Legitimacy and Authority in Internet Coordination: A Domain Name Case Study[†]

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INTRODUCTION

The process of crafting and promulgating technical standards for the Internet is often hailed as a prime example of how coordinated activity can take place on a distributed network with little central authority or formal "law."[1] Groups of interested engineers and computer scientists form working groups to study particular Internet technical problems. Participation in these groups is generally open. The engineers and computer scientists reach consensus on a particular

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1. See, e.g., David R. Johnson & David G. Post, And How Shall the Net Be Governed?: A Meditation on the Relative Virtues of Decentralized, Emergent Law, in COORDINATING THE INTERNET 62, 62, 68-69 (Brian Kahin & James H. Keller eds., 1997).

standard and, after review by other groups of engineers, publish the standard on the Internet. The standards are then voluntarily adopted by the Internet as a whole. This coordination takes place, across millions of computers around the world, without any formal legal structure. The working groups have no formal or legal authority to set Internet standards; nothing requires the computers on the Internet to follow these standards. Nevertheless, the standard-setting process has served to coordinate orderly development of Internet technical standards for the past ten years. The success of this open and consensus-based process has led some observers to believe that nontechnical issues, such as regulation of fraud and crime on the Internet, may be resolved through analogous forms of "decentralized, emergent law."[2]

Often overlooked, however, is the fact that the Internet's technical standard-setting process rests on a number of highly contingent assumptions. One fundamental assumption is that consensus is achievable. It is easy to see how this assumption might hold true in the realm of technical standards. The Internet's technical standards are created and adopted by a relatively small community of engineers and programmers. Such a community can be expected to share a certain set of common professional norms and values, at least as compared to the public as a whole. In addition, the technical nature of the standards means that relatively objective factors can be employed to measure the desirability of a particular standard. Consensus under such conditions may be much easier to achieve. Moreover, the coordination of technical standards may not solely be the result of consensus; other factors, such as simple adherence to custom or the lack of any viable alternatives, may also contribute to the orderly development and adoption of technical standards.

The conditions that make possible the existing consensus-based process of standards coordination may not exist in other areas of Internet governance. Broader questions of Internet policy implicate the interests of individuals and entities outside the relatively small community of engineers and computer scientists. As the universe of individuals and entities expands, the set of values and norms similarly expands. Consensus is far more difficult, if not impossible, to achieve when the stakeholders include not only engineers but also commercial interests and the public at large. Moreover, general policy questions, such as acceptable standards of behavior on the Internet, are not as subject to objective measures and may, in fact, involve highly contested value judgments. Where such value judgments are at issue, the existing, consensus-based process for technical standard-setting may be inadequate to deal with the particular problem. Although much praise has generally been given to the decentralized and self-governing

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2. *Id.* at 68.

> We will argue that the same decentralized decision-making process that created the Internet at a technical level may be able to create a workable and, indeed, empowering and just form of order even at the highest level of the protocol stack—the realm of rules applicable to the collective social evaluation and governance of human behavior.

Id. Note that the groups that are responsible for technical standard-setting have by-and-large made no such claims.

aspects of Internet coordination, far less attention has been paid to the possible limits of the process.

In this Article, I wish to explore the limits of the existing standard-setting model of Internet coordination, using the Internet domain name controversy as a case study. Internet domain names, such as "nike.com" or "harvard.edu," are the text-based addresses of the Internet. Used initially as convenient mnemonics by the engineers who created the Internet, domain names have since come to signify much more, as commercial interests have come to recognize their value as trademarks. Largely unbeknownst to the general public, a heated debate has arisen over the past several years regarding the proper distribution of domain names and the authority over such distribution. As the Internet has grown in scale, it has become increasingly clear that the largely informal mechanisms that had governed domain name distribution during the Internet's early years were becoming increasingly ill-suited to the task. Various parties have accordingly floated proposals for significantly reforming the existing domain name system and its administration, and one of these proposals is currently in the process of being implemented.

I will argue that these attempts to reform the system improperly rely, either explicitly or implicitly, on the technical standard-setting model of coordination. That is, to one extent or another, they attempt to resolve the domain name problem through some version of the dominant, existing method of Internet coordination. These proposals fail, however, to fully appreciate the fact that domain name problems are not purely, or even primarily, technical in nature. Rather, they are classic public policy questions, requiring the resolution of conflicting distributional and value claims. The public policy aspect of the domain name problem undercuts many of the assumptions that underlie the standard-setting model of coordination. The result is that attempts to use the current standard-setting process face serious legitimacy and implementation problems. Although more recent attempts to reform the system are beginning to recognize the limits of the standard-setting process, they do not go far enough.

I begin in Part I with a brief overview of how the domain name system works. In Part II, I outline the technical standard-setting model of Internet coordination and analyze the assumptions underlying that model. I also demonstrate how existing attempts at reforming the domain name system rely either implicitly or explicitly on the standard-setting model. In Part III, I argue that problems with the domain name system are in fact not primarily technical, but rather questions of public policy, and in Part IV, I analyze how this undercuts the assumptions underlying the standard-setting model. In Part V, I explore a number of alternatives to the current standard-setting model and conclude that some minimal level of government coordination may be necessary in order to ensure that the domain name system is administered in a legitimate[3] fashion. I then conclude with

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3. What I mean by "legitimate" will be fleshed out in more detail below. For present purposes, however, a process will be considered more legitimate to the extent that it seeks to take into account the interests of all of the various parties that have a stake in the issue to be decided by that process.

some cautionary thoughts about the application and extension of the consensus-based model of Internet coordination to other Internet problems.[4]

I. A SHORT INTRODUCTION TO THE DOMAIN NAME SYSTEM AND CURRENT PROBLEMS

Let us begin with a quick overview of how the domain name system works.[5] A domain name, by itself, is not sufficient to tell your computer where and how to find a particular computer on the Internet. To do that, your computer must translate the domain name into its corresponding numerical Internet Protocol ("IP") address. Each computer on the Internet has a unique 32-bit IP address, which takes the form of four groups of numbers separated by dots (e.g., 128.103.200.10).[6] The IP address tells your computer specifically where and how to find the computer you are seeking. Thus, when you type in "law.harvard.edu" into your browser or e-mail software, the first thing it needs to do is look up the corresponding IP address. To do this, it sends out a query into the Internet.[7]

No single computer on the Internet authoritatively tracks the IP addresses for all of the domain names on the Internet. Because such a database would be very large and difficult to keep current, the domain name database is held in a distributed and hierarchical fashion among numerous computers across the Internet. At the top of the hierarchy is a computer that holds the root directory,[8]

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4. Although a number of articles have discussed issues of Internet governance in general, only a few have taken a sustained, close look at the issue from the perspective of the existing standard-setting model that provides the baseline for Internet coordination. *See* Henry H. Perritt, Jr., *Cyberspace Self-Government: Town Hall Democracy or Rediscovered Royalism?,* 12 BERKELEY TECH. L.J. 413, 443 (1997); I. Trotter Hardy, *The Proper Legal Regime for "Cyberspace,"* 55 U. PITT. L. REV. 993 (1994); David R. Johnson & David Post, *Law and Borders—The Rise of Law in Cyberspace,* 48 STAN. L. REV. 1367 (1996); Lawrence Lessig, *The Path of Cyberlaw,* 104 YALE L.J. 1743 (1995) [hereinafter Lessig, *Path of Cyberlaw*]; Lawrence Lessig, *The Zones of Cyberspace,* 48 STAN. L. REV. 1403 (1996) [hereinafter Lessig, *Zones of Cyberspace*]. *But see* David G. Post, *Anarchy, State, and the Internet: An Essay on Law-Making in Cyberspace,* 1995 J. ONLINE L. art. 3, ¶ 1, *available at* <http://warthog.cc .wm.edu/law/publications/jol/post.html>; Joel R. Reidenberg, *Governing Networks and Rule-Making in Cyberspace,* 45 EMORY L.J. 911 (1996).

5. *See generally* Barry M. Leiner et al., *A Brief History of the Internet* (last modified Feb. 20, 1998) <http://www.isoc.org/internet-history/brief.html>.

6. *See* P. Mockapetris, *RFC 1034: Domain Names—Concepts and Facilities (Nov. 1987)* 12 (visited Feb. 3, 1999) <ftp://ftp.is.co.za/rfc/rfc1034.txt>; J. Postel, *RFC 1591: Domain Name System Structure and Delegation (Mar. 1994)* (visited Feb. 3, 1999) <http://www.isi.edu/ in-notes/rfc1591.txt>. *See generally Internet Requests for Comments* (last modified July 22, 1998) <http://www.cis.ohio-state.edu/hypertext/information/rfc.html> (listing "Requests for Comments" or "RFCs"). Note that a domain name does not always map to an IP address–it can also map to other types of records. In addition, your internet service provider may assign you a different IP address each time you log on.

7. *See* Mockapetris, *supra* note 6, at 5; Postel, *supra* note 6.

