

TECHNOLOGY POLICY INSTITUTE

▫ Studying the Global Information Economy ▫

27 May 2014

Re: Enhancing ICANN Accountability

We submit these comments in response to ICANN's 6 May 2014 request for comments on the issue of ICANN accountability. According to the announcement, "This discussion will look at how ICANN remains accountable in the absence of its historical contractual relationship to the U.S. Government and the perceived backstop with regard to ICANN's organization-wide accountability provided by that role."

Accountability has long been one of the most important issues surrounding ICANN and thus the Internet. We have undertaken a detailed study of ICANN's accountability, and these comments are based on the results of that study, which is attached.¹

Accountability requires some meaningful external checks, and virtually all major organizations are externally accountable. For example, corporations are accountable to their customers, who can go elsewhere, as well as to their shareholders who elect boards of directors, who in turn can replace management if the company is not performing. Non-profits are accountable to their members and donors and, when applicable, customers. ICANN has no shareholders, members, or donors. Its customers cannot go elsewhere, because ICANN has a monopoly on gTLDs, which provides it with an assured and rapidly growing source of revenue.²

The issue of ICANN accountability becomes even more important with the decision to transition the Internet Assigned Numbers Authority (IANA) contract away from control of the U.S. Department of Commerce (DOC). Under a series of agreements—the Memorandum of Understanding, the Joint Project Agreement, and currently the Affirmation of Commitments—the DOC has exercised modest, but diminishing, oversight over ICANN. In addition, the DOC's role in awarding the IANA function, the source of ICANN's control of the Domain Name System (DNS) root, has provided an important measure of external control, since failing to renew the contract would effectively destroy the organization.

In the 16 years of its existence, ICANN has taken seriously its responsibility to maintain the stability of the root. The Internet has flourished, and ICANN has committed no major gaffes. However, the loss of external control implied by the proposed transition increases the likelihood

¹ These comments draw from Lenard, T.M., White, L.J. Improving ICANN's governance and accountability: A policy proposal Inf.Econ.Policy (2011), doi: 10.1016/j.infoecopol.2011.03.001.

² In 2013, the introduction of new gTLDs has increased ICANN revenue by over 200% compared to 2012. The data on ICANN finances are available at: <https://www.icann.org/resources/pages/historical-2012-02-25-en>.

that ICANN might take substantially misguided actions in the future. Moreover, notwithstanding the fact that U.S. oversight has been quite light-handed, the diminished U.S. role will create a void that other governments are anxious to fill.

While ICANN has established a number of “accountability” procedures, they largely reflect internally determined policies, which can be changed by the leadership of ICANN without external constraints. ICANN places a great deal of emphasis on obtaining input from the Internet “community” with respect to issues on which ICANN must make decisions. ICANN’s “multistakeholder” model “means that anyone with an interest in the Internet is invited to come and share their perspective and ideas regarding the evolution of the Internet,” and that ICANN “listen(s) to every conceivable angle before decisions are made.”³ In the end, however, it is ICANN’s board that makes those decisions.

ICANN’s board is the ultimate decision-making authority for the organization. But that board has no shareholders or other external entities to which it is accountable. Although ICANN’s bylaws provide that certain constituencies have board seats, those board members have an obligation to ICANN, not to their constituencies. All of ICANN’s procedures, including those for electing board members, are the result of bylaws or other policies that have been adopted by the board or the management, all of which are subject to change by the board or management. The bylaws can be amended by a two-thirds vote of the board, and the other procedures can be changed more easily.

Our study reviewed the operations and structures of a number of other organizations that perform a range of private-sector and quasi governmental coordination and standard-setting functions.⁴ We further examined how these institutional structures address accountability, and how they could be applicable to ICANN. Virtually all of the organizations that we surveyed are governed by their direct users, with generally good results. The direct users of ICANN are the registries, the registrars, and the Regional Internet Registries (RIRs). Importantly, the RIRs, which are separate non-profit organizations, have adopted a governance model similar to the organizations we studied. They are governed by boards that are elected by their members—entities that receive allocations of IP addresses. This includes ISPs and other network operators.

The most direct way to have external accountability is to modify ICANN’s governance structure so that board members, or at least a significant number of them, are accountable to external groups. Thus, we would suggest a model that would increase representation of direct users, including registries, registrars, and RIRs, on the board. These groups have the strongest incentive to see that the DNS works smoothly and apolitically and that ICANN focuses on the technical functions involved in administering the DNS, avoids mission creep, and addresses problems affecting the DNS (such as trademark issues) as they arise. This benefits all users.

³ See Lenard and White, p. 4.

⁴ See Lenard and White. Organizations studied include the American National Standards Institute (ANSI), Depository Trust and Clearing Corporation (DTCC), GS1 US, National Automated Clearinghouse Association (NACHA), Nav Canada, North American Numbering Plan Administrator (NANPA), and Options Clearing Corporation (OCC).

A modified board structure might also allow for representation by other constituencies. However, given the longstanding goal, which we share, that Internet governance should be private, we do not envision formal ties between governments and ICANN, and thus would not allot seats on ICANN's board to representatives of governments.

The IANA transition represents a crossroads for ICANN. Although ICANN has functioned reasonably well, we cannot assume that an organization that is essentially accountable to itself, with no meaningful external controls, can continue to do so indefinitely. Thus, the issue of ICANN external accountability urgently needs to be addressed.

Respectfully Submitted,

A handwritten signature in dark ink, reading "Thomas M. Lenard". The signature is written in a cursive style with a large initial 'T'.

Thomas M. Lenard
President and Senior Fellow, Technology Policy Institute

A handwritten signature in dark ink, reading "Lawrence J. White". The signature is written in a cursive style with a large initial 'L'.

Lawrence J. White
Professor of Economics, NYU Stern School of Business

**Improving ICANN's Governance and Accountability:
A Policy Proposal**

March 2011

Thomas Lenard and Lawrence White



Contents lists available at ScienceDirect

Information Economics and Policy

journal homepage: www.elsevier.com/locate/ie

Improving ICANN's governance and accountability: A policy proposal

Thomas M. Lenard^a, Lawrence J. White^{b,*}^a Technology Policy Institute, Washington, DC, USA^b Stern School of Business, New York University, USA

ARTICLE INFO

Article history:

Received 23 June 2009

Received in revised form 7 March 2011

Accepted 8 March 2011

Available online xxxx

JEL classification:

L38

L59

L96

Keywords:

ICANN

Internet

Domain

Registry

Registrar

Governance

ABSTRACT

The Internet Corporation for Assigned Names and Numbers (ICANN) has control over extremely important aspects of the Internet. Yet, its non-profit corporation status, combined with the way that it is funded and governed, make accountability a serious problem. This paper draws on the accountability framework that has been developed by Mueller (2009) to evaluate the structure and governance of ICANN and then compares it to the structure and governance of a number of other organizations that perform a roughly comparable range of coordination and standard-setting functions, to explore what might be applicable to ICANN. Virtually all of these other organizations are governed by their direct users, thereby building accountability into their structures. We suggest that this would be a good model for ICANN as well.

