptions of authority exist; however, we claim that ours is particularly appropriate for the present discussion, that is, to deal with standard setting and enforcement processes in non-hierarchical systems.

4. Data and methods

We adopt an fsQCA to empirically study the systematic relationship between democratic anchorage and regulatory authority in internet governance. To begin with, we use fuzzy scores to capture how well multi-stakeholder regulators are anchored in democratic institutions and principles, and, respectively, their degree of regulatory authority. On the one hand, this allows us to examine variation in the anchorages of individual regulators. On the other, we can also make more general statements on whether and which strong anchorages are necessary and/or sufficient for exerting high authority at the cross-case level. In line with the explorative nature of our fsQCA approach, we expect that combinations of necessary or sufficient conditions, if any exist, will emerge as a result of the empirical analysis.

4.1. Research design

We applied an fsQCA because we examined complex and systematic relations among the concepts of interest (operationalized as "conditions" in QCA terminology) in a manner that required unpacking information and examining how factors *combine* rather than *compete* to create the outcome (Ragin 2000). This approach enables the study of "multiple and conjunctural" patterns and the possibility of "equifinality" – in other words, the prospect that different combinations of conditions can lead to the same outcome (Schneider & Wagemann 2012). These relations were conceived as set-theoretic in terms of necessity and sufficiency (Rihoux & Ragin 2008). The test of necessity implies examining whether instances of the outcome represent a subset of a specific condition.

The analysis of sufficiency corresponds to identifying the combinations of conditions that constitute a subset of the outcome (Ragin & Giesel 2006).

These conditions were operationalized and measured ("calibrated" in QCA terminology) to indicate their degree of membership in a specified fuzzy set. Researchers can adjust partial membership in such sets using ordinal and interval scales between zero (non-membership) and one (full membership) (Ragin 2008a). The fuzzy-subset relation is then assessed using fuzzy-set algebra, which is implemented in software such as the dedicated fs/QCA 2.0 (Ragin *et al.* 2006) and the QCA package for R (Dusa & Thiem 2014).

Our first analytical step was to discover all conditions with membership scores that were consistently greater than or equal to the outcome membership scores in order to determine the possible necessary conditions. Our second step was to examine the sufficient conditions by means of a comparison between membership scores in the outcome and the scores for all possible combinations of conditions. We assessed "consistency," indicating how closely the subset relation was approximated, and "coverage," the empirical relevance of a consistent subset (Ragin 2006).

Finally, following standing practice, we examined three models for each analysis: a complex solution with no simplifying operations; an intermediate solution that incorporated simplifying assumptions based on so-called easy counterfactuals, which were considered theoretically and substantially plausible; and a parsimonious solution that included all logical remainders (Ragin 2008b). Following Ragin and Sonnett (2005, pp. 181–182), there is no "correct" degree of complexity in absolute terms but it depends on the research goals. Accordingly, our baseline interpretation was based on the intermediary solution because we wanted to achieve substantial interpretability of our results while keeping the complexity of the solution term reasonably low. At the same time, we also considered the other formulas to refine our interpretation. In that regard, according to Schneider and Wagemann "several solution formulas of different complexity should be produced and presented" (2010, p. 12), while Maggetti and Levi-Faur recommend "the comparison of complex, intermediate, and parsimonious solution formulas" (2013, p. 200).

4.2. Case selection and data sources

We collected data on 23 internet regulators (cf. Nye 2014 for a good general overview of internet regulators). Our sample includes dedicated internet regulators that are set-up as multi-stakeholder organizations. We employed the definition of multi-stakeholderism mentioned above, stating that governance bodies can be characterized as multi-stakeholder organizations when they promote participation by those being regulated and beneficiaries. This approach excludes several relevant organizations that are active in regulating internet infrastructure. First, purely commercial and civil actors alike provide many proprietary or open-source protocols and standards. We excluded these actors, however, as they are not based on multi-stakeholderism. Second, governmental or intergovernmental organizations, such as the International Telecommunication Union (ITU), are also excluded from our analysis. Although ITU is concerned with internet governance, it also manages many tasks unrelated to the internet. Established in 1865, the ITU also substantially predates the internet, and, as an agency of the United Nations, represents a purely intergovernmental organization.

In addition, we have not included the whole population of NOG in our analysis. The exact size of the full population is difficult to estimate because of the informal nature of these groups, which also severely limits data availability. However, pretesting on random NOG from every region of the world showed little empirical variation among them (except for NANOG). Overall, our number of cases is large and diversified enough to allow a proper application of fsQCA.