8. There are in fact 12 copies of the root directory, which all refer to a single "A" root directory. *See* Management of Internet Names and Addresses, 63 Fed. Reg. 31,741, 31,742 (1998), *available at* <http://www.ntia.doc.gov/ntiahome/domainname/6_5_98dns.htm> (visited Nov. 11, 1998) (commonly known as the "White Paper").

which contains a list of authoritative computers for all of the top-level domains, both geographic (e.g., .uk, .de, .us, .jp) and generic (.com, .gov, .edu).[9] These computers, in turn, contain lists of the computers that are authoritative for the second-level domains (e.g., mcdonalds.com, harvard.edu) within each top-level domain, and so on. The value of this distributed approach is that it allows address changes to be made at the most local level, and therefore obviates the need for any huge, centralized administrative body to keep track of such changes.[10]

Thus, using "law.harvard.edu" as an example, your computer would query the computer holding the root directory, which would tell your computer the address of the computer on the Internet that authoritatively lists all domain name addresses within the ".edu" top-level domain. That computer would, in turn, be able to tell your computer the address of the computer that authoritatively lists domains within the "harvard.edu" second-level domain, and so on, until your computer finds the desired IP address. In practice, not all of these steps may be necessary, as computers on the Internet routinely store or "cache," for a limited period of time, addresses that they have looked up relatively recently. Thus, in our example, your Internet service provider probably already knows the IP address for the top-level ".edu" domain, and possibly for the "harvard.edu" second level domain.

The parties that control the computers with authoritative information at each level of the domain name hierarchy have de facto control over the coordination and registration of domains in that level of the hierarchy. For example, the root directory was for a long time practically controlled by the Internet Assigned Numbers Authority ("IANA"), a division of the Information Sciences Institute at the University of Southern California, managed by a computer scientist named Jon Postel.[11] When a particular country wished to register for a geographic top-level domain, IANA issued to that country a two-letter country code (e.g., .uk, .de) and changed the root directory to include the new domain along with the IP address of the computer that had authority over that domain.[12] Similarly, the addition of new generic top-level domains required implementation through

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9. *See* Improvement of Technical Management of Internet Names and Addresses, 63 Fed. Reg. 8826 (1998), *available at* <http://www.ntia.doc.gov/ntiahome/domainname/dnsdrft.htm> (visited Jan. 27, 1999) (commonly known as the "Green Paper"); Leiner et al., *supra* note 5.

10. *See* Mockapetris, *supra* note 6, at 5, 6.

11. *See* Management of Internet Names and Addresses, 63 Fed. Reg. at 31,741; Alexander Gigante, *Blackhole in Cyberspace: The Legal Void in the Internet*, 15 J. MARSHALL J. COMPUTER & INFO. L. 413, 416 (1997); *see also* Josh A. Goldfoot, Note, *Antitrust Implications of Internet Administration*, 84 VA. L. REV. 909, 913 (1998).

Postel, a well-regarded and highly respected member of the Internet engineering community, passed away unexpectedly on October 16, 1998, shortly after initiating the latest proposal for reforming the domain name system. *See A Tribute to Jon Postel, Director of the Internet Assigned Numbers Authority (IANA)* (last modified Oct. 29, 1998) <http://www.iana.org>; James Glave, *Net Mourns Passing of Giant* (last modified Oct. 18, 1998) <http://www.wired .com/news/news/culture/story/15682.html>. For a discussion of Postel's reform proposal, see *infra* text accompanying notes 78-84.

12. The entity that controlled that computer would then have the authority to distribute second-level domains within that top-level domain.

IANA.[13] IANA thus coordinated and maintained the issuance of the top-level domains, making sure that there were no conflicts. Authority over the root directory has since been transferred from IANA to the newly-created Internet Corporation for Assigned Names and Numbers ("ICANN"), as part of the most recent effort to reform the domain name system, which will be discussed in more detail below.[14].

Similarly, Network Solutions, Inc. ("NSI") administers the databases that contain authoritative information regarding domains within a number of the most important generic top-level domains, such as ".com," ".org," and ".net." Thus, if a company wishes to register a second-level domain within the ".com" top-level domain (e.g., burger.com), the company must go to NSI and ask for that domain.[15] If that second-level domain has not yet been taken, NSI will register that second-level domain and list both the domain name and the corresponding IP address in its database. (NSI issues domain names on a first-come, first-served basis, with some special provisions for dealing with trademark issues.[16]) The company with burger.com can then allocate domains within that second-level domain, as it wishes.

Both IANA and NSI originally derived their authority to coordinate domain names ostensibly from the U.S. National Science Foundation ("NSF"). The NSF played a significant role in the initial funding and development of the Internet, and in fact constructed the first high-speed "backbone" connecting various regional networks.[17] The NSF was also responsible for opening up the Internet to commercial interests and the general public.[18] The NSF originally delegated the authority to administer the root directory to IANA,[19] and contracted with NSI and AT&T (collectively known as "InterNIC") to provide administration and registration services for a number of the generic top-level domains.[20] It was thus

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13. Although the root directory was ostensibly controlled by IANA, it was (and is) physically maintained on computers operated by Network Solutions, Inc. *See* Management of Internet Names and Addresses, 63 Fed. Reg. at 31, 742. Some doubt existed, however, over what precisely would have happened if NSI had refused to follow an instruction from IANA.

14. *See infra* text accompanying notes 78-80.

15. As of the date of this writing, ICANN is in the midst of considering how to open up the registration function to multiple registrars, as part of the most recent plan to reform the domain name system, which will be discussed in more detail below. *See* Joanna Glasner, *ICANN to Unveil New Rules* (visited Feb. 2, 1999) <http://wircd.com/news/news/politics/story/17563.html>; *see also infra* text accompanying notes 78-80.

16. *See* Carl Oppedahl, *Trademark Disputes in the Assignment of Domain Names, in* COORDINATING THE INTERNET, *supra* note 1, at 154, 160-66.

17. *See* Management of Internet Names and Addresses, 63 Fed. Reg. at 31,742; NICHOLAS BARAN, INSIDE THE INFORMATION SUPERHIGHWAY 39-40 (1995).

18. *See* Gigante, *supra* note 11, at 414.

19. *See* V. Cerf, *RFC 1174: IAB Recommended Policy on Distributing Internet Identifier Assignment and IAB Recommended Policy Change to Internet "Connected" Status* 2 (last modified Aug. 1990) <http://www.cis.ohio-state.edu/htbin/rfc/rfc1174.html>.

20. *See* Management of Internet Names and Addresses, 63 Fed. Reg. at 31,742; *NSF Cooperative Agreement*, art. 2, pt. A.1 (visited Nov. 11, 1998) <http://rs.internic.net/nsf/agreement/agreement.html>.

through its contract with the NSF that NSI originally obtained authority to allocate domain names within those generic top-level domains.

It is important to note that the NSF's own authority over domain name administration, and accordingly the authority of the various entities to whom it delegated such authority, was largely de facto.[21] No formal legal strictures (e.g., statutes, regulations, or contracts) required computers on the Internet to accept their databases as authoritative.[22] Theoretically, all of the computers on the Internet could have decided, and could today decide, to accept as authoritative the version of the root directory held by another party and point their browsers or other software programs to an alternate server.[23] Indeed, at least one individual, Eugene Kashpureff, has attempted (with limited success) to set up a competing registry, with a competing root server.[24] This other party would then have de facto authority to issue additional top-level domains. In practice, however, such a result is unlikely, as widespread coordination of millions of computers would be extremely difficult.[25] The important point is that the authority of IANA and NSI over domain name allocation and administration was largely a matter of custom and historical contingency; it was not based on any identifiable legal claim of right.[26]

As the Internet has grown, and as more and more commercial interests and members of the general public have come onto the Internet, dissatisfaction has grown with various aspects of the domain name system, and the largely informal mechanisms that had up until recently governed the domain name system have

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21. *See* Sharon Eisner Gillett & Mitchell Kapor, *The Self-Governing Internet: Coordination by Design, in* COORDINATING THE INTERNET, *supra* note 1, at 3, 22 (IANA's "performance of this function is a product of history, not design. [Jon] Postel picked up the role of number coordinator because it needed to be done when he was a graduate student involved in the birth of the [Advanced Research Projects Agency Network ("ARPANET")], and he never quit doing it."); Robert Shaw, *Internet Domain Names: Whose Domain is This?, in* COORDINATING THE INTERNET, *supra* note 1, at 107, 120-23 (unsuccessfully attempting to trace the formal authority supporting IANA).

22. *See* Johnson & Post, *supra* note 1, at 64 ("[D]omain name look up tables function because local hosts point their domain name servers at these tables; a form of custom, not law, dictates the particular root servers to which local hosts point for this information.").

23. *See* David R. Johnson, *The Price of Netizenship* (last modified Nov. 12, 1996) <http://www.cli.org/pon.html> ("[I]n theory at least, anyone anywhere in the world can . . . set up a 'registry' and associated lookup tables that map domain names to IP addresses.").