© 2011 Elsevier B.V. All rights reserved.

1. Introduction

"One problem with Internet governance as a concept... is that there is no natural institutional home for all of the issues that are involved." Mathiason (2009, p. 133).

"In the new Internet governance regime, private and intergovernmental conflict over the ownership of the root was resolved through the establishment of a central authority that, in effect, owns the entire name space and grants limited privileges of use to suppliers and consumers." Mueller (2002, p. 259).

The central governance structure of the Internet is a puzzle. Governments and for-profit companies are involved in various aspects of the operation of the Internet,

but only weakly and indirectly in its governance. Instead, a non-profit corporation—the Internet Corporation for Assigned Names and Numbers (ICANN)—is responsible for essential governance functions. It attempts to be responsive to the "Internet community" at large, but in fact is largely accountable to no one.

ICANN's website, which devotes extensive attention to proposals concerning potential changes in Internet policies and requests for public comment on these proposals (with specified comment periods), gives the impression of strong similarities with the regulatory processes of US Government agencies. But the impression is just that, since the link between ICANN and the US Government has historically been weak and became yet weaker in September 2009.

In this paper we argue that a lack of accountability is one of the most important issues surrounding ICANN—and thus the Internet.¹ Accountability requires

* Corresponding author. Address: NYU Stern School of Business, 44 West 4th Street, New York, NY 10012-1126, USA. Tel.: +1 212 998 0880; fax: +1 212 995 4218.

E-mail address: Lwhite@stern.nyu.edu (L.J. White).

¹ ICANN's accountability and "legitimacy" have been longstanding issues. See, for example, Weinberg (2000) and Mueller (2002).

some meaningful external checks; but those external checks are absent. A set of “notice and comment” procedures over which ICANN has sole control does not constitute meaningful accountability. Instead, our review of other institutional models suggests that a change in governance that puts ICANN’s direct users effectively in control would make the organization more accountable and would improve incentives for efficient operation.

The remainder of this paper proceeds as follows: Section 2 provides an overview of ICANN’s structure and responsibilities. Section 3 offers a framework for evaluating organizational governance and accountability. In light of that framework, Section 4 discusses the problems with ICANN’s current structure. Section 5 examines the governance structures of seven other organizations that play roles that are similar to that of ICANN and draws lessons from those structures. Section 6 discusses how a direct-user-controlled ICANN might address some of the major issues that the organization faces. Section 7 lays out the major options for ICANN governance. And Section 8 concludes.

2. ICANN’s structure and responsibilities

2.1. The domain name system

In order for the parties connected through the Internet to be able to communicate—whether through e-mail or through the accessing of a web page—they need unique “addresses” to which the relevant communications will be sent. Those addresses, for the purposes of the computers that do the routing, are simply unique strings of numbers, which are called Internet Protocol (IP) addresses.

The coordination of the allocation of IP addresses is the responsibility of ICANN through the Internet Assigned Names Authority (IANA), which is operated by ICANN. IANA is responsible for managing the domain name system (DNS) “root”—the master file of top-level domains.² The root file is continuously copied by 13 main root servers: ten in the United States, two in Europe, and one in Japan.³ These are the computers that guide Internet communications to the appropriate top-level locations (at which point local nameservers direct the messages to the appropriate organizations, and then the organization’s computers further route the messages to the end-recipient).

ICANN distributes numeric IP addresses, which every computer or other device connected to the Internet needs, to five Regional Internet Registries (RIRs) around the world. These RIRs in turn distribute smaller blocks of IP addresses to Internet Service Providers (ISPs) and others who need them. Interestingly, in light of the following discussion about the governance of ICANN itself, the RIRs are separate non-profit organizations that are governed by boards that are elected by their members. Membership in the RIRs is restricted to entities that receive allocations of IP addresses (although others can participate in the policy

development process). Thus, RIRs are governed by their direct users.⁴

Although the IP addresses (the strings of numbers) could also be the addresses that individuals use when directing their computers to send a communication, most individuals find alphabetic letters and words (or mnemonics) easier to recognize, remember, and organize. Hence, e-mail addresses and web page locations are represented by letters and words (sometimes with a few numbers or symbols interspersed), rather than just by the IP addresses. This alphabet-based set of addresses is the “domain name system” (DNS). The logic of the communication system’s requiring unique addresses means that each complete domain name must be unique and must be uniquely linked to the appropriate IP address (with these links again kept in master files in those 13 root servers). Further, the DNS requires some coherence or hierarchy (instead of, say, just being random strings of letters).

Every host computer on the Internet has a unique IP number. The purpose of the DNS is to assure that every host computer (and, as a consequence, every URL and every email address that is linked to an individual computer) “resolves” (i.e., is linked) to a unique IP address. The failure to achieve this is called “instability,” which might occur if there were alternative or competing roots. In that event, similar queries that are made by different people at different computers might resolve to different IP addresses.

The DNS that was developed in the early 1980s relies on the Roman alphabet⁵ and is hierarchical in structure. The hierarchy is demarcated by periods or “dots” between strings of characters. The string of characters to the right of the rightmost dot represents the first- or top-level domain (TLD), with strings that are progressively to the left indicating progressively lower-level domains.

Originally, there were eight generic TLDs (gTLDs): .com, .edu, .org, .net, .gov, .int, .mil, and .arpa. Subsequently, a large number of two-letter country code TLDs (ccTLDs) were added. Today, there are 252 two-letter ccTLDs and 21 gTLDs: the original eight plus seven additional gTLDs that were added in 2001 (.info, .biz, .coop, .aero, .museum, .pro, and .name) and another six gTLDs (.travel, .tel, .jobs, .asia, .cat, and .mobi) that have been added in recent years.⁶

There is a single “registry” that is responsible for the coordination and coherence of each gTLD—i.e., making sure that IP and domain name addresses are unique and are properly linked and stored.⁷ The registry maintains the database (zone file) of all of the registrations—second-level domain names—under the TLD. The registries operate under contracts with ICANN.

⁴ For a useful discussion of RIRs, see Mueller (2010, chap. 10).

⁵ ICANN is currently developing and testing the protocols that would allow non-Roman lettering systems to be part of the DNS and approved four such systems in January 2010. This is being done under ICANN’s “internationalized domain names” (IDN) program.

⁶ As of early 2011, ICANN was proceeding slowly toward the creation of additional gTLDs.

⁷ For example, VeriSign, Inc., is the company that is the registry for the .com and .net domains. For ccTLDs, the registry function is performed by a country code manager.

² IANA has a contract with the US Department of Commerce that specifies this responsibility.

³ The VeriSign Corp. is responsible for maintaining these master files, under a contract from the US Department of Commerce.