We collected most of our data on organizations and procedures in spring and summer 2015 from primary sources, including bylaws, charters, constitutions, annual reports, press releases, project reports, meeting minutes, organization websites, and other official documents (see Appendix I). The purpose of collecting this information was to allow an in-depth understanding of the institutions and procedures of the regulators in our sample. With this, we aimed to reach a high level of abstraction regarding the calibration and assignment of the fuzzy scores (see next subsection). For instance, consider "transparency," that is, whether a regulator publishes relevant information. We did not consider whether every regulator was transparent in every situation, whether information was published for every event, for every discussion, on every standard, and so on. Instead, we attempted to

understand what information each regulator discloses in general and on a regular basis. This approach tends to account for formal processes and institutions. Informal norms, practices, and events, however, might not have left enough traces in the available documentation.

The corpus includes, on the one hand rather objective information, such as the fees members are required to pay, lists of members or published standards, and legal texts. On the other hand, all of this information is provided by the entities under scrutiny themselves. Hence, we further used secondary literature on internet regulation to complement and validate the primary sources. In particular, we used the works of Bygrave and Bing (2009), DeNardis (2009), Drake and Wilson (2008), Koppell (2010), Mueller (2002, 2010), Take (2013), and Weber (2010) for this purpose.

4.3. Calibration

To calibrate the democratic anchorages of internet regulators into fuzzy sets, we followed the framework developed by Sørensen and Torfing (2005b) with the adaptations described earlier. More precisely, we employed a two-step approach. First, we identified three subdimensions for each anchorage, as outlined in the presentation of the framework. Each subdimension was coded individually on a four-point ordinal scale adjusted between zero and one: low (corresponding to the value 0), medium-low (0.33), medium-high (0.67), and high (1). This coding followed a qualitative logic, except where noted, including several iterations of assessment and evaluation of primary and secondary information, comparison and re-evaluation of theory and information, and comparison of cases with each other. Second, the subdimensions were aggregated by taking the average value and coded as fuzzy sets to obtain the final score for each anchorage. As a result, regulators in our dataset show a rather large variation and take on many fuzzy scores between zero and one, which is in line with the aim of mapping and describing variation across regulators. All fuzzy scores can be found in Appendix II.

The *anchorage in democratically elected politicians* indicates how strongly a regulator is attached to the chain of delegation. For this, politicians should contribute to the design and creation of the regulator, frame its goals and values, and participate and manage it directly. As indicated earlier, the explicit involvement of elected politicians is rare. However, public officials are involved in many internet regulators, and we treated their inclusion as a proxy. To reflect this option in our scores, we imposed a penalty of one step. For example, full involvement of public officials was expressed as only partial instead of full membership (i.e. 0.67 instead of 1). Of course, the use of this penalty, as well as its strength, can be debated. However, this one step signifies a qualitative difference between the involvement of elected politicians and public officials, respectively. In addition, a stronger punishment would have led to "zero inflation," that is, to a situation where many cases converge toward non-membership. Our goal was to map variation, not to suppress it.

The *anchorage in the participation of stakeholders* indicates how well affected stakeholders are represented in decisionmaking processes; in other words, how inclusive the regulator is regarding stakeholders. For this, stakeholders must be able to freely select, evaluate, and dismiss their own representatives regarding the regulator (Sørensen & Torfing 2005b). Hence, this anchorage indicates the ability of *all* stakeholders to place their representatives within the regulator, as well as the ability of those representatives to participate in the various organs of the regulator in a meaningful way, such as by voting in a general assembly or taking part in a working group. This does not mean that all stakeholders have the same power or the same weight in voting, just that they all are able to participate.

The *anchorage in accountability* indicates how much control members have over the regulator, that is, over the vector through which they make decisions. Institutionalized channels of accountability require transparency and incentives to foster responsiveness (Bovens 2007; Koppell 2010, p. 35). Transparency indicates the provision of information through publications relevant to the regulatory process, especially drafts, ongoing negotiations, policy feedback, or technical data; or by "open-door" events such as press conferences, speeches, workshops, and training. Incentives to foster responsiveness, on the other hand, indicates the degree of discretion over the organizational structure of the regulator, which is mainly expressed by modifying the regulator's constitutional documents or by dismissing the board, the director, the secretary, or other key staff members. In addition, relying mostly on membership fees and donations for funding makes regulators potentially more accountable to members.