24. *See AlterNic Index* (visited Jan. 27, 1999) <http://alternic.net>; David Hakala & Jack Rickard, *A Domain by Any Other Name!* (visited Jan. 27, 1999) <http://boardwatch. intcrnet.com/mag/96/oct/bwm9.htm>.

25. Moreover, a partially successful effort would result only in a splintering and fragmenting of the Internet.

26. Sometimes the question of who controls the root server is asked in the form: who "owns" domain name space? This formulation is less than helpful. It assumes that domain name space is a form of property subject to "ownership" by some entity. The description above should make it clear that no one "owns" domain name space since no one has the universally recognized legal authority to control the various domain name servers. Rather, control over the root server is de facto. No legal obligations require Internet hosts to consider the root server as authoritative. Indeed, the key characteristic of the entire domain name system is that it is largely legally voluntary; there exist few lines of binding legal authority.

come under increasing scrutiny. Although these problems will be discussed in more detail below, it is worth quickly mentioning them here. First, the domain name registration system has come into increasing conflict with trademark law. Numerous lawsuits have been filed by trademark holders against parties who have registered domain names corresponding to their trademarks.[27] These suits have led some to question the current allocation process and, indeed, the current structure of domain names themselves.[28] Second, the trademark conflicts noted above, and the corresponding proposals to reform the system, have highlighted the lack of clear authority regarding control of the domain name system and, in particular, control of the ".com" domain, which has become (literally) the default domain for commercial entities on the Internet.[29] NSI's de facto monopoly over the registration of the most desirable top-level domains and its particular policies have generated much concern.

Even more worrisome have been concerns about the future governance and stability of the domain name system. The contract between the NSF and NSI was scheduled to expire on September 30, 1998. Prior to its expiration, the NSF announced its intention not to renew the contract and to withdraw from domain name coordination altogether.[30] The resulting vacuum in authority created substantial uncertainty over what would happen after the expiration date. NSI claimed that it possessed continuing authority to register domain names, while other interested parties sought to reform the existing domain name system to address some of the concerns mentioned above.[31] In the end, government intervention and an extension of the contract by the NSF forestalled any crisis in the domain name system and ensured some continuing stability and coordination of the domain name system while enabling further discussions of the matter.[32] However, lingering questions of authority and legitimacy remain to be resolved.

The domain name system is thus presented with a number of challenges, both short-term and long-term. Some challenges involve conflicts between existing practices and specific bodies of law, such as trademark. Other challenges involve more fundamental questions about the continuing administration and future shape of the domain name system as a whole. The main question that this Article is interested in asking is whether the existing processes of Internet governance and coordination, which have up to now have coordinated the Internet with little central governance, are up to the task of meeting these challenges.

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27. *See infra* notes 87-88.

28. Others have expressed dissatisfaction with NSI's efforts at resolving domain name and trademark conflicts. *See* Hakala & Rickard, *supra* note 24.

29. The most recent versions of Netscape automatically place a ".com" after a text string entered into the address box, if that string is missing a generic top-level domain. *See* Oppedahl, *supra* note 16, at 156, 169-71 (discussing the importance of a ".com" address for commercial entities).

30. *See infra* text accompanying note 106.

31. *See infra* text accompanying note 107.

32. *See* Niall McKay, *Network Solutions Hangs On* (last modified Oct. 6, 1998) <http://www.wired.com/news/news/politics/story/15453.html>.

II. THE STANDARD-SETTING MODEL OF COORDINATION

The coordination of the current domain name system is an example of the general technical standard-setting model used to coordinate the Internet as a whole. This model is based very much on consensus and a deference to expertise. Groups of computer scientists, engineers, and programmers gather to discuss various technical issues. Rough consensus is reached on a particular technical standard, which is published on the Internet. Once published and shown to work, technical standards are then voluntarily adopted by those connected to the Internet. Underlying this process are a number of key assumptions regarding the character of technical standards. Many proposals for reforming the domain name system rely, explicitly or implicitly, on some version of this standard-setting model of coordination.

A. The Standard-Setting Process and Sources of Coordination

The Internet's technical standards are set through a process that bears a surprising resemblance to the low-tech ideal of the New England town meeting. The body with de facto responsibility for setting Internet standards is the Internet Engineering Task Force ("IETF"),[33] which is composed primarily of computer scientists, programmers, and engineers.[34] The IETF holds open meetings three times per year, at which various parties are permitted to comment on numerous issues surrounding Internet technical standards.[35] After these meetings, working groups within the IETF consider the various comments and come to consensus around a particular technical standard. These standards are then approved by the

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33. Other committees also play a role in the standard-setting process. The Internet Architecture Board ("IAB"), another related group of computer scientists and engineers, develops general guidelines for Internet research. *See* Gigante, *supra* note 11, at 417. The Internet Research Task Force ("IRTF") focuses on longer-range engineering problems faced by the Internet. *See id.* The Internet Society ("ISOC") is a nonprofit corporation founded in 1992 composed of various companies, agencies, and individuals involved in Internet industries. *See id.* The ISOC is generally considered the most likely candidate for overall Internet governing body and provides the formal legal umbrella for many of these other bodies. *See, e.g.,* E. Krol & E. Hoffman, *RFC 1462: FYI on "What is the Internet?"* 4 (last updated May, 1993) <http://www.cis.ohio-state.edu/htbin/rfc/rfc1462.html>. Still other bodies play a role in standard-setting. The IETF, however, is the main body with the primary responsibility for drafting and issuing Internet technical standards.

34. *See* Gigante, *supra* note 11, at 417; R. Hovey & S. Bradner, *RFC 2028: The Organizations Involved in the IETF Standards Process* 1 (last modified Oct. 1996) <http://www.cis.ohio-state.edu/htbin/rfc/rfc2028.html>. Membership in the IETF is generally open to computer engineers "with reasonable credentials." David W. Maher, *Trademarks on the Internet: Who's in Charge?* (visited Jan. 27, 1999) <http://www.aldea.com/cix/maher.html>.

35. *See, e.g.,* Hovey & Bradner, *supra* note 34, at 2.

Internet Architectural Board ("IAB")[36] and then published on the Internet in the form of a Request for Comment ("RFC").[37]

The standards are then adopted and implemented voluntarily[38] by the wider Internet community.[39] The central and salient fact about the Internet coordination process is that no central body has the de jure authority to mandate adoption of the standards published in the RFCs.[40] The Internet is a network with distributed intelligence. Because no single computer controls the Internet, the adoption of a given standard cannot be made at a single locus but, instead, must be adopted in a distributed fashion by all of the computers on the Internet. The miraculous part is that this occurs without any formal mandate or legal obligation.[41] With a surprising degree of noncentralized coordination, the standards are voluntarily adopted by thousands of system operators all throughout the Internet.[42]

A number of factors contribute to the widespread adoption of such standards. First, custom plays a large role. Technical standards have historically been adopted and propagated in this fashion. This is the Internet's way of coordinating such standards. Second, deference to expertise also plays a role. The IETF, which includes a number of founders of the Internet, commands a degree of respect within the Internet community. There is a general belief that the standards crafted by the IETF are objectively good standards, worth adopting. Moreover, the IETF is widely assumed to have no other agenda than to look out for the best interests of the Internet. Finally, network effects may also serve to bind individuals to continuing adherence to this process and custom. As more parties adopt a given standard, the value of that standard increases. Conversely, leaving that standard entails greater and greater cost. The existing custom of technical coordination

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36. *See supra* note 33.

37. See Shaw, *supra* note 21, at 114-15, for a useful chart listing the main Internet governing bodies. *See also* Leiner et al., *supra* note 5.

38. *But see infra* text accompanying notes 118-19.

39. This is a simplified version of the process, though accurate for our purposes. In practice, technical standards may gain increasing acceptance over time, as they are shown to work. Other technical standards may be optional (e.g., providing a different way to do the same thing) and, accordingly, may not be adopted by all.

40. Indeed, protocol standards could, in theory, be developed by other bodies and, if accepted by the Internet community as a whole, become standard. *See* Gillett & Kapor, *supra* note 21, at 20 ("[N]othing stops companies from inventing their own protocols and attempting to turn them into universal standards through marketing genius, instead of through the IETF (at least initially).") (parenthetical in original).

41. *See* ACLU v. Reno, 929 F. Supp. 824, 832 (E.D. Pa. 1996) ("No single entity—academic, corporate, governmental, or non-profit—administers the Internet. It exists and functions as a result of the fact that hundreds of thousands of separate operators of computers and computer networks independently decided to use common data transfer protocols to exchange communications and information with other computers . . . ."), *aff'd*, 117 S. Ct. 2329 (1997).

42. *See* Johnson, *supra* note 23 (characterizing the relationships between the various entities as a series of informal contracts).

gives rise to a powerful network externality.[43] Those who fail to adopt a standard widely adopted by others will effectively be severed from the Internet.