Each registry, in turn, deals with (possibly multiple) “registrars,” which register specific second-level domain names (e.g., “aol.com” or “delta.com”) within that TLD to the individuals or organizations that desire that second-level domain name. Thus, the registry acts as the “wholesaler” with respect to the distribution of domain name addresses within a TLD, and the registrars act as “retailers.”

The entity with the second-level domain name can, in turn, assign third-level domain names (e.g., “stern.nyu.edu”), etc.

Placed at the top of this overall hierarchy is ICANN, with the powers to create gTLDs, to select and contract with registries for the gTLDs, to accredit and contract with the registrars with whom the registries deal, and to coordinate with the country code managers of the ccTLDs.

2.2. A brief history⁸

The experimentation with data communication that led to the Internet started in the late 1960s as a small, computer-based telecommunications network that was developed under the auspices of the US Department of Defense (DOD) Advanced Projects Research Administration (ARPA), and was known as ARPANET. A decade later, in the late 1970s and early 1980s, the key software programs of the Transport Control Protocol and Internet Protocol (TCP/IP) were worked out, which provided the basis for the current Internet address system and the transport of messages between those addresses. During the 1980s the Internet grew by linking to the internal networks that were in place in agencies of the US Government, such as the National Science Foundation (NSF), the National Aeronautic and Space Administration, and the Department of Energy, and linking to the networks that had developed in universities and research institutions in the United States and abroad. Also, in the late 1980s the NSF began to take a more active role in supporting the Internet backbone and in encouraging educational and research institutions to link to it.

In 1992 US legislation removed restrictions on the interconnection of commercial traffic with the NSFNet. This was followed, in 1993, by the awarding of a contract to Network Solutions, Inc. (which was absorbed by VeriSign in 2000⁹) to provide registration services for entities that wanted to obtain second-level domain names and establish websites. This expansion of the commercial use of the Internet came on the heels of reduced involvement by the DOD and the NSF. In 1997 the Clinton Administration transferred the remaining US Government role to the National Telecommunications and Information Administration (NTIA) of the US Department of Commerce (DOC), but with explicit direction for the DOC to privatize the governance of the domain name system. The DOC released an initial proposal (the “Green Paper”) in January 1998 and a final proposal (the “White Paper”) in June 1998.

Simultaneously, in the summer of 1998 Jon Postel, a widely respected Internet pioneer, drew up plans for a non-profit corporation that would be the private entity that would absorb from the federal government the responsibility for administering the DNS. That entity—ICANN—came into existence in September 1998. The DOC entered into a memorandum of understanding (MOU) with ICANN in November 1998 and officially recognized ICANN as the private non-profit entity that would be responsible for the DNS in February 1999. The MOU was renewed a number of times and was replaced in 2006 by a Joint Project Agreement (JPA), the purpose of which was “the joint development of the mechanisms, methods, and procedures necessary to effect the transition of Internet domain name and addressing system (DNS) to the private sector.” The expiration date of the JPA was September 2009.

In early 2008 the NTIA undertook a midterm review of the JPA. During that review, ICANN argued that it was meeting its responsibilities under the JPA and that therefore the JPA was no longer necessary.¹⁰ ICANN recommended that the JPA should be concluded and that ICANN should complete its transition to the private sector. Another interpretation of that transition, of course, would be that ICANN then would truly be accountable to no one.¹¹

At the end of September 2009 the DOC and ICANN jointly signed a new document: the Affirmation of Commitments (AOC). In that document, ICANN committed to remain a non-profit corporation that is headquartered in the US and to be transparent and accountable to a multi-stakeholder public, as well as specifically committing to internal reviews of its own accountability and transparency, competition and consumer choice issues, and security and stability/resiliency of the Internet. However, there is no DOC oversight of any of these commitments.

The DOC retains authority over who is awarded the contract for the IANA function, which is the source of ICANN’s control of the DNS root. The DOC could decide not to renew the contract with ICANN, but this would effectively destroy the organization, and therefore would only be done under extraordinary circumstances. Thus, it is unclear that the IANA contract gives the DOC any meaningful oversight.

2.3. ICANN’s functions

As the administrator of the DNS, ICANN has a number of functions:

- Decide on the number of gTLDs, the potential categories of coverage that apply to each domain (e.g., what kinds of organizations can register for a website in a specific domain), and the specific letters or mnemonic that will be the suffix for that domain.¹²

⁸ This section draws heavily on Mueller (2002) and Mathiason (2009); see also Abbate (1999), Kesan and Shah (2001), and National Research Council (2005, chap. 3).

⁹ Network Solutions was subsequently sold by VeriSign and is now a separate company that provides, among other things, Internet registrar services to companies, while VeriSign is a registry for the .com and .net gTLDs.

¹⁰ Comments of Peter Dengate Thrush, Chairman of the Board of Directors, ICANN, January 9, 2008.

¹¹ The National Research Council (2005, pp. 217–219) was similarly concerned about the severing of ICANN’s link with the DOC before a suitable governance structure for ICANN was in place.

¹² This function includes decisions as to whether non-Roman alphabets can be part of the DNS.

- Designate and contract with specific organizations to serve as the registries for specific gTLDs.
- Accredite and contract with the registrars with whom the registries deal.
- Maintain a system for settling disputes among website holders (e.g., as to who is entitled to specific character strings in their second-level domain name).¹³
- Maintain the compatibility, capacity (in terms of IP addresses), and stability (in terms of the uniqueness of IP and DNS addresses) of the DNS.
- Through IANA, coordinate the allocation of IP addresses and manage the DNS “root”—the master file of top-level domain names (TLDs), including ccTLDs.¹⁴

2.4. ICANN's organizational structure/procedures

ICANN is a non-profit corporation, incorporated in California. It has a CEO, a staff, and a board of directors. It coordinates its actions with a number of other organizations and advisory groups, including the Internet Engineering Task Force (IETF), and similar advisory bodies (many of which came into being as a consequence of ICANN's bylaws).

When undertaking new actions—say, creating new gTLDs—ICANN announces its general intentions and invites public comments. In coordination and consultation with other organizations and advisory boards, ICANN gradually develops more specific proposals and again invites public comments. Eventually, its board of directors votes on the specific proposal; if the board approves, the proposal is implemented.

ICANN places a great deal of emphasis on obtaining input from the Internet “community” with respect to issues on which ICANN must make decisions. ICANN's “multistakeholder” model “means that anyone with an interest in the Internet is invited to come and share their perspective and ideas regarding the evolution of the Internet,” and that ICANN “listen(s) to every conceivable angle before decisions are made.”¹⁵ In the end, however, it is ICANN's board that makes those decisions.

2.4.1. The board

The ICANN board of directors has 21 members.¹⁶ About two-thirds of the board are from countries other than the US. Of the full board, 15 are voting members; their (staggered) terms are for 3 years. Eight of the voting members are selected by a nominating committee that is drawn from the advisory groups with which ICANN coordinates and from organizations that are associated with various Internet constituency groups. In addition, two members each are selected by the Address Supporting Organization (which represents the RIRs), the Country Code Names Supporting Organization, and the Generic Names Supporting

Organization. (These three organizations are specified in and created by the ICANN bylaws.) The 15th voting member is ICANN's CEO.