Lastly, the *anchorage in democratic procedures* indicates whether decisions are made through open deliberation and aim to reach a consensus, and whether regulators strive for democratic improvement. This anchorage thus requires in particular a channel for non-members to participate. It is not necessary that non-members have the same influence as regular members, but negotiations and drafts should be transparent and accessible, and there should be an official method to "deposit" comments from non-members. Further, deliberations should be formalized and allow every member to participate and express their "voice." Finally, a regulator should explicitly self-reflect on its governance and aim to improve its democratic quality. In particular, the regulator is well anchored if it emphasizes the relevance of including democratically elected politicians and stakeholders, and the relevance of accountability.

Regarding clustering, membership in either the ICANN or the ISOC/IETF cluster was indicated with a score of one if the given regulator explicitly stated an affiliation with the central organizations. As indicated in Table 1, regulators either belonged to one of the clusters or did not, in which case they scored zero.

The coding of our outcome – *regulatory authority* – was based on our coding of the two aforementioned dimensions: the hardness of the output and the central position within the regulatory regime, respectively. Similar to the coding of democratic anchorages, each dimension of authority rests on three subdimensions. However, for conceptual reasons, we measured these subdimensions on a three-point (not four-point) scale. This corresponds to "low," "medium," and "high" values for three subdimensions each. Our robustness tests found no evidence of a significant difference between this method and a four-point scale. Averaging them created an aggregated value for both dimensions, which were then combined and calibrated to create the fuzzy scores for the "full" regulatory authority. It is also worth noting that (aggregated) fuzzy scores of 0.5 were rare (see Appendix II).

Regarding the first dimension of authority, a regulator has a hard output if its decisions enter into force automatically, are mandatory, and it is not possible to opt-out of them. Further, a hard output indicates that decisions are legally binding, as opposed to only factually binding (e.g. there are no viable alternative standards), or not binding at all. Lastly, formalized sanctions for enforcing decisions, as opposed to more informal sanctions or no sanctions, also correspond to a hard output.

The second dimension of authority refers to the position of a regulator within the regime. We determined that regulators responsible for several (e.g. three or more) specific issues are more relevant than those that work on fewer issues. Further, we have adopted the framework provided by DeNardis (2009) to identify the level of regulation. Decisions regarding hardware or the protocols of the address system are more relevant for the operation of the internet and we treat them as high-level policies. Decisions regarding software and protocols not related to the address system are of a lower level and less relevant. They are mostly voluntary and, unlike the address system, not finite. Lastly, we distinguished between standard-setters that have higher authority from implementing and administrating bodies and discussion forums with lower authority.

5. Empirical analysis

The following section presents the results of the fsQCA and their discussion. The tested conditions are "strong inclusion of politicians," "strong inclusion of stakeholders," "high accountability," "high respect for democratic procedures," and "ICANN membership" (which is dichotomous), for the outcome "high regulatory authority." For the sake of simplicity and readability, we use each anchorage's short name (introduced in Table 2) in the truth table (Table 3) and in the result table (Table 4). All fuzzy scores are reported in Appendix II.

5.1. Results of fuzzy-set qualitative comparative analysis (fsQCA)

As explained in Section 4.1, QCA allows the identification of whether any conditions or combinations of conditions are necessary or sufficient for the given outcome. We first report whether strong anchorages are necessary to have high regulatory authority; then whether strong anchorages are necessary or sufficient for *not* having high regulatory authority; and, finally, whether strong anchorages are sufficient for having high regulatory authority.

Necessary conditions: Using the standard consistency thresholds of 1 or 0.95, no individually necessary conditions were identified. In other words, neither democratic anchorages nor membership in the ICANN cluster are

Table 3 Truth table

Conditions					Number	Outcome	Consistency		
Politicians	Stakeholders	Accountability	Procedure	ICANN		Regulatory authority	Raw consist.	PRI consist.	SYM consist.
0	1	1	1	1	4	1	1	1	1
0	1	0	1	1	1	1	0.95	0.87	0.87
0	0	0	1	1	1	1	0.85	0.52	0.52
0	0	0	0	1	1	0	0.83	0.20	0.21
0	0	0	0	0	1	0	0.74	0.49	0.49
0	1	1	0	0	1	0	0.55	0	0
1	1	0	1	0	1	0	0.52	0	0
0	1	1	1	0	5	0	0.36	0	0
0	1	0	1	0	5	0	0.31	0	0

ICANN, Internet Corporation for Assigned Names and Numbers; PRI, proportional reduction in inconsistency; SYM, symmetric consistency.

strictly needed to exercise a high degree of authority in internet governance. This is not unusual, because necessary conditions are seldom found with QCA (Dion 1998, p. 142; Schneider & Wagemann 2007, p. 60).