Even though the adoption of standards is distributed and no centralized control exists, some minimal degree of centralized coordination is necessary to maintain certain aspects of the protocol.[44] For example, the Internet protocol requires that all computers be aware of certain common parameters and values, in order to be able to communicate with each other.[45] In order to ensure that the parameters and values are consistent, there must be some source on the Internet that contains the authoritative parameters and values so that when disputes arise, reference can be made to an authoritative source. Similarly, some central body must be trusted with coordination of Internet addresses. Because each Internet address is unique, some central repository must allocate Internet addresses and keep track of them in order to prevent conflicts.

Such minimal coordination functions are vested in certain trusted bodies,[46] and their authority is largely de facto. For example, IANA was for a long time responsible for many of the coordination functions.[47] Among other tasks, it managed the allocation of various Internet protocol parameters, it allocated blocks of numerical IP addresses to regional registries (which in turn allocated them to Internet service providers),[48] and it also maintained the root directory for the domain name system, which contains the authoritative sources for the top-level domains.[49] The authority wielded by such coordinating bodies is largely de facto, rather than de jure. Nothing legally requires Internet computers to refer to

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43. *See generally* ROBERT MERGES ET AL., INTELLECTUAL PROPERTY IN THE NEW TECHNOLOGICAL AGE 846-47 (1997) (general discussion of network effects); Mark A. Lemley & David McGowan, *Legal Implications of Network Economic Effects*, 86 CAL. L. REV. 479 (1998) (same); J. Liebowitz & Stephen Margolis, *Should Technology Choice Be a Concern of Antitrust Policy?*, 9 HARV. J.L. & TECH. 283 (1996) (same); J. Liebowitz & Stephen Margolis, *Network Externality: An Uncommon Tragedy*, 8 J. ECON. PERSP., Spring 1994, at 133, 147 (same); Brian W. Arthur, *Positive Feedback in the Economy*, SCI. AM., Feb. 1990, at 92, 93 (same); Joseph Farrell, *Standardization and Intellectual Property*, 30 JURIMETRICS J. 35, 41 (1989) (same); Paul David, *Clio and the Economics of QWERTY*, 75 AM. ECON. REV. 332 (1985) (same); Joseph Farrell & Garth Saloner, *Standardization, Compatibility and Innovation*, 16 RAND J. ECON. 70 (1985) (same); Michael L. Katz & Carl Shapiro, *Network Externalities, Competition and Compatibility*, 75 AM. ECON. REV. 424, 435 (1985) (same).

44. *See* Gillett & Kapor, *supra* note 21, at 18-28 (analyzing the coordination of the "1 percent" needed to make the Internet work).

45. *See* Management of Internet Names and Addresses, 63 Fed. Reg. 31,741, 31,742 (1998).

46. *See* Don Mitchell et al., *In Whose Domain?: Name Service in Adolescence, in* COORDINATING THE INTERNET, *supra* note 1, at 258, 259-61.

47. These tasks have since been transferred to ICANN. *See infra* text accompanying notes 74-83.

48. *See* Gillett & Kapor, *supra* note 21, at 21-23. These regional Internet registries ("RIRs") are Reseaux IP Europeens Network Coordination Centre ("RIPE NCC"), for European Internet Service Providers ("ISPs"); Asia Pacific Network Information Center ("APNIC"), for Asian-Pacific ISPs; and InterNIC for any other place in the world. Both RIPE NCC and APNIC are operated and funded by a consortia of Internet connectivity providers. *See id.* at 22-23. InterNIC is discussed *supra* text accompanying note 20.

49. *See* Cerf, *supra* note 19, at 1.

these sources for authoritative information. Yet strong network effects essentially bind Internet participants to these authorities.

B. Assumptions Underlying the Standard-Setting Model

The standard-setting process described above relies, for its success, upon a number of unstated and closely related assumptions, both about the nature of technical standards and the identity of those who have an interest in such standards. For the past several years, these assumptions have by and large held true, and technical standard-setting has progressed in a relatively coordinated manner, with little central control or direct assertion of authority. This process, however, is coming under increasing pressure as the Internet is opened up to a wider and wider population, as more interested parties wish to participate in the standard-setting process, and as the stakes increase. The extent to which these assumptions hold true in the future will determine the continuing success of this model of Internet coordination.

Foremost among these assumptions is a belief in the possibility of "rough consensus" in arriving at technical standards. The phrase "rough consensus and running code" was coined by David Clark of MIT, one of the original "founders" of the Internet, and it aptly captures the philosophy behind the current standard-setting process.[50] Under this view, no central authority is necessary if rough consensus among the relevant stakeholders can be achieved around a working standard. Once such consensus is achieved, the standard can be propagated throughout the Internet. Consensus, of even the rough variety, can thus lead to coordinated activity without any central authority ("kings" and "presidents," in Clark's formulation).

The belief in the possibility of a "rough consensus" is itself, however, dependent upon a number of specific, and contingent, circumstances. Consensus is more commonly achieved among relatively small communities with shared values.[51] The engineers comprising the IETF are such a community. The broader population of system administrators affected by the standards is also part of the same community. Although differences may exist among the engineers, these differences exist within a larger set of norms of the engineering community as a whole. Among these norms is a recognition of and respect for technical expertise.[52] Rough consensus is also more easily achieved when the relevant

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50. The full credo reads: "We reject Kings, Presidents, and Voting: We believe in rough consensus and a running code." *Transcript of Dialogue Between J. Zittrain and D. Clark: On the Issue of Domain Names . . .* (visited Jan. 27, 1999) <http://cyber.harvard.edu/fallsem97/trans/clark/> [hereinafter *Dialogue*].

51. *Cf.* ROBERT C. ELLICKSON, ORDER WITHOUT LAW: HOW NEIGHBORS SETTLE DISPUTES 167 (1991) (stating that "members of tight social groups will informally encourage each other to engage in cooperative behavior").

52. *See* Mitchell et al., *supra* note 46, at 258 ("The Internet grew from a small research experiment to the huge global enterprise it is today in a relatively closed and protected environment whose cultural ethics were based on cooperation and collegiality . . . ."). Indeed, the respect for, and deference to, expertise may play a significant role in quelling dissenting views.

metrics are relatively technical and objective in nature. Technical standards, after all, are meant to be implemented. Accordingly, they can be measured for performance.[53] Coordination of technical standards (such as whether addresses should be 16-bit or 32-bit) involves fewer of the value judgments that generally attend nontechnical policy issues.

Coordination is also made possible through an implicit recognition by others that the existing process is a legitimate one. Members of the Internet community recognize the legitimacy of the IETF's pronouncements not only because they come from a respected source, but also because of a sense that the IETF does an adequate job of speaking for the relevant interested parties, in this case primarily the operators of systems connected to the Internet, who are directly affected by the standards. Even if a particular computer programmer disagrees with the particular implementation of a standard, there is a sense that relevant viewpoints have been considered and the relevant stakeholders have had a chance to voice their opinions.

This type of technical coordination is only possible if there exist trusted institutions to take care of the minimal coordinating functions. The coordination of purely technical standards is largely administrative. The control of certain parameter lists and values, while certainly requiring judgment, does not implicate any large degree of *value* judgment.[54] Judgment exercised in this coordinating function can generally be measured against a performance metric. And historically, such judgment has been entrusted by the IETF to "one of their own," who has garnered the respect of the community for being objective and fair minded—in this case, for example, Jon Postel.[55]

Finally, the perceived legitimacy of the various coordinating institutions may also be a function, to an underappreciated extent, of a background government presence. The government, through the Department of Defense's Advanced Research Projects Agency ("DARPA") and the NSF, played a significant role in the initial funding and development of the Internet and plays a continuing role in the funding of various parties.[56] The background involvement of the government may in fact play a part in the perceived legitimacy of these institutions by providing a background, public-interest check. To the extent this is true, coordination of Internet standards through such institutions may not be as "private" as commonly believed.

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53. Indeed, the extent to which a given standard is adopted is often a function of the extent to which it is shown to work in practice.

54. *See* Gillett & Kapor, *supra* note 21, at 22 ("Assigning [protocol parameters] takes more effort to discuss than to do . . . .").

55. *See* William A. Foster, *Registering the Domain Name System: An Exercise in Global Decision-Making, in* COORDINATING THE INTERNET, *supra* note 1, at 194, 198 ("John [sic] Postel has a long history of making technically sound decisions that have worked for the IETF, Internet Service Providers (ISPs), and users of the Internet. It is this history that has given IANA its authority."); Shaw, *supra* note 21, at 120 ("There is little doubt that a sagacious IANA has played an important role in consolidating the stability of the Internet.").

56. *See* Management of Internet Names and Addresses, 63 Fed. Reg. 31,741, 31,741-42 (1998) ("[T]he U.S. government has played a pivotal role in creating the Internet as we know it today.").