The remaining six non-voting members are liaisons from and selected by the Internet Engineering Task Force and five advisory committees that are established by the ICANN bylaws. Their terms are for 1 year.

Although ICANN's board structure is designed to have board members that are drawn from various constituencies, such memberships do not “represent” those constituencies, since the constituencies themselves have not voted for these board members and since the obligation of board members (as specified in ICANN's bylaws) is to act in the interests of ICANN and not of the organizations that selected them.

2.5. ICANN's finances

ICANN has grown rapidly in the years since its inception. From 2000 to 2009, ICANN's revenues increased from about \$5 million to over \$60 million. Over the same period, operating expenses increased from just under \$3 million to about \$52 million. ICANN had assets of more than \$45 million at the end of FY2009.¹⁷

ICANN receives over 90% of its revenues from registrars and registries, none of which can operate without ICANN's permission.¹⁸ The gTLD registrars contributed about \$31 million to the FY09 revenue figure. Registrars pay application fees of \$2500, annual accreditation fees of \$4000 each, variable fees of \$3.8 million divided among the registrars, and transaction fees of 20 cents per registration. gTLD registries contributed about \$25 million to the FY09 revenues. Registries pay application fees as well as fees determined by their agreement with ICANN, and each one is different. For example, the .com registry pays a fixed fee of \$12 million; the .net registry pays a \$0.75 fee per transaction for a total of about \$9.9 million; and the .org registry pays a \$0.15 fee per transaction for a total of about \$1.1 million. All of these fees are set solely at ICANN's discretion.

The budget for ICANN's fiscal year 2009 is presented in Table 1. As can be seen, its expenses were about 90% of its revenues. Operating expenses—personnel, travel and meetings, professional services, and administration—accounted for over 90% of ICANN's expenses.

3. Governance and accountability: a framework

The governance of an organization describes the system whereby the actions of the organization are directed and controlled.¹⁹ For corporations in the US, the governance process describes the relationship between the shareholder-owners of a corporation and its senior management, with the corporation's board of directors serving as the agent for the shareholders in most circumstances. For governmental bodies, the governance process describes the relationship

¹³ ICANN's current system is called its “uniform dispute resolution policy” (UDRP).

¹⁴ Unlike the gTLDs, over which ICANN has direct authority and control, the ccTLDs and their country code managers have a considerably looser relationship with ICANN.

¹⁵ See <http://icann.org/>.

¹⁶ ICANN's initial board in 1998 had only nine members.

¹⁷ 2001–2007 data from annual audited financial reports; 2008–2009 data from ICANN FY10 Operating Plan and Budget.

¹⁸ ICANN FY10 Operating Plan and Budget.

¹⁹ “Corporate governance is the system by which organizations are directed and controlled” (Anheier, 2005, p. 230).

Table 1

ICANN budget for FY2009 (ending June 30) (in millions of US\$). Source: ICANN

<i>Revenue</i>	
Registrars	30.9
Registries	25.1
Regional Internet Registries	0.8
ccTLDs	2.3
Other	1.5
Total	\$60.7
<i>Expenses</i>	
Personnel	19.9
Travel and meetings	12.5
Professional services	11.9
Administration	7.6
Bad debt expense	1.2
Depreciation	0.9
Total	\$53.9
Surplus	\$6.8

between the citizenry of a governmental unit and its elected officials.

Accountability—the means by which individuals within an organization are held responsible for their actions—is at the center of a governance relationship of this kind. Being held responsible involves answerability and enforcement.²⁰ As examples:²¹

- The senior managers of a corporation are accountable to the shareholders (via the board of directors) and can be replaced by the board; the board is elected by and accountable to the shareholders. Further, a corporation's actions are constrained by the laws and regulations of the jurisdictions in which it is incorporated and in which it does business, and the actions of its board vis-à-vis the senior managers and the shareholders are subject to the laws and regulations of the jurisdiction in which it is incorporated. In addition, competitive marketplaces provide an additional level of accountability: If a corporation cannot find sufficient numbers of customers who are willing to buy its goods or services at prices that yield an adequate return on invested capital, it must adapt or disappear; and similarly, it must find suitable employees and suppliers (of goods, services, and capital).
- Elected government officials are accountable to their electorate and must periodically stand for re-election. The actions of a democratic government are also subject to the rule of law, as interpreted by an independent judiciary. Lower-level governmental entities (e.g., municipalities) are usually embedded in and are accountable through a legal framework that is established by a higher-level governmental entity (e.g., a state or province, or a nation). Further, especially for lower-level entities such as municipalities, the possibility that their constituents (citizens or enterprises) may move to a different municipality provides the same kind

of check (albeit, usually operating more slowly) that competition provides to corporations.

- A non-profit organization is usually accountable to its members and/or its donors.²² And, like a corporation, it is subject to the laws and regulations of the jurisdictions in which it is organized and in which it operates. Further, members and donors may abandon an organization; and an organization that provides services to a clientele (e.g., a non-profit hospital, university, or museum) is likely to wither if it cannot continue to attract a satisfied clientele.

These forms of governance-accountability have been categorized by Mueller (2009, Table 1), and we will use—and expand on—his framework in the discussion that follows. In Table 2 we lay out Mueller's four categories of accountability—direct; external; exit; and voice—as they apply to corporations, governments, and non-profit organizations. *Direct accountability* is that of corporate executives to their boards and ultimately to shareholders, elected government officials to their electorate, and non-profit organizations to their members and their donors. *External accountability* is the embedding of any organization in a system of laws and regulations, with appropriate judicial review. *Exit accountability* encompasses the ability of customers to desert a company, residents to leave a jurisdiction, and members/donors/clientele to desert a non-profit organization. *Voice accountability* is the ability of an affected party to express an opinion.²³ Table 2 categorizes and organizes the points above into the appropriate boxes.

In the last column of Table 2 we have added ICANN. In contrast to the typical accountability structures that apply to corporations, governments, and non-profits, as is shown in the previous three columns, ICANN has little or no accountability outside the organization itself. Though it is a non-profit organization, it has no members or shareholders or donors. With its control of the Internet, it is effectively a monopolist, with an assured revenue stream from the fees that it can levy on registries and registrars. Since it is incorporated in California, it is bound by the laws of that state and of the US. But these provide few or no constraints on the important economic and technical decisions that it must make in its role as operator of the Internet.

Where ICANN clearly does excel is in the “voice” category. Through its “multi-stakeholder” model, ICANN makes extensive efforts to be responsive to “the Internet community.” It does so through requests for comments on proposed actions, public meetings in various parts of the world, consultations and coordination with other Internet-related organizations, and the board membership structure that draws members from various constituencies. But, as was noted above, voice is the weakest form of accountability.

²² Glaeser (2003) expresses doubt as to the strength of such accountability for non-profit organizations.