Negative outcomes: Although the focus of our study rests on the positive relationship between anchorage and authority, we also checked for negative outcomes. This means that we tested whether the conditions are necessary or sufficient for the *absence* of authority. Note that this would operationalize the counterfactual expectation that being well anchored in democratic institutions and principles would in fact correspond to not having high authority for a given regulator. However, the application of the different models did not produce robust or consistent results. Hence, we cannot explain the absence of high authority with our data and model.

Sufficient conditions: The baseline consistency threshold used in our analysis is 0.85, in line with standard practice. The intermediate solution is derived by assuming that all conditions but ICANN are present. Following the usual robustness checks (the iterative use of both packages mentioned in Section 4.1, the alternative coding of some conditions as described in Section 4.2, an alternative consistency threshold set at 0.9, and the comparative assessment of different solutions), the interpretation of the results remains substantively unchanged. In this respect, it is worth mentioning that the use of a consistency threshold of 0.8 would have included another configuration represented by one case whose cut-off point would have been 0.83. This would leave the complex solution unchanged but slightly modify the intermediary and parsimonious ones. However, we consider that it is correct to exclude this configuration. It does not meet our original consistency threshold, and, above all, it would run against the "possibility principle" (Mahoney & Goertz 2004). Following this principle, cases should only be included when the outcome is expected by at least one condition. This is not the case in this configuration, which is only populated by "zero" in the conditions for which we have directional expectations. As a final robustness check, we included the ISOC/IETF cluster as an additional condition; however, results remain unchanged.

The complex, intermediate, and parsimonious solutions show very good consistency scores for the outcome, ranging from 0.92 to 0.91. As previously mentioned, our interpretation will mostly focus on this intermediate solution, although the other solutions will be used to refine our interpretation. All solutions are reported in Table 4.

Specifically, the intermediate and parsimonious solutions, which are identical, indicate that the presence of high respect for democratic procedures and membership in the ICANN cluster are sufficient to explain high regulatory authority in internet governance. The cases that follow this sufficient term are numerous: African Network Information Centre (AFRINIC), American Registry for Internet Numbers (ARIN), Asia-Pacific Network Information Centre (APNIC), ICANN, Latin America and Caribbean Network Information Centre (LACNIC), Number Resource Organization (NRO), and Réseaux IP Européens Network Coordination Centre (RIPE NCC).

The complex solution consists of two equifinal paths, which means there are two combinations of conditions that both lead to high regulatory authority. The first is the absence of both a strong inclusion of politicians and high accountability, combined with the presence of high respect for democratic procedures and membership in

Table 4 Results of the fsQCA

Sufficient conditions for regulatory authority					Cases
Solution	Path	Raw Coverage	Unique Coverage	Consistency	
Complex	politicians*accountability* PROCEDURE*ICANN	0.34	0.01	0.88	*ICANN, NRO*
	+				
	politicians*STAKEHOLDERS* PROCEDURE*ICANN	0.52	0.19	0.96	*RIPE NCC, ICANN, ARIN, AFRINIC, APNIC*
	solution coverage: 0.53				
	solution consistency: 0.92				
Intermediate/ parsimonious	PROCEDURE*ICANN	0.63	0.63	0.91	*ICANN, AFRINIC, LACNIC, APNIC, RIPE NCC, NRO, ARIN*
	solution coverage: 0.63				
	solution consistency: 0.91				

Capital letters indicate the presence of the given condition, lowercase the absence. AFRINIC, African Network Information Centre; APNIC, Asia-Pacific Network Information Centre; ARIN, American Registry for Internet Numbers; fsQCA, fuzzy set qualitative comparative analysis; ICANN, Internet Corporation for Assigned Names and Numbers; NRO, Number Resource Organization; RIPE NCC, Réseaux IP Européens Network Coordination Centre.

the ICANN cluster. The second path is again the absence of strong inclusion of politicians, combined with the high inclusion of stakeholders, high respect for democratic procedures, and membership in the ICANN cluster.

5.2. Results and discussion

The discussion of our findings proceeds in three steps. First, we discuss the anchorages as a measure of the democratic quality and the authority of individual regulators. Second, we discuss cross-case patterns, for which we rely on the results from the fsQCA with respect to the general relations between specific anchorages and regulatory authority in an aggregate sense. Third, we draw conclusions regarding the application of the framework of democratic anchorages to the debate surrounding the legitimacy of transnational multi-stakeholder regulators.