C. Domain Name Proposals: The Standard-Setting Model

Many proposals for reforming the domain name system have essentially adopted, either explicitly or implicitly, the standard-setting method of coordination, or a close analog to it. For example, some early proposals were set forth to change the structure of the domain names themselves in order to eliminate existing conflicts between trademark law and domain name registration.[57] Under some such proposals, a domain name might include both a geographic limitation and a subject matter limitation[58] (e.g., mcdonalds.fastfood.us). Other proposals similarly sought changes in the shape and appearance of domain names in order to address specific problems facing the domain name system.[59] Although many of these proposals did not directly address questions of implementation, they implicitly assumed that implementation would be effected through the existing standard-setting process. As in the past, a committee would be formed to address the questions, and then, after consensus was achieved, an RFC would be published and subsequently adopted by the Internet community as a whole.

One prominent early domain name proposal was the Generic Top Level Domain Memorandum of Understanding ("gTLD MoU" or "MoU").[60] Instead of changing the structure of the domain names themselves, the gTLD MoU proposed the addition of new top-level domains (e.g., .firm, .store, .rec, .nom) to the existing top-level domains (e.g., .com, .gov), in order to address concerns about the scarcity of domain names.[61] In addition, it proposed that registration services for top-level domains be opened up to competition among registrars.[62] Finally, it argued for the establishment of an international body to administer the system and

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57. *See, e.g.*, G. Peter Albert, Jr., *Right on the Mark: Defining the Nexus Between Trademarks and Internet Domain Names*, 15 J. MARSHALL J. COMPUTER & INFO. L. 277, 310 (1997) (advocating the creation of domain name "masks" which would list multiple parties sharing the same domain name, along with a description); David Collier-Brown, *On Experimental Top Level Domains* (last modified Sept. 1996) <http://turing.sci.yorku.ca/~davecb/tld/experiment.html>.

58. *See, e.g.*, James W. Morando & Christian H. Nadan, *Can Trademark Law Regulate the Race to Claim Internet Domain Names?*, COMPUTER LAW., Feb. 1996, at 10, 12.

59. *See, e.g.*, Paul Vixie, *External Issues in DNS Scalability* (visited Jan. 27, 1999) <http://ksgwww.harvard.edu/iip/vixie.html> (calling for the issuance of meaningless "license plates" instead of domain names). Vixie subsequently withdrew this proposal in favor of an alternative proposal involving multiple registries. *See* Maher, *supra* note 34.

60. *See Establishment of a Memorandum of Understanding on the Generic Top Level Domain Name Space of the Internet Domain Name System (gTLD-MoU)* (last modified Feb. 28, 1998) <http://www.gtld-mou.org/gTLD-MoU.html> [hereinafter *Generic Top Level Domain Memorandum of Understanding*].

61. *Id*; *gTLD-MoU: Frequently Asked Questions* (last modified June 1, 1998) <http://www.gtld-mou.org/docs/faq.html>.

62. *See Memorandum of Understanding for the Internet Council of Registrars ("CORE­ MoU")* (visited Jan. 27, 1999) <http://www.gtld-mou.org/docs/core-mou.htm>.

to deal with disputes over domain name "ownership."[63] This body would be made up of representatives from a number of existing Internet stakeholder groups.

Although the MoU, unlike other proposals, did not rely on existing standard-setting procedures, the implementation process it pursued was closely analogous to such procedures and relied on many of the same assumptions. In 1996, the International Ad Hoc Committee ("IAHC") was formed to study the domain name problem. The IAHC was composed of nominees from a number of existing Internet governance groups (e.g., IAB, IANA, ISOC),[64] as well as the World Intellectual Property Organization ("WIPO") and the International Telecommunications Union ("ITU").[65] The IAHC convened a number of meetings to discuss the domain name problem. Various proposals were discussed and a "rough consensus" was achieved around what eventually became the MoU. Once the MoU was drafted, it was posted upon the Internet and companies with an interest in the Internet were asked to "sign on." The general idea was to generate a certain critical mass of acceptance and, at that point, seek implementation of the MoU by adding the top-level domains and permitting competition among registries.[66] Although the process took place outside the normal standard-setting process, it was in some ways analogous to the process in that it sought to build a consensus and voluntary participation.[67]

The MoU was eventually supplanted by a domain name proposal set forth in January of 1998 by the U.S. Department of Commerce under the guidance of Ira Magaziner—the so-called "Green Paper."[68] Like the MoU, the Green Paper proposed opening up registration services to competition and creating a number of new top-level domain names. However, instead of an international body to administer the domain name system, the Green Paper called for the creation of a private, not-for-profit corporation that would essentially take on a number of the coordination and policy-making functions previously in the hands of IANA and

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63. *Id.*; *see also Summary of Comments: Registration and Administration of Internet Domain Names*, pt. C (visited Nov. 11, 1998) <http://www.ntia.doc.gov/ntiahome/domainname /DNSComments_SUM.htm> [hereinafter *Summary of Comments*] (summarizing the views of some trademark holders that the creation of new gTLDs "would confuse users, increase opportunities for the selection of infringing domain names, and make it harder for trademark owners to police their marks").

64. *See supra* note 33.

65. *See* Gigante, *supra* note 11, at 419.

66. *See Network Solutions' Preliminary Response to the IAHC's Draft Specifications for the Administration and Management of gTLDs* (last modified Jan. 14, 1997) <http://netsol.com /news/apr_19970114.html> ("[N]o one has the legal basis, delegated by statute or otherwise, to oversee and direct the affairs of the Internet. Without legal mandate, the Committee must seek and obtain consensus for its actions.").

67. *See Generic Top-Level Domain Memorandum of Understanding* (last modified Dec. 14, 1998) <http://www.gtld-mou.org>. A major weakness in the MoU was its inability to compel NSI to comply with its terms. Despite the efforts of the MoU, NSI continued to insist that it would maintain control over the registration of top-level domains under its control. *See* Kenneth Cukier, *Internet Row Prompts Major Shake-Up* (last modified Feb. 3, 1997) <http://www.emap.com/cwi/177/177news2.html>.

68. *See* Improvement of Technical Management of Internet Names and Addresses, 63 Fed. Reg. 8826 (1998).

NSI. This corporation would thus have the responsibility for distributing IP addresses, managing the domain name root directory, and overseeing the policies for the creation of new top-level domains. The corporation would be governed by a board of directors, which would consist of representatives from a number of different Internet "stakeholder" groups. The government would retain some background oversight function until September 30, 2000, at which point, it would withdraw completely from domain name governance.[69]

After soliciting numerous public comments on the Green Paper,[70] the Commerce Department issued in June of 1998 a final White Paper,[71] which contained many of the recommendations set forth in the Green Paper, though it differed in a number of respects. In particular, it left a number of issues regarding the structure of the domain name system (e.g., the addition of new top-level domains, the minimum qualifications for competing registrars) to the new not-for-profit corporation and provided less in the way of substantive guidance.[72] The basic structure of the Department of Commerce's "policy statement" remained unchanged, however. The coordination functions once fulfilled by IANA would now be fulfilled by a "new, not-for-profit corporation formed by private sector Internet stakeholders."[73] The U.S. Government would initially enter into an agreement with this new organization, but would eventually withdraw completely from domain name governance by September 30, 2000, once the new arrangement had become sufficiently stable.[74]

In response to the White Paper's call for an "invit[ation] to work together to form a . . . corporation to manage DNS functions,"[75] various interested Internet groups met over the following months to try to hammer out the structure and shape of such a corporation.[76] Meetings were held in Virginia, Geneva, and Buenos Aires to discuss the recommendations in the White Paper.[77] At these meetings, some areas of consensus emerged, though many questions were left unresolved.

Shortly before the September 30, 1998 deadline, however, IANA, through Jon Postel, issued its own proposal for a new, not-for-profit domain name organization, which it called the Internet Corporation for Assigned Names and

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69. *See id.* at 8832.

70. More than 430 comments were submitted in response to the Green Paper. *See* Management of Internet Names and Addresses, 63 Fed. Reg. at 31,741; John Borland, *Domain Name Plan Gathers Criticism* (visited Jan. 27, 1999) <http://www.techweb.com/wire/story/domnam/TWB19980323S0029>.

71. *See* Management of Internet Names and Addresses, 63 Fed. Reg. at 31,741.

72. *See id.* at 31,745-46.

73. *Id.* at 31,749. The White Paper listed a number of criteria which such a corporation should satisfy.

74. *See id.*

75. *Id.*

76. *See* Amy Harmon, *We the People of the Internet: Cybercitizens Debate How to Form On-Line Union, Perfect or Otherwise,* N.Y. TIMES, June 29, 1998, at D10; *see also International Forum on the White Paper* (visited Nov. 20, 1998) <http://www.ifwp.org>.

77. *See* The Berkman Center for Internet & Society, *IFWP/DNS Work-in-Progress* (visited Jan. 27, 1999) <http://cyber.law.harvard.edu/ifwp>.

Numbers ("ICANN").[78] The proposal included bylaws and very specific provisions regarding the powers of the corporation and the appointment of its directors. Although this proposal came under much criticism from other groups,[79] it quickly became the leading proposal. ICANN was subsequently incorporated, the initial board of directors was appointed,[80] and in December 1998, after some amendments to the bylaws in response to numerous concerns, the Department of Commerce transferred domain name coordination functions to ICANN.[81] As of the time of this writing,[82] ICANN is engaged, under close scrutiny by members of the Internet community, in fulfilling the functions laid out in the White Paper, including, for example, considering how to open up registration services to competition and whether and how to create additional top-level domains.