²³ As Mueller (2009) points out, voice accountability is usually quite weak, unless it is accompanied by one of the other three forms of accountability. As he states (Mueller, 2009, p. 1), “There is an important distinction between ‘making your views known’ and ‘making your views count.’”

²⁰ See Farkas and Molnar (2005, p. 2).

²¹ This discussion draws heavily on Mueller (2009).

Table 2

Types of accountability and types of organizations.

Type of accountability	Type of organization			
	Corporation	Government	Non-profit	ICANN
Direct	Senior executives are accountable to shareholders, via a board of directors; board of directors is accountable to shareholders	Elected officials are accountable to their electorate	Senior executives are accountable to their members and donors	There are no members; there is no electorate; there are no shareholders; there are no donors
External	Corporations are subject to laws and regulations	Governmental actions are subject to judicial review; lower-levels of government are subject to the restrictions of higher levels of government	Non-profit organizations are subject to laws and regulations	ICANN is a non-profit corporation, incorporated in California; non-profit law places only mild restraints on ICANN
Exit	Customers and/or employees and/or suppliers may desert the company	Residents may desert the jurisdiction	Members and/or donors and/or clientele may desert the organization	ICANN is a monopoly; the possibilities of competing “roots” are limited
Voice	Customer “hot lines”; third-party blogs	“Town hall” meetings; lobbying; support or protest rallies	Organizational meetings	ICANN holds extensive public forums and “notice and comment” periods on proposals

4. Problems with the current structure

ICANN sits at the center of and has control over extremely important aspects of the Internet. This is an extraordinary position for a modest-sized non-profit organization that has almost no accountability. While ICANN has established a number of “accountability” procedures, they largely reflect internally determined policies, which can be changed by the leadership of ICANN without external constraints. ICANN perceives itself to be accountable to the “global community” or the “public at large rather than any member or group of members” (ICANN, 2008, p. 5). However, being accountable to the public at large really means being accountable to no one.

ICANN's board is the ultimate decision-making authority for the organization. But that board has no shareholders to which it is accountable and no government agency to which it must answer (other than, in the past, the loose oversight of the US Department of Commerce; and with the AOC in 2009, even that is gone). Although ICANN's by-laws provide that certain constituencies have board seats, those board members have an obligation to ICANN, not to their constituencies. All of ICANN's procedures, including those for electing board members, are the result of by-laws or other policies that have been adopted by the board or the management, all of which are subject to change by the board or management. The bylaws can be amended by a two-thirds vote of the board, and other procedures can be changed more easily.²⁴

Finally, of course, ICANN itself is not a governmental organization and thus does not have the ultimate legislative

accountability that would accompany a governmental structure.

This absence of accountability is worrisome because ICANN's actions can have important consequences for the structure of the Internet and the important economic, communication, and social activity that now occurs on and through the Internet. For example, the number and nature of the gTLDs may have important consequences for competition among firms that conduct commerce through the Internet. ICANN's fee structure and pricing of second-level domain name registrations could influence who decides to register for a domain name and who does not. ICANN's dispute resolution process—the Uniform Dispute Resolution Policy (UDRP)—has important consequences for the strength of protection for the intellectual property (such as trademarks) that are associated with domain names.

Although in its decade of existence ICANN has taken seriously its responsibility to maintain the stability of the root, it is also hard to know whether ICANN's limited expansion of the gTLDs has been less than—or more than—the socially worthwhile levels.²⁵ And, without accountability, there is no assurance that ICANN might not take substantially misguided actions in the future. After all, ICANN is a monopoly.

However, it is also difficult to conjure an alternative structure for ICANN that would not also have substantial flaws:

- A private for-profit corporation might try to create artificial scarcities and extract high prices as a consequence (again, ICANN is a monopoly).
- Subjecting ICANN (in either its current form or in a private for-profit form) to governmental regulation raises the questions of which government(s) (the United States? another country? a consortium of countries?)

²⁴ To the extent that ICANN can be successfully sued in U.S. federal courts or in California courts, the courts thereby provide some degree of accountability. But this form of indirect legal accountability is not a good substitute for the direct accountability that would come with a better governance structure. Moreover, ICANN's “regulatory” decisions are generally not appealable to the courts in the same way that a US regulatory agency's decisions typically are.

²⁵ For the most recent study, see Katz et al. (2010).

should regulate it and what the principles of that regulation should be, as well as raising a set of well-known problems concerning the distortions that regulation can induce.

- Reconstituting ICANN as a governmental agency again raises the question of which government and the related questions of governmental inefficiencies and political influence.
- Reconstituting ICANN as an international agency—perhaps as part of the United Nations, such as the International Telecommunications Union (ITU) or the Universal Postal Union (UPU)—raises similar questions of inefficiencies, sluggishness, and political influence.

The remainder of this paper addresses these accountability and governance questions, develops principles that should guide any restructuring of ICANN's governance, and offers our recommendations for that restructuring.

5. Lessons from other models

In this section we summarize the operations and structures of a number of other organizations that perform a range of private-sector and quasi-governmental coordination and standard-setting functions, to explore what might be applicable to ICANN.²⁶ In particular, we are interested in how these institutional structures address accountability, which is the major issue for ICANN.

We have reviewed the operations and structures of the following seven organizations (Table 3 further summarizes these summaries):²⁷

- (1) The American National Standards Institute (ANSI) coordinates the standard-setting process for a wide range of standards. It is a non-profit organization that is governed by a 50-member board that is elected by the ANSI dues-paying member companies. ANSI earns additional revenue by selling its standards. ANSI standards are voluntary, and it operates independently of government oversight.
- (2) The Depository Trust and Clearing Corporation (DTCC) is the centralized clearinghouse for most securities that are traded in the United States. DTCC is owned by its principal users—banks, brokerages, and exchanges—and receives transactions fees from its customers. Although it is a for-profit company, it returns any surplus over costs to its customers. Its board of directors consists primarily of representatives of the major firms that use DTCC to clear securities. Several regulatory agencies, including the Securities and Exchange Commission (SEC), the

Board of Governors of the Federal Reserve System, and New York banking regulators, have oversight responsibilities.