Overall, there is a great variation among the regulators in our sample both in terms of democratic anchorage and regulatory authority (see Appendix II). One clear pattern, as previously mentioned, is that these regulators tend to be rather weakly anchored to elected politicians. In addition, regulators are rather well anchored to stakeholders, with few exceptions. This is an interesting result: although all organizations in our sample are multi-stakeholder regulators, the actual involvement of stakeholders significantly varies, and stakeholders cannot participate everywhere equally well. Further, high regulatory authority is especially associated with the ICANN cluster, although not all organizations of this cluster possess it to a great extent.

Our results can be interpreted for each of the regulators individually. As we cannot discuss all 23 regulators in detail, we focus on two crucial ones: ICANN and IAB. ICANN has the highest authority (1) in our sample, and is rather well anchored to *stakeholders* (1) and *procedures* (0.87). This means that ICANN can be considered as inclusive, and respectful of democratic rules and norms in decisionmaking. However, its anchorage to *politicians* (0.37) and particularly *accountability* (0.25) are rather weak. This means that there is not much potential for the will of citizens to be translated into the regulatory output, given that ICANN is only weakly attached to the chain of delegation. This finding is also consistent with previous research, where the existing shortcomings regarding ICANN accountability have been extensively discussed (Mowery & Simcoe 2012; Weber & Grosz 2007; Mueller 2009; Chenou & Radu 2013; DeNardis & Raymond 2013).

IAB also has high regulatory authority (0.8); the highest, in fact, of any regulator outside the ICANN cluster. At the same time, IAB is only weakly anchored to democratic institutions and principles, and exhibits the lowest scores of all anchorages in our sample. This comes as no surprise, as IAB serves as an oversight organization that comments

on and approves the decisions made by other regulators; in particular, it oversees protocol development in the ISOC/IETF cluster. However, it might still find alternative ways to improve its democratic quality. Because IAB is well embedded in the ISOC/IETF cluster, whose members are better anchored in democratic institutions and principles, one could argue that this cluster "lends" democratic quality to IAB as well. However, the conditions under which democratic quality can be shared, if it can indeed be shared at all, need to be specified by further research.

In Section 3.1, we argued that regulators perform democratically inasmuch as they are democratically anchored (Sørensen & Torfing 2005b, p. 201). Considering this, we find that ICANN performs rather well (i.e. fuzzy scores exceed 0.5) related to both the principle of affection (stakeholders) and the procedural quality of its decisionmaking (procedures). However, ICANN does not perform well (i.e. fuzzy scores below 0.5) in regard to representation (politicians) and institutional control (accountability). IAB, on the other hand, does not perform well at all, given that all of its anchorages are rather weak. Hence, while ICANN achieves some democratic quality through two (out of four) anchorages, IAB obtains none.

Turning to our fsQCA and cross-case findings, being a member of the ICANN cluster *and* respecting democratic rules and norms in decisionmaking appears to be sufficient to establish a high degree of regulatory authority in internet governance. This finding supports the assumption that governance over internet infrastructure is a highly technological issue and that its regulators are concerned with "politics of problems" and not "politics of opinions" (Leca 1996). In this context, being anchored in democratic procedures can increase not only the quality of decisionmaking processes, but their outputs as well, that is, protocols, standards, contracts, and other forms of regulation. In other words, the multi-stakeholder organizations of the ICANN cluster appear to benefit from the ongoing process of deliberation, which includes the possibility for members – or to a lesser extent even non-members – to voice their concerns, following a process similar to the "logic of empowerment" identified by Auld *et al.* (2015).

However, our findings also suggest that we should qualify our expectations about the exercise of transnational authority because some factors appear to be irrelevant or even to have a reverse effect compared to what was expected. In the complex solution, it is indeed weak anchorage to *democratically elected politicians* that is related to the outcome of having high regulatory authority.

This relates to the discussion on whether internet governance should be set up as "multi-stakeholderism" or "governmentalism." Mueller *et al.* argue, "policymakers unwisely skipped foundational tasks in regime construction" and "did not attempt to forge agreements on underlying principles and norms for international cooperation on Internet governance (…)" (2007, p. 238). Although multi-stakeholderism prevails at present, there are propositions to structure internet governance differently, and policymakers worldwide are discussing these propositions – for instance, in the NetMundial Initiative. A possible interpretation sees the relevance of democratic procedures as symptomatic of multi-stakeholderism, while governmentalism might produce a different pattern whereby we might find, for example, the inclusion of politicians or governmental delegates as crucial features to determine the authority of a regulator.