Unlike the MoU, implementation of the Green Paper's and White Paper's recommendations was not sought so much through a ground up consensus-building procedure, although the comment period after issuance of the Green Paper was designed to gather input on the proposals. Rather, the proposals were implicitly backed by the authority of the U.S. Government to implement changes in the domain name system, either directly through legislation or through its control of the NSF contract with NSI and the other coordinating bodies. Thus, in some ways, the White Paper moved away from the preexisting standard-setting model of Internet coordination. This Article will later discuss whether these moves were ultimately successful. In the mean time, however, it is worth noting that, despite this shift, the White Paper still drew heavily from the standard-setting model and its underlying assumptions. First, the proposal continued to treat the domain name problem as primarily a technical problem: "[W]e seek to create mechanisms to solve a few, primarily technical (albeit critical) questions about administration of Internet names and numbers."[83] In addition, it conceived of the solution to the problem mainly as one of technical standard-setting: "In

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78. *See ICANN: The Internet Corporation for Assigned Names and Numbers* (last updated Jan. 11, 1999) <http://www.ICANN.com>.

79. *See, e.g., The Boston Group* (visited Jan. 27, 1999) <http://pax.cavebear.com/bwg>; Niall McKay, *Critics Delay New Net Government* (last updated Oct. 8, 1998) <http://www.wired.com/news/news/politics/story/15482.html>.

80. *See Meet the ICANN Board* (last updated Oct. 8, 1998) <http://www.wired.com/news/news/politics/story/15499.html>.

81. *See* Niall McKay, *Net Authority Passes to ICANN* (last updated Oct. 20, 1998) <http://www.wircd.com/news/news/politics/story/15718.html>; Niall McKay, *ICANN Gets Green Light* (last updated Nov. 24, 1998) <http://www.wired.com/news/news/politics/story/16469.html>.

82. One of the perpetual challenges of writing in this area is dealing with the incredible pace of change in the subject matter. Accordingly, some of the references here and elsewhere in the Article reflect the particular state of events at the particular time at which the Article was written. Despite the rapid pace of change, I feel it still worthwhile to draw what relatively enduring lessons we can from these rapidly shifting circumstances, and risk being proven wrong (or rendered irrelevant) perhaps sooner than in other, less rapidly changing areas.

83. Improvement of Technical Management of Internet Names and Addresses, 63 Fed. Reg. 8826 (1998) (parenthetical in original).

performing the functions listed above, the new corporation will act much like a standard-setting body."[84]

III. THE NONTECHNICAL NATURE OF DOMAIN NAME PROBLEMS

As noted above, the problems surrounding the domain name system have, up to now, largely been framed as technical standard problems, and the processes used to resolve these problems have accordingly been analogs to the technical standard-setting processes.[85] This approach, however, fails to fully appreciate the fact that domain name problems are not purely technical problems, but public policy ones as well. Specifically, the domain name controversy raises difficult issues regarding the proper distribution of a limited resource (domain names), the allocation of authority to control such a resource, and the proper shape and structure of the Internet as a whole. Such questions are "public" in nature, to the extent that they affect all participants on the Internet and to the extent they involve distribution of a quasi-public resource. Moreover, they cannot be resolved solely by reference to a relatively neutral technical performance metric; in many cases, conflicting value judgments may be irreconcilable.[86] Domain name problems are thus, in a number of ways, fundamentally unlike other technical standard problems.

A. The Conflict with Trademark Law

The most visible aspect of the domain name problem has been the tension between trademark law and domain name registration. This tension has been made visible by a host of well-publicized lawsuits between trademark owners and the holders of domain names corresponding to their trademarks.[87] In the most

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84. *Id.* at 8828.

85. *See* Johnson & Post, *supra* note 4, at 1388 (stating that "[e]xperience suggests that the community of online users and service providers is up to the task of developing a self-governance system" for domain names).

86. *See* Lawrence Lessig, *Constitution and Code*, 27 CUMB. L. REV. 1, 14-15 (1997) ("[C]ode is political . . . . [T]he architectures that are established in cyberspace have normative significance, and . . . choices can be made about the values that this architecture will embed. . . . If code is political, then it is not the task of engineers alone. . . . If code constitutes cyberspace, then citizens must choose the code."); Lawrence Lessig, *The Constitution of Code: Limitations on Choice-Based Critiques of Cyberspace Regulation*, 5 COMMLAW CONSPECTUS 181, 184 (1997) [hereinafter Lessig, *Constitution of Code*] ("[T]hese are all policy choices made by default by a structure of code that has developed—unaware at times, and, generally, uncritically of the politics that code entails.").

87. *See, e.g.*, Data Concepts, Inc. v. Digital Consulting, 150 F.3d 620 (6th Cir. 1998); Cybersell, Inc. v. Cybersell, Inc., 130 F.3d 414 (9th Cir. 1997); Interstellar Starship Servs., Ltd. v. Epix, Inc., No. 97-107-FR, 1997 WL 736486 (D. Or. Nov. 20, 1997); Juno Online Servs., L.P. v. Juno Lighting, Inc., 979 F. Supp. 684 (N.D. Ill. 1997); Teletech Customer Care Mgmt., Inc. v. Tele-Tech Co., 977 F. Supp. 1407 (C.D. Cal. 1997); Planned Parenthood v. Bucci, No. 97 Civ. 0629 (KMVV), 1997 WL 133313 (S.D.N.Y. Mar. 24, 1997), *aff'd*, 152 F.3d 920 (2d Cir. 1998); Intermatic, Inc. v. Toeppen, 947 F. Supp. 1227 (N.D. Ill. 1996); Panavision, Inc.

notorious cases, domain name "squatters" registered domain names corresponding to famous trademarks and sought to sell the domain names at a profit to the trademark owners. In other cases, disputes have arisen between parties each having a colorable trademark-based claim to a given domain name.[88] Numerous articles have been written addressing the tension between trademark law and domain name registration.[89]

Although this is the most visible aspect of the problem, it is, if considered in isolation, in some ways the least troubling. The courts have begun the process of sorting through the trademark implications of domain names. In some cases, domain names have been transferred to the trademark owners, under theories of likelihood of confusion or trademark dilution.[90] In other cases, the parties have

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v. Toeppen, 945 F. Supp. 1296 (C.D. Cal. 1996); Hasbro, Inc. v. Internet Entertainment Group, Ltd., No. C96-I30WD, 1996 WL 84853 (W.D. Wash. Feb. 9, 1996) (discussing dispute between Hasbro and IEG over candyland.com); MTV Networks v. Curry, 867 F. Supp. 202 (S.D.N.Y. 1994) (analyzing dispute between MTV and former V.J. Adam Curry over mtv.com); Ray V. Hartwell, III & Stephen P. Demm, *Courts Unclear Whether Internet Names Infringe,* NAT'L L.J., May 8, 1995, at C37 (discussing dispute between Stanley Kaplan and Princeton Review over ownership of kaplan.com); Joshua Quittner, *Billions Registered: Right Now, There Are No Rules to Keep You from Owning a Bitchin' Corporate Name as Your Own Internet Address,* WIRED, Oct. 1994, at 50, 54 (describing author's registration of mcdonalds.com).

88. *See, e.g.,* Actmedia, Inc. v. Active Media Int'l, Inc., No. 96C3448, 1996 WL 466527 (N.D. Ill. July 17, 1996); Giacalone v. Network Solutions, Inc., No. C-96 20434 RPA/PVT, 1996 WL 887734 (N.D. Cal. June 14, 1996); Sun Microsystems, Inc. v. Astro-Med, Inc., No. C-95-20602-JW, 1996 WL 36910039 (N.D. Cal. Apr. 1, 1996).