- (3) GS1 US (formerly the Uniform Code Council) coordinates product identification and transmission systems, such as bar codes and RFID tags. It is a non-profit organization that is governed by its users, including manufacturers and retailers. It is funded by users in proportion to sales revenue and is not subject to regulatory oversight (although it is subject to the US antitrust laws).²⁸
- (4) The National Automated Clearinghouse Association (NACHA) sets standards for nationwide payments exchange networks. NACHA is a not-for-profit association that is composed of representatives of the banks and payment processors that use the automated clearinghouse system. NACHA members are regulated by the Federal Trade Commission, the Federal Reserve Board, the US Treasury Department, the Office of the Comptroller of the Currency, the Office of Foreign Assets Control, and various state and local banking authorities.
- (5) Nav Canada owns and operates Canada's nationwide air traffic control system. Nav Canada is a non-profit organization and relies on income from user fees. It is governed by a board of directors with representatives from the major users—the commercial airlines and general aviation—as well as the Canadian government and Nav Canada employees. Transport Canada, the Canadian airline regulator, has regulatory authority over Nav Canada.
- (6) The North American Numbering Plan Administrator (NANPA) oversees the telephone numbering system for 19 North American countries, including Canada and several Caribbean nations, but not including Mexico and Central America. Since 1997, NeuStar, Inc., a publicly traded corporation, has been the NANPA under a contract from the Federal Communications Commission (FCC).²⁹ This contract is awarded by competitive bidding every 5 years.
- (7) The Options Clearing Corporation (OCC) performs a clearing function that is similar to the DTCC for equity derivatives that are traded on major options exchanges. OCC is a for-profit corporation that is owned by five major options-trading exchanges. Its board consists of representatives of the exchanges and brokerage firms. The SEC and the Commodity Futures Trading Commission (CFTC) have oversight responsibility.

Table 3 summarizes a few of the key characteristics of these organizations and compares them to ICANN. There are several major lessons to be learned from these models, which span a fairly wide range of activities. None of them operates with ICANN's independence. In six of the seven cases, the organizations—both non-profit and for-profit—are governed by their users. This is the primary way that

²⁶ More detailed descriptions of the operations of these organizations can be found in the Lenard and White (2009).

²⁷ In Lenard and White (2009) we also included the International Telecommunications Union (ITU) and the Universal Postal Union (UPU). Our choice of organizations to compare with ICANN was guided by a desire to find organizations that (like ICANN) operate an essential facility that is necessary for the functioning of an important network of users.

²⁸ See Brown (1997, pp. 51–55, 66–67).

²⁹ NeuStar also provides registry services for several TLDs, including .biz and .us.

Table 3

Important characteristics of seven organizations that play roles similar to ICANN.

Organization	For-profit or non-profit	Government oversight	Controlled by users
American National Standards Institute (ANSI)	Non-profit	No	Yes
Depository Trust and Clearing Corporation (DTCC)	For-profit	Yes	Yes
GS1 US	Non-profit	No	Yes
National Automated Clearinghouse Association (NACHA)	Non-profit	Yes	Yes
Nav Canada	Non-profit	Yes	Yes
North American Numbering Plan Administrator (NANPA) ^a	For-profit	Yes	No ^a
Options Clearing Corporation (OCC)	For-profit	Yes	Yes
ICANN	Non-profit	No	No

^a The NANP Administrator since 1997 has been NeuStar, Inc., a publicly traded company.

these organizations have created the “direct accountability” of our framework of Section 3. In addition, in five of the seven, there is some form of government oversight (which provides a form of “external accountability” from our framework), and that oversight is strongest in the one instance (NANPA) where the entity is not governed by its users.

ANSI and GS1 US are both voluntary standard setting bodies. Like ICANN, they are non-profits and are funded in various ways by their users. Unlike ICANN, however, they are also governed by their users. Their users are both their customers—ANSI and GS1 US sell their standards—and their governors. This structure assures substantial accountability.

NACHA and Nav Canada are also non-profits that are governed by their users (Nav Canada also has representation from labor and the government), but perhaps in a different category than ANSI and GS1 US because of their market power. An airline that operates in Canada, for example, has no choice but to deal with Nav Canada. But these organizations also are subject to regulatory oversight, which provides another layer of accountability.

DTCC and OCC are for-profit organizations, although their goal is not to maximize profits. They are owned by their users, a structure that yields incentives similar to a non-profit that is governed by its users. In addition, both organizations are overseen by a number of financial regulatory agencies.

In some respects, the closest analog to ICANN in terms of its function is NeuStar, which operates the North American Numbering Plan. NeuStar is a for-profit company, which operates under a contract with the FCC. It is required to compete for the contract every 5 years, and thus is accountable to the FCC.

Each of these organizations is either governed by its users, subject to external regulatory oversight, or both. Thus, each of them has considerably more accountability to external parties that is built into its structure than does ICANN. We think that the incentives that are provided by the user-governance framework are quite positive, particularly for an organization that does not face competition.

6. Expected performance under the direct-user governance model

Virtually all of the organizations that we have surveyed (as summarized above) are governed by their direct users,

with generally good results. The direct users of ICANN are the registries and the registrars. One could envision an arrangement where seats on the board of directors were rotated among the major operators in a manner that reflects the diversity of viewpoints among registries and registrars.³⁰ In addition, the Regional Internet Registries (RIRs) are also direct users of ICANN. They should also have board representation (as they do now) and be included in the registry/registrar governance model. This would also give representation to ISPs and other network operators that constitute RIR membership.

The question is whether this governance model would produce better performance than the current model where ICANN is (arguably) accountable to the vaguely specified “Internet community” at large.³¹ In contrast to the current governance structure, the registry/registrar model goes a long way toward solving the accountability problem, by establishing a direct accountability structure (in the terms of our framework of Section 3). The incentives of the registries and registrars would seem to be aligned with the interests of the ultimate end users of the Internet—businesses and individuals—who are their customers.³²

Any new governance structure should be evaluated with respect to how well it furthers widely accepted goals for ICANN.

6.1. Focusing on technical functions

From the beginning, there has been strong support for the view that ICANN should hew closely to the technical functions involved in administering the Domain Name System—i.e., coordinating the allocation of IP addresses,

³⁰ The exact details of how the seats on the board would be distributed are less important than establishing the principle that the direct users should be the occupants of those seats. For details on how GS1 US developed the user orientation of its board and allocated seats, see Brown (1997, pp. 96–97).

³¹ The National Research Council (2005, pp. 208–210) discusses a somewhat similar proposal (its “Alternative C”) as a possible restructuring for ICANN’s governance. This approach is similar, at least in spirit, to that of Gunnarson (2010). And it is consistent with the findings of Ostrom (1990) that individuals and organizations are able to find structural solutions to problems that otherwise appear to be plagued with free rider or other negative externality problems.

³² We recognize that a whole range of entities, including individuals and businesses, are users of ICANN. However, their use of ICANN is intermediated through the registries and registrars just as any individual’s use of organizations such as ANSI and GS1 US is intermediated through manufacturers and retailers.

managing the DNS “root,” and ensuring the stability of the DNS—and do little more.³³ Under the current structure, however, ICANN operates as a quasi-regulatory organization, and is lobbied as such by the various Internet constituencies, including governments. We would expect this lobbying behavior to be greatly diminished under the registry/registrar model. Having ICANN stick closely to its technical coordination functions would be consistent with the interests of the registries and registrars and their customers.