So far, we have examined the empirical patterns characterizing democratic anchorage and the regulatory authority of multi-stakeholder regulators. In the remainder of this section we take a step further and discuss the usefulness of this approach for debating the legitimacy of internet regulation, and of transnational multi-stakeholder regulation more generally. We do not wish to make normative judgments or recommendations but illustrate how some insights from our empirical study could have normative implications.

In particular, we want to elaborate on the result that weak anchorage to *democratically elected politicians* is systematically related to high regulatory authority. Indeed, this feature might be an important shortcoming for the legitimacy of internet governance, because it leads to a "double isolation" of ordinary citizens. They are isolated from internet governance because, firstly, this policy field is concerned with highly technical issues, rendering it hardly understandable to any layperson. Although internet governance is indeed transparent and inclusive for stakeholders (see Appendix II), without representation it remains inaccessible to citizens. Secondly, citizens' representatives do not positively contribute to the authority of internet regulators, as our analysis has shown. Considering that "'real places' and 'virtual spaces' cannot be separated in the information age" and that "[e]very virtual communication among netizens starts and ends with a real citizen" (Kleinwächter 2006, p. 476), this double isolation can be seen as a critical weakness of the regime (cf. Hunter 2003; Papadopoulos 2007; Vibert 2011). Although our analysis allows us to identify this weakness, further research and elaboration is required to determine whether this indeed leads to a legitimacy challenge or even crisis.

The framework of democratic anchorages put forward by Sørensen and Torfing has proven useful for analyzing the democratic quality of internet governance. Several key characteristics that contribute to the democraticness of regulators, such as their representativeness, transparency, and accountability (Weber 2010; Take 2013), can be apprehended coherently and analyzed with a unified model through this framework. Other characteristics, such as expertise (Take 2013; Sylvain 2015), do not belong to this framework but to a more technocratic than democratic approach to regulation. Nonetheless, in our case, expertise is reflected in anchorage in democratic procedures because only these procedures enable expertise to influence decisionmaking. In this respect, the technical expertise of stakeholders in particular is embedded in institutions in the form of inclusiveness and procedural fairness (Quack 2010, p. 10; Antonova 2011). Indeed, there is some overlap between different forms of legitimization, and certain characteristics, such as the procedural quality of decisionmaking, are relevant to more than one form.

6. Conclusion

Increasingly, authority lies in the hands of transnational multi-stakeholder organizations, which operate on multiple levels of governance and include non-state actors, and whose democratic quality has been widely debated by scholars and policymakers. To contribute to this discussion, we have investigated the regulatory regime of the internet, including 23 regulators with various degrees of regulatory authority over the internet's technical infrastructure. Our objective was to explore and map the democratic anchorages of these regulators, and to examine whether strong anchorages systematically relate to high regulatory authority. We agree with the current literature that the role of multi-stakeholder organizations is crucially shaped by those actors affected by them, that is, stakeholders (e.g. Doria 2013; Auld *et al.* 2015; Sylvain 2015). However, we claim that the democratic quality of a governance body *also* depends on the principle of representation, on institutional control, and on procedural quality of decisionmaking.

More precisely, we depicted multi-stakeholder organizations as vectors through which those being regulated and the beneficiaries might participate in decisionmaking (Cafaggi 2011) following a "logic of empowerment" (Auld *et al.* 2015, p. 109; Sylvain 2015). The multi-stakeholder regulators included in our analysis vary to a great degree in both their democratic anchorages and with respect to their regulatory authority. ICANN, for example, shows good democratic performance regarding the principle of affection and the procedural quality of decisionmaking, but weaker performance regarding the principle of representation and institutional control. Hence, the overall democratic quality of ICANN rests only on two out of four democratic anchorages.