89. *See generally* Albert, *supra* note 57; Alexander Gigante, *"Domain-ia": The Growing Tension Between the Domain Name System and Trademark Law, in* COORDINATING THE INTERNET, *supra* note 1, at 135; Neal J. Friedman & Kevin Siebert, *The Name Is Not Always the Same,* 20 SEATTLE U. L. REV. 631 (1997); Deborah Howitt, *War.Com: Why the Battles Over Domain Names Will Never Cease,* 19 HASTINGS COMM. & ENT. L.J. 719 (1997); Michael Landau, *Problems Arising Out of the Use of "www.Trademark.Com": The Application of Principles of Trademark Law to Internet Domain Name Disputes,* 13 GA. ST. U. L. REV. 455 (1997); David J. Loundy, *A Primer on Trademark Law and Internet Addresses,* 15 J. MARSHALL J. COMPUTER & INFO. L. 465 (1997); David W. Maher, *Trademark Law on the Internet–Will it Scale? The Challenge to Develop International Trademark Law,* 16 J. MARSHALL J. COMPUTER & INFO. L. 3 (1997); Gayle Weiswasser, *Domain Names, the Internet, and Trademarks: Infringement in Cyberspace,* 13 SANTA CLARA COMPUTER & HIGH TECH. L.J. 137 (1997); Dan L. Burk, *Trademarks Along the Infobahn: A First Look at the Emerging Law of Cybermarks,* 1 RICH. J.L. & TECH. 1 (Apr. 10, 1995) <http://www.urich.edu/~jolt/v1i1/burk.html>; Kenneth Dueker, Note, *Trademark Law Lost in Cyberspace: Trademark Protection for Internet Addresses,* 9 HARV. J.L. & TECH. 483 (1996); Danielle Weinberg Swartz, Comment, *The Limitations of Trademark Law in Addressing Domain Name Disputes,* 45 UCLA L. REV. 1487 (1998); Ira S. Nathenson, Comment, *Showdown at the Domain Name Corral: Property Rights and Personal Jurisdiction over Squatters, Poachers and Other Parasites,* 58 U. PITT. L. REV. 911 (1997); Milton Mueller, *Trademarks and Domain Names: Property Rights and Institutional Evolution in Cyberspace* (visited Jan. 27, 1999) <http://istweb.syr.edu/~mueller/study.html>.

90. *See Planned Parenthood,* 1997 WL 133313, at *3-10; *Intermatic,* 947 F. Supp. at 1234-41; *Panavision,* 945 F. Supp at 1301-04.

settled, with the trademark generally going to the party with the trademark right.[91] The legal system is gradually effecting a rough accommodation between trademark law and the domain name registration system. To be sure, the process is slow and costly. However, as decisions become more widely publicized, litigation should decrease as the rights of trademark holders are more clearly established.

The one area of potentially serious conflict involves the geographic and subject matter scope of domain names. Whereas trademark law permits some limited concurrent use of the same trademark (in different geographic areas or with different products and services), the domain name system, as it is currently structured, permits no concurrent use, since domain names are both unique and operate worldwide.[92] Thus, for example, a pizza shop in New Haven and a pizza shop in Seattle can both be called "Broadway Pizza." Similarly, both Apple Records and Apple Computer can share the same "Apple" mark. There can be, however, only one apple.com.

Although this inconsistency presents some tension, it is certainly not unresolvable by the courts.[93] The courts, in applying traditional trademark principles, may resolve this tension in any one of a number of different ways. The courts (1) might require the registration of different types of marks (e.g., applecomputer.com and applerecords.com); (2) could award the domain name to neither party, in order to reduce consumer confusion; (3) could award the domain name to the party that first registered it with NSI, or that first registered it federally. If the courts fail to set clear standards, Congress can step in to clarify the rights of the respective parties. In short, numerous options exist. Trademark law can be adapted to fit the new medium of the Internet.[94]

B. Allocation Problems

Although the existing litigation concerning trademarks is, by itself, not an unresolvable problem, it points to deeper underlying problems with the domain name allocation system as a whole. NSI's current process of allocating domain names is essentially first-come, first-served. Thus, anyone can register any domain name, as long as it has not already been taken. In the wake of the above-mentioned lawsuits (into which NSI was often dragged), NSI refined this process to include provisions dealing with trademark claims. Thus, NSI will now suspend

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91. Note that a number of these settlements may have more to do with the relative economic strengths of the parties involved, rather than the strength of the underlying trademark claim.

92. *See* Nathenson, *supra* note 89, at 954.

93. *See* Dan L. Burk, *Trademark Doctrines for Global Electronic Commerce*, 49 S.C. L. REV. 695, 697 (1998).

94. Moreover some, at least, have argued that the use of domain names as de facto directories will be displaced with the development of fully functioning Internet directories. *See* Mitchell et al., *supra* note 46, at 264-66, 269. Indeed, even today, it is relatively easy to find a given entity's domain name by using existing search engines. *See* Oppedahl, *supra* note 16, at 170 ("It is a trivial matter to plug in the company name with any search engine and very quickly to find the company's Web site.").

operation of a domain name under certain circumstances, if presented with evidence of valid trademark registration held by another party.[95]

Litigation has highlighted flaws with the first-come, first-served allocation process. Most obviously, the existence of trademark litigation points to the fact that the allocation process fails to adequately account for trademark rights ex ante, thus leading to costly redistribution efforts ex post. NSI's attempts to deal with these conflicts have been designed with an eye toward keeping NSI out of litigation rather than toward any larger policy goal.[96] Substantial concerns have been raised over NSI's power to suspend operation of potentially extremely valuable domain names, with the only recourse being the courts. NSI's policies have, by and large, satisfied no one.[97]

Even more fundamentally, and largely overlooked in the focus on trademark related problems, the first-come, first-served allocation process is an extremely inefficient way to allocate a limited resource[98] such as domain names. Like any pure registration system, the domain name allocation process gives rise to wasteful "rent seeking" and "gold rushes," as parties compete to lock up potentially valuable domain names, without any thought of productive use.[99] Indeed, domain name brokers have already registered many names that they believe will be valuable in the future.[100] Thus, there may be reasons to believe that more rational allocation systems may be possible, certainly with respect to trademark rights and possibly with respect to domain names in general. For example, one could well imagine that "ownership" of a domain name might be

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95. *See Network Solutions' Domain Name Dispute Policy* (visited Jan. 27, 1999) <http://www.internic.net/faq/dispute.html>; *see also NSI Flawed Domain Name Policy Information Page* (visited Jan. 23, 1999) <http://www.patents.eom/nsi.sht> (web site of Oppedahl & Larson, L.L.P.).

96. *See* Oppedahl, *supra* note 16, at 160-66.

97. *See* Gigante, *supra* note 89, at 139-41; Maher, *supra* note 34; Oppedahl, *supra* note 16, at 158-66; Shaw, *supra* note 21, at 115-18.

98. Some (e.g., NSI) have argued that the supply of domain names is in fact not scarce, pointing to the fact that the 22 open spaces to the left of ".com" can be filled with 37 different characters or symbols, leading to 37 to the 22nd power in domain names. *See* NSI, *Internet Domain Name System: Myths and Facts* (visited Jan. 20, 1999) <http://www.netsol.com/policy/MYTHS4.html>. In fact, the domain name space is much more limited than that, sinee it is practically constrained by the number of meaningful combinations of letters, as well as by trademark law. To McDonalds, for example, only one domain name will do.

99. *See* William Landes & Richard Posner, *Trademark Law: An Economic Perspective*, 30 J.L. & ECON. 265, 275 (1987). A situation analogous to the present one took place in the early years of the trademark registration system. In 1965, Robert Aries registered over 100 valuable U.S. trademarks (e.g., Pan American, NBC, Texaco, Monsanto) and forced the companies to buy the marks from him. *See* MERGES ET AL., *supra* note 43, at 559-60; Gerald O'Brien, *The Madrid Agreement Adherence Question*, 56 TRADEMARK REP. 326, 328 (1966).

100. *See* Joshua Quittner, *Life in Cyberspace: You Deserve a Break Today*, NEWSDAY, Oct. 7, 1994, at A05, *available in* 1994 WL 7444048 ("[Domain name registration] is like a gold rush: Two thousand requests a month are coming in to stake claim to a name on the Internet, nearly 10 times as many as a year ago."); *see also BestDomains* (visited Jan. 27, 1999) <http://www.bestdomains.com>; *DomainMart: Your Marketplace for Internet Estates & Businesses* (visited Jan. 27, 1999) <http://www.domainmart.com>.

limited in duration, subject to forfeiture, dependent upon certain conditions of ownership, and so on.

These issues, regarding the proper allocation of domain names, are not technical, but political in nature in that they involve competing value claims and competing claims of right. The domain name space is, in many ways, a limited public resource, as many of the domain name proposals seemed to recognize. The gTLD MoU, for example, expressly stated that "the Internet Top Level Domain (TLD) name space is a public resource and is subject to the public trust."[101] Much of its value arises from the participation of "netizens," not through the efforts of NSI. Furthermore, the government, through the NSF and the DARPA, has been involved in the development and funding of Internet protocols and infrastructure. The domain name space, as one of the consequences of such government sponsored development, is thus, in many ways, a public resource.

The proper distribution of such a resource is a public policy question, not a purely technical one. There are numerous ways in which a limited resource can be distributed. For example, trademark law distributes trademarks based on a number of requirements, including the productive and continuing use of a mark. It also has rules for resolving disputes over marks. The current domain name allocation system, by contrast, includes almost none of these wider considerations. Indeed, it seems designed solely for the purpose of trying to keep NSI from being dragged into litigation.[102] Yet one could well imagine that a broader view might be warranted.