6.2. Avoiding mission creep

As a corollary to the above, ICANN's organizational growth should be limited in order to restrict mission creep and unnecessary bureaucracy. ICANN's revenues are growing because of the overall growth of the domain name market. ICANN receives its income from the registries and registrars through a series of contracts and other arrangements. The licenses—i.e., the rights to be a registry or a registrar—have substantial economic value, and ICANN is currently able to capture a portion of that value. Because ICANN essentially grants licenses to operate to registries and registrars, it also has the ability to dictate the fees that they pay, so long as it does not drive them out of the market. The registries and registrars would have a strong incentive to assure that ICANN fulfills its responsibilities efficiently and with budgetary discipline and does not engage in mission creep. Its incentives in this respect would, again, seem to be aligned with the ultimate end users of the Internet—businesses and individuals. Since ICANN would be a non-profit organization, it would be unlikely to generate monopoly profits for the registries or the registrars through excessive fees; and these entities, as the governors of ICANN, should object to excessive ICANN fees that are absorbed through prerequisites and emoluments by ICANN's employees.³⁴

6.3. Pursue pro-competitive policies

There is a concern that the registries and registrars—if they were in charge—would restrict competition by limiting the introduction of new domain names. This is a legitimate concern, but there are several reasons to believe that the registries and registrars would not behave anticompetitively: First, there is no evidence of direct users using their governance authority to disadvantage actual or potential competitors in any of the models we analyzed (see Section 5). In this respect, the experience of GS1 US is instructive: The ability to attach barcodes (for a new manufacturer of consumer goods) and to scan barcodes (for a new retail chain) is surely a necessity for either category of entrant; but we are aware of no efforts by GS1 US governors (manufacturers or retailers) to restrict barcode use by rivals. Instead, the ethos of the organization has been to expand the use and

usefulness of the barcode as widely as possible.³⁵ Second, although ICANN has recently adopted a policy to facilitate applications for new gTLDs, throughout much of its history under the current governance structure ICANN has been overly restrictive in authorizing new gTLDs (Kobayashi, 2006). Third, VeriSign, the operator of .com (which might be expected to want to restrict competition) has in fact supported the introduction of new gTLDs by ICANN, in part because it creates new demand for third-party registry services.³⁶ Fourth, ICANN would maintain its non-profit status, which would protect against the operators' trying to exercise market power through fee collections by ICANN.³⁷ Finally, ICANN would remain subject to the US antitrust laws.

6.4. Address problems as they arise

ICANN needs to be able to solve problems that affect the DNS when they arise. For example, the protection of intellectual property in domain names has become a major issue, particularly in connection with the introduction of new gTLDs. The business community and the US Government have been concerned that the need for registrants to purchase domain names on new gTLDs for defensive purposes would confer market power on new gTLD registry owners. For example, if “.abc” becomes a new gTLD and General Motors wants to avoid the possibility that someone else will register the domain name *generalmotors.abc*, the .abc registry owner may be able to extract a considerable price from General Motors. In essence, the new gTLDs would have the power to create potential “nuisances” that would induce incumbent registrants to pay fees so as to avoid the potentiality from becoming a reality.

ICANN's Uniform Dispute Resolution Policy (UDRP), which was supposed to address these trademark issues, has not worked well enough to satisfy trademark holders. Although ICANN has taken steps to address this problem, nevertheless the problem has festered for many years.³⁸ Again, while we cannot know what would have happened under an alternative registry/registrar governance regime, it is plausible, perhaps likely, that the pressure on the registries and registrars from major customers would have led to an earlier and perhaps better solution.

7. Options

As we have indicated above, structural accountability is a major problem—arguably, the major problem for ICANN—going forward, given the important role that ICANN plays in structuring the Internet. There are three

³³ A flavor of this can be found in Mueller (2002, chap. 10).

³⁴ In Lenard and White (2009) we suggest that ICANN should adopt a less regulatory stance, with an emphasis on relatively open entry into gTLDs and fees that are close to marginal costs. That stance would be consistent with the governance structure that we recommend.

³⁵ See, for example, Brown (1997).

³⁶ http://www.circleid.com/posts/20091013_verisign_supports_new_gtlds_with_appropriate_safeguards/.

³⁷ The exercise of market power by the registries as owners of a for-profit ICANN could occur through ICANN's levying a (profit-maximizing) fee on registrations and then distributing the resulting profits to the owners under a formula that did not mimic their registrations. See, for example, Lewis and Reynolds (1979).

³⁸ See, e.g., Mueller (2002, chaps. 11 and 12).

realistic options for ICANN's governance structure and accountability.

7.1. The status quo

Given the AOC and the DOC's exit from any oversight function (except through its contract with IANA), this option would mean the continuation solely of the "voice" accountability that the ICANN incumbent board and senior management clearly prefer. This arrangement would not be much different from the experience of the past dozen years, since the DOC exercised only modest oversight over ICANN through the MOU and the JPA. It has worked reasonably well during this period: The Internet has flourished, and ICANN has committed no major gaffes.³⁹ But there is no assurance that this good luck would continue, particularly since the MOU and JPA probably did involve a little more external accountability than does the AOC. To the extent that the diminished US role creates a void, other countries might fill it.

7.2. Place ICANN under the oversight of an international organization, such as the International Telecommunications Union (ITU)

Under this arrangement, ICANN would presumably have a contract or some type of memorandum of understanding with the ITU. This contract could be re-competed periodically, as in the case of NeuStar's contract to operate the NANP.

This second option might be popular with constituencies who believe that the US now has disproportionate influence.⁴⁰ However, its disadvantages outweigh that advantage. The Internet is a rapidly changing environment, and it needs a governance structure that can respond accordingly. International organizations, which usually require agreement among a large number of governments, are by their nature slow moving. Such a governance structure might seriously impede the development of the Internet.

In addition, the postal and telecommunications systems that are coordinated by the Universal Postal Union (UPU) and ITU, respectively, are quite different in nature from the Internet. There are well-defined national postal and telecommunications systems, and there was a need to coordinate so that mail and telephone calls could readily and quickly travel from one country to another. By contrast, as our brief historical summary above indicates, there were not separately developed national internets that needed to be connected. Instead, the Internet began

in the US and then spread internationally. Thus, the coordination and governance functions are quite different.⁴¹

7.3. Modify ICANN's governance structure

The fact that virtually all of the organizations that we have surveyed (as summarized above) are governed by their direct users, and that this model seems to have worked well, argues that it should be seriously considered for ICANN. This would provide a form of "direct" accountability under the Mueller (2009) framework. Variants of the model would increase representation of registries and registrars on the board, but also would allow for other constituencies. We do not envision formal ties between governments and ICANN (and thus would not allot seats on ICANN's board of directors to representatives of governments). It is worth remembering, in this context, that most of the ccTLDs maintain only informal coordinating connections with ICANN (unlike ICANN's formal contractual relationships with the gTLD registries and registrars) and are not required to make any regular payments to ICANN (again, in contrast to the gTLD registries and registrars). Perhaps, however, an advisory committee (to ICANN) of interested governments could be established.