In addition, analyzing the cross-case relations between anchorages and authority with fsQCA showed that being part of the ICANN cluster and respecting democratic procedures for decisionmaking is jointly sufficient to exert high regulatory authority in this regulatory regime. Thus, even in this technological and truly global policy field, democratic institutions are relevant and serve, at least, instrumental purposes. Respect for democratic procedures increases the quality of decisionmaking and, consequently, is expected to improve the regulatory output. However, it is also important to note that some anchorages appear to be irrelevant or even are negatively related to high regulatory authority. This is precisely the case for the anchorage to *democratically elected politicians.*

Internet governance stands out among policy issues regulated by transnational multi-stakeholder organizations. First, and as indicated above, some fundamental principles of regulation are still contested in internet governance, and the current model of multi-stakeholderism is challenged by governmentalism. The systematic relationship between regulatory authority and democratic anchorage reflects this current model, but might change should governmentalism become more dominant. Second, the internet is a highly technical and complex construct involving a multitude of protocols, standards, contracts, and other regulations. Hence, it is embedded in politics of problems (Leca 1996) and requires specific skills and expertise, which, in turn, are shared by the community to which this regulatory regime belongs (Antonova 2011; Braman 2011). Whether we find similar patterns of authority and democratic anchorages in other policy fields remains thus to be seen.

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Notes

1 The One Laptop Per Child initiative is an example of a non-profit organization that develops and distributes hardware and software. Its goal is to provide children in developing countries with low-cost laptops to promote education.

2 There have been attempts to provide alternatives to the Global Address System (which is operated by ICANN), most of which have had only marginal consequences. "Unifiedroot," for example, is a company from the Netherlands that offers alternative domain names on its own. However, this alternative requires the implementation of additional components not needed for the default, ICANN's address system.

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APPENDIX I

Organizations and data sources

This list gives an overview of the documents included in the analysis. They have been published online and may include sub-documents. For example, ICANN: Meetings includes information about past and upcoming ICANN meetings, including travel information, presentations, and transcripts, but also information for sponsors.

AfNOG: Archives; Mailing List; Meetings Agenda; Meetings Sponsors; Workshops website; From the homepage: General information, History, Funding, Workshops, Tutorials and Conferences agenda and participants; From the Internet Society website: General information

AFRINIC: About AFRINIC; AFRINIC Factsheet; By-laws; Events; Fees and Categories; Fellowship; Corporate Documents; Mailing List; Members List; Membership; Policy Development Process; Policy Documents; Publications; Service Agreement

APNIC: Activity Plans and Budget; Annuals Reports; Articles of Association; Auditors reports; By-laws; Conferences and Presentations; Corporate Documents; Executive Council Meeting Minutes; Financial Reports; Mailing Lists; Media Library; Membership Agreement; Members List; Memorandum of Association; Policy Development Process; Strategy Guide, Policy Discussions And Decisions; Privacy Statement; Processes; Statistics Portal

ARIN: About ARIN; Agreements; By-Laws; Code of Conduct; Corporate Documents; Elections; General Education; Fee Schedule; Mailing Lists; Meetings; Members List; Membership; Number Resource Policy Manual; Policy Development Process; Registration Services Audit Reports; Service Agreement; Sponsorship; Statistics; Technical Information; Whois Service Terms of Use

ASO: About the ISO; Address Council; ASO FAQ; Global Policies; History; Mailing Lists; Meetings; Memorandum of Understanding; Operating Procedures; Presentations; RIR Policies; RIR Policy Documents

DENOG: DENOG Wiki; General information from homepage, Publications from DENOG meetings on participants and sponsors; Statutes.

FRnOG: FRnOG Presentation; Mailing List Archives; Meetings Archives; Meetings Participants; Meetings Slides; From the homepage: Charter, Mailing List.

IAB: Charter; Description; History; IAB Correspondence, Reports, and Selected Documents; IAB, IESG, and IAOC Selection, Confirmation, and Recall Process; IETF Meetings; Mailing Lists; Members; Minutes; RFC Editor and Published Standards.

ICANN: About ICANN; Accountability & Transparency; Affirmation of Commitments; Annual Reports; Articles of Incorporation; By-laws; Contractual Compliance; Contractual Compliance Audit Program; Financials; GAC Advice; GNSO Policy Development Process; ICANN Policy; ICANN Wiki; Meetings; Public Comment; Uniform Domain-Name Dispute-Resolution Policy.

ICG: About IANA; Calls for Input; Conference Calls; IANA Stewardship and Accountability; IANA Stewardship Transition Coordination Group Members; ICG Guidelines for Decision Making; Informational Booklet; Internet Governance Project website; Mailing Lists; Statement from the First Meeting of the IANA Stewardship Transition Coordination Group.

IESG: Charter; IAB and IESG Selection, Confirmation, and Recall Process; IETF Areas; IESG Wiki; Mailing Lists; Meetings; Members; Minutes; RFC Pages.