Given that ICANN is not currently accountable to any external authority, we are not sure how our suggested structure could be put into place, since it is at odds with the "voice" accountability and culture that the ICANN incumbents clearly favor.⁴² About the only route that we could imagine would be for the major participants in the "voice" process to demand such a change, so that the incumbent leadership of ICANN might have little choice but to accede.⁴³

8. Conclusion

No organization compares to ICANN in terms of global reach combined with institutional structure. It is ICANN's governance structure—its lack of true accountability to any external authority—that we find especially worrisome.

In this paper we have described the background of ICANN's (and the Internet's) development and current structure. We have drawn on Mueller's (2009) accountability framework to highlight the striking absence in ICANN's governance structure of most of Mueller's categories of accountability, with the exception of "voice accountability"—at which ICANN excels, but which Mueller describes as the weakest of the categories. For comparison, we have briefly described the governance structures of seven other organizations that have roughly comparable functions and

³⁹ However, as we noted above, it's hard to tell whether ICANN has been too slow or too fast in authorizing new gTLDs, although we strongly suspect that the former is the case. Also, although things may look largely satisfactory from a North American or Western European perspective, someone in an Arabic or Cyrillic or Chinese script country might argue that ICANN has been far too slow to extend the DNS to non-Roman script languages.

⁴⁰ See, for example, the suggestion on May 4, 2009, by Viviane Reding, then the EU Commissioner for Information Society and Media, that an intergovernmental body should oversee ICANN: http://ec.europa.eu/commission_barroso/reding/video/text/message_20090504.pdf

⁴¹ The National Research Council (2005, pp. 192–195) similarly takes a dim view of having the ITU or an international organization more generally take control of the DNS system.

⁴² The same conundrum applies to Gunnarsson's (2010) suggested change in governance for ICANN

⁴³ However, one should always be conscious of the possibility of "the law of unintended consequences" intervening. In the face of such persistent demands, the incumbent ICANN leadership might instead back away from its "voice" culture, so that even that (albeit weak) form of accountability disappeared.

that all have accountability relationships that are far stronger than ICANN's.

Building on the Mueller (2009) framework and the examples of these other organizations, we suggest that ICANN remain as a non-profit organization but that its board of directors should be drawn from the ranks of the registries (including RIRs) and registrars, the direct users of the services that ICANN provides, in order to provide “direct” accountability. These direct users should reflect the interests of the end users of the Internet—the business and individuals—who are their customers. The result, we believe, would be an organization that would be less likely (than under its current near-complete absence of accountability) to stray from the goal of maintaining the Internet as an efficient and dynamic network for communication and commerce.

Acknowledgements

The authors thank Michael Abramowicz, John Asker, Stanley Besen, Steve DelBianco, Arlene Holen, Michael Katz, Paul Levins, John Mayo, Gregory Rosston, W. Kenneth Ryan, Michael Uretsky, Scott Wallsten, Norman White, and the participants at the “ICANN at a Crossroads” seminar hosted by TPI on May 8, 2009, and at the “Internet Governance and ICANN: Emerging Policy Issues” seminar hosted by TPI and the Centre for European Policy Studies on June 18, 2010, for very helpful comments on an earlier draft and James Riso for very able research assistance. We also thank David Waterman and two anonymous referees for useful comments on earlier drafts. An earlier version of this paper was a TPI report (Lenard and White, 2009). This paper reflects the views of the authors but not their respective institutions

References

- Abbate, Janet, 1999. *Inventing the Internet*. MIT Press, Cambridge, Mass.
- Anheier, Helmut K., 2005. *Nonprofit Organizations: Theory, Management, Policy*. Routledge, New York.
- Brown, Stephan A., 1997. *Revolution at the Checkout Counter: The Explosion of the Bar Code*. Harvard University Press, Cambridge, Mass.
- Farkas, Ferenc, Molnar, Monika, 2005. Towards a universal standard of nonprofit accountability: ‘standard of standards’ in NGO accountability? In: Paper Presented at the Conference Concepts of the Third-Sector, The European Debate, Civil Society, Voluntary Organizations, Social and Solidarity-Based Economy, Paris, France. <http://www.emes.net/fileadmin/emes/PDF_files/ISTR_EMES_Paris/PS_5/PS5_S4/PS5_S4a_ISTR-EMES_Molnar_Farkas.pdf>.
- Glaeser, Edward L., 2003. Introduction. In: Glaeser, Edward L. (Ed.), *The Governance of Not-for-Profit Organizations*. University of Chicago Press, Chicago.
- Gunnarson, R. Shawn, 2010. A Fresh Start for ICANN. <http://www.circleid.com/pdf/ICANN_White_Paper_A_Fresh_Start_Jun_2010.pdf>.
- ICANN, 2008 (January). *Accountability & Transparency Frameworks and Principles*. <<http://www.icann.org/en/transparency/acct-trans-frameworks-principles-10jan08.pdf>>.
- Katz, Michael L., Rosston, Gregory L., Sullivan, Theresa. Economic Considerations in the Expansion of Generic Top-Level Domains, Phase II Report: Case Studies. <<http://www.icann.org/en/topics/new-gtlds/phase-two-economic-considerations-03dec10-en.pdf>>.
- Kesan, Jay P., Shah, Rajiv C., 2001. Fool us once shame on you—fool us twice shame on us: what we can learn from the privatizations of the internet backbone network and the domain name system. *Washington University Law Quarterly* 79 (Spring), 89–220.
- Kobayashi, Bruce, 2006. After the MOU Extension: More Competition, Less Regulation is the Solution to ICANN's Problems. *The Progress & Freedom Foundation*, October.
- Lenard, Thomas M., White, Lawrence J., 2009. ICANN at a Crossroads: A Proposal for Better Governance and Accountability. Working Paper #EC-09-07, Stern School of Business, New York University. <<http://w4.stern.nyu.edu/economics/docs/workingpapers/2009/ICANN%20final.pdf>>.
- Lewis, Lucinda M., Reynolds, Robert J., 1979. Appraising alternatives to regulation for natural monopolies. In: Mitchell, Edward J. (Ed.), *Oil Pipelines and Public Policy*. American Enterprise Institute, Washington, DC, pp. 135–140.
- Mathiason, John., 2009. *Internet Governance: The New Frontier of Global Institutions*. Routledge, New York.
- Mueller, Milton L., 2002. *Ruling the Root: Internet Governance and the Taming of Cyberspace*. MIT Press, Cambridge, Mass.
- Mueller, Milton L., 2009. ICANN, Inc.: Accountability and Participation in the Governance of Critical Internet Resources. <<http://www.internetgovernance.org/pdf/ICANNInc.pdf>>.
- Mueller, Milton L., 2010. *Networks and States: The Global Politics of Internet Governance*. MIT Press, Cambridge, Mass.
- National Research Council, 2005. *Signposts in Cyberspace: The Domain Name System and Internet Navigation*. National Academies Press, Washington, DC.
- Ostrom, Elinor., 1990. *Governing the Commons: The Evolution of Institutions for Collective Action*. Cambridge University Press, New York.
- Weinberg, Jonathan., 2000. ICANN and the problem of legitimacy. *Duke Law Journal* 50, 187–260.