IETF: About the IETF; Arbitration Process; IETF Endowment Fact Sheet; IETF Journal; IETF NomCom; Mailing Lists; Meetings; Members; Mentoring Program; Minutes; Mission Statement; Official Documents; Participation; RFC Pages; Standards Process.

IGF: About the IGF; IGF Brochure; IGF Support Association; Consultations; Documents; Dynamic Coalitions; Funding; Meetings; Multistakeholder Advisory Group; Tunis Agenda for the Information Society; UN statements.

IRSG: General Information; IAB Charter; IAB Minutes; IRTF Document Stream; IRTF Research Group Guidelines; IRTF website; Mailing Lists.

IRTF: General Information; IESG Procedures for Handling of Independent and IRTF Stream Submissions; IRTF Chair; IRTF Research Groups; IRTF Research Group Guidelines; IRTF Wiki; Mailing Lists; Overview.

ISOC: Annual Reports; Articles of Incorporation; Audit Committee Charter; By-laws; Chapters; Events; Governance & Policies; Issues; Members; Organization Reports & Policies; Policy for Establishing New Chapters; Public Policy.

LACNIC: About LACNIC; Annual Reports; Budget; Culture and Values; Events; Fiscal Commission; ICANN Recognition of LACNIC Document; Mailing Lists; Members List; Membership Information; NRO LACNIC Fact Sheet; NRO Memorandum of Understanding; Policies and Procedures; Policy Development Process; Policy Manual; Registration Service; Statute, System Guide.

NANOG: NANOG Wiki; Budget; Bylaws; Certificate of Incorporation; Charter; Governance; Mailing Lists; Meetings; Membership Policy; Sponsors.

NRO: About the NRO; Global Policies; Memorandum of Understanding; NRO NC Election Process; NRO FAQ; Regional Internet Registries Overview; RIR Accountability Questions and Answers.

RIPE NCC: Annual and Quarterly Reports (including 2014); Articles of Association; Billing Procedures and Fee Schedule; Budget and Activity Plans (including 2015); Closure of members; Conflict Arbitration Procedures; Deregistration of Internet Resources and Legacy Internet; List of Arbiters; From the homepage: General Information and History, Becoming a Member, RIPE NCC General Meetings, The RIPE NCC Executive Board.

SANOG: From homepage: Sponsorship and Sponsorship Prospectus, Partnerships, Meetings, Membership of SANOG's Committees, General Information, Mission Statement, History, Information on Fellowship Program, Publications from SANOG Meetings.

SWINOG: Charter; Homepage; Mailing List; Meetings; Sponsors.

W3C: Patent Policy; Process Document; Member Agreement; Membership FAQ; Members List; From the homepage: Information on Staff, Governance Structure, Funding, History, Fellows Program, Press Releases.

APPENDIX II

Fuzzy scores for democratic anchorage, cluster memberships, and authority for internet regulators

Regulator	Politicians	Stakeholders	Accountability	Procedure	ICANN	ISOC	Regulatory Authority
ICANN	0.37	1	0.25	0.87	1	0	1
ICG	0.5	0.37	0.25	0.5	1	0	0.5
ASO	0.12	0.37	0.37	0.37	1	0	0.4
NRO	0.12	0.37	0.12	0.62	1	0	0.2
ARIN	0.25	0.75	0.75	0.62	1	0	0.8
AFRINIC	0.37	0.62	0.62	0.87	1	0	0.8
LACNIC	0.25	0.5	0.62	0.87	1	0	0.8
APNIC	0.37	0.62	0.75	0.75	1	0	0.8
RIPENCC	0.25	0.75	0.87	0.75	1	0	0.8
ISOC	0.12	1	0.75	0.62	0	1	0.3
IAB	0	0.12	0.37	0.37	0	1	0.8
IETF	0.25	1	0.75	0.62	0	1	0.5
IESG	0.12	0.62	0.62	0.37	0	1	0.4
IRTF	0.12	0.75	0.62	0.62	0	1	0.2
IRSG	0.12	0.5	0.37	0.5	0	1	0.1
W3C	0.25	1	0.62	1	0	1	0.4
IGF	1	0.75	0.37	1	0	0	0.1
SWINOG	0	1	0.37	0.75	0	0	0
NANOG	0.25	1	0.62	0.87	0	0	0.1
AFNOG	0.25	1	0.37	1	0	0	0
FRNOG	0	1	0.37	0.87	0	0	0
DENOG	0	1	0.37	0.87	0	0	0
SANOG	0.12	1	0.37	1	0	0	0