C. Authority Problems

Apart from NSI's policies in allocating domain names, serious questions have also been raised regarding NSI's authority to allocate such names in the first place. NSI's actions in suspending certain domains in light of trademark claims have led many to question the source of NSI's authority to do so, without any recourse except the courts.[103] These questions were also raised when NSI began to charge a fee for registering domain names.[104] The idea of a purely private company having monopoly control over, and charging for, distribution of a quasi-public resource is disturbing.[105]

NSI's authority to register domain names was ostensibly derived from its "cooperative agreement" with the NSF, which delegated the authority to NSI in

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101. *Generic Top Level Domain Memorandum of Understanding, supra* note 60, pt. I, § 2.a. Indeed, the creation and development of Internet protocols is to some extent government funded. *See* Gillett & Kapor, *supra* note 21, at 21, 22, 24. That is one reason why they are available to the public, and not owned by any single entity.

102. *See* Oppedahl, *supra* note 16, at 158-66 (documenting the various changes in NSI's trademark dispute policy).

103. *See* Management of Internet Names and Addresses, 63 Fed. Reg. 31,741, 31,746 (1998); Oppedahl, *supra* note 16, at 164-66.

104. *See* Mitchell ct al., *supra* note 46, at 260-61.

105. *See* Oppedahl, *supra* note 16, at 158; Shaw, *supra* note 21, at 115-16 (roughly estimating the revenues that NSI has received from domain name registration).

1993.[106] That contract, however, originally was scheduled to run out in September of 1998. Prior to the issuance of the White Paper, NSI had asserted ownership over the domain name database, and had indicated that it intended to continue to register domain names,[107] giving rise to substantial concern about whether the rest of the Internet community would continue to recognize its authority to do so (or whether it would choose to recognize an alternative authority, such as the gTLD MoU). These concerns have since been eased somewhat by the more active recent involvement of the Department of Commerce in ensuring a "transition" to private management of the domain name system by ICANN. However, the White Paper itself raises a number of issues concerning authority, which will be discussed in more detail below.

Note that similar authority questions also existed for IANA, as well. IP addresses are also a limited resource.[108] Allocation of "blocks" of such addresses to regional Internet providers was for some time done in a largely informal manner by Jon Postel (and has since been transferred to ICANN). As demand for larger and larger blocks of IP addresses increases, increasing scrutiny will be given to allocation processes. These processes also have an element of value judgment to them.[109] While Jon Postel's sound judgment and reputation in the Internet community had for some time led few to criticize his actions, newer entrants into the Internet may well have differing views.[110]

This question, who should have the right to control, and indeed profit from, allocation of a limited Internet resource, is far from a purely technical one. Indeed, it is fundamentally a public policy question, involving questions of value and competing claims of right. Existing stakeholders, for example, NSI, IANA, domain name owners, and consumers, have an interest in the resolution of this question, and changes to the allocation process will have a direct impact on them. No objective metric can be appealed to in order to resolve this issue.

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106. *See NSF Cooperative Agreement, supra* note 20, at art. 7.

107. *See* Cukier, *supra* note 67 ("NSI says it owns all the intellectual property rights to the database containing the domain names ending in .com. In theory it says it could carry on issuing .com addresses irrespective of any proposal . . . from the IAHC.").

108. *See generally* Gillett & Kapor, *supra* note 21, at 23-24 (discussing potential problems with IP address allocation).

109. Indeed, the decision about who, in a given country, is the proper manager of that country's domain name space is a question fraught with value judgments. *See* Shaw, *supra* note 21, at 111-13. Until recently, Jon Postel had largely given the registration right to whomever applied first. *See* Gillett & Kapor, *supra* note 21, at 26. Should a dispute arise, however, it is unclear what the lines of authority should be.

110. *See generally* Mitchell et al., *supra* note 46, at 258-61 (discussing the broader implications of the government's withdrawal of funding from many of the existing standard-setting institutions, such as IANA and the IETF, and the need for the Internet to develop self-sustaining institutions).

D. Structural Problems

Some early proposals concerning the domain name system advocated changes in the structure of domain names, and these too raise difficult policy questions. As mentioned above, some proposals have called for changes to the domain names themselves, in order to deal with the concurrent use problem presented by trademark law. Thus, domain name space might look like "mcdonalds.fastfood. us.com." Yet questions concerning the structure of domain names are clearly based fundamentally on value, not technical standards.[111] Should domain names conform to trademark law? How does this shape our perception of the Internet? How should the Internet be zoned?[112]

Moreover, any changes to the existing domain name structure would inevitably have real-world financial impacts on the owners of existing domain names. Companies have invested quite substantial sums of money promoting their domain names. Users have come to rely on existing domain names. Consideration and weighing of such impacts involve questions of value and competing claims of right, not technical performance. How are such claims to be resolved? As should be clear, these questions cannot be resolved with reference to a technical performance metric. Instead, they involve competing value claims, which must be resolved through some kind of legitimate process, one that adequately takes into account the interests of the many different stakeholders.

IV. THE INADEQUACY OF THE STANDARD-SETTING PROCESS OF COORDINATION

Because the problems raised by domain names possess this fundamentally value-based and interest-based character, the consensus-based technical standard-setting process cannot resolve the domain name problems in a satisfactory manner. In the domain name context, the various assumptions that underlie the standard-setting approach no longer hold true. "Rough consensus" is not likely to be possible where the universe of stakeholders is diverse and competing economic interests are at stake. The result is that the technical standard-setting process, to the extent it fails to include all stakeholders, will face (and indeed already has faced) serious legitimacy problems. Absent true consensus among relevant stakeholders, it is difficult to see how those who have de facto control

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111. *See* Mockapetris, *supra* note 6, at 8 (acknowledging the "political decisions" that went into the choice of the current top-level domains); *see also* W. Lazear, *RFC 1031: Milnet Name Domain Transition (Nov. 1987)* (last modified Dec. 19, 1998) <http://www.faqs.org/rfcs/rfc1031.html>; J. Postel & J. Reynolds, *RFC 920: Domain Requirements (Oct. 1984)* (last modified Mar. 19, 1997) <http://www.faqs.org/rfcs/rfc920.html>. Indeed, the fact that the generic top-level domains are effectively controlled by the United States has political overtones.

112. *See* Lessig, *Zones of Cyberspace, supra* note 4, at 1409-11. One example of the literally political nature of Internet zoning was presented when Zaire was renamed Congo, and applied to IANA for a change in its top-level domain. *See* Jos van Geffen, *Changes in Domain List* (last modified June 23, 1997) <http://tnj.phys.tue.nl/stats/getstts/fomains.html>.

over the Internet have a legitimate claim to impose standards that adversely affect the interests of others. As a direct result of such legitimacy problems, the process will no longer be able to rely upon the informal agreements that coordinated the Internet in place of any central authority. Although the recent implementation of the White Paper's proposals through ICANN goes further than earlier proposals in recognizing the value-based nature of the problem, it does not go far enough.

A. The Failure of Standard-Setting Assumptions

The assumptions that underlie the standard-setting process no longer hold true in the domain name context. First, "rough consensus" is not a realistic possibility.[113] The relevant norms are no longer the relatively convergent norms of a close community of engineers. Instead, the relevant community of stakeholders now includes current domain name holders, who have a considerable interest in any proposals for reform.[114] Both Yahoo.com and Amazon.com have spent considerable sums promoting their domain names and have strong financial interests in the structure and continuing management of the domain name system.[115] Similarly, Internet users now have a direct interest as well.[116] The structure of the domain name system has a direct impact on their experience as browsers of the World Wide Web and as senders and receivers of e-mail. Whereas before, these parties had little interest in the obscure, and largely invisible, technical standards, they now have a direct interest in the future shape of the domain name system.[117] The dramatic expansion of the interested parties means that true consensus will be difficult to achieve.

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113. *See* Gillett & Kapor, *supra* note 21, at 29 ("The IETF process has produced many proposals for change, but few (if any) have been implemented because of the perceived need for consensus, which is highly valued but notoriously slow to achieve.") (parenthetical in original).

114. *See* Mitchell et al., *supra* note 46, at 258 (arguing that "we can no longer rely on this protected environment to shelter [the Internet's] existence and preserve its cultural ethic").

115. *See* A.M. Rutkowski, *Internet Domain Names and Other Identifiers: A Roadmap Among Issues and Initiatives* (last modified Nov. 20, 1996) <http://www.wia.org/pub/identifiers/issues-roadmap.html>.

> [F]or a variety of reasons, it is the business community that presently is least able to participate in ongoing forums dealing with these issues. Few people in the corporate or public policy worlds are familiar with, or would participate in, the kind of forums traditionally used by the Internet community for collaboration and decision making—which are fine tuned for working technical level and research and academic participation.

Id.

116. *See* Tony Rutkowski, *Parties of Interest in Internet Public Policy Matters* (last modified Apr. 5, 1998) <http://www.wia.org/pub/policy-orgs.html> (listing parties with an interest in the domain name issue); Shaw, *supra* note 21, at 124 ("Who are the parties that should be consulted on the evolution of international Internet name space? Certainly many more than are currently involved.").

117. Indeed, the acceptance and incorporation of new voices presents a challenge to the existing standard-setting process. Given that the Internet is largely controlled by a rather small community with a strong, established culture, how easily does this community incorporate new voices with values markedly different from their own?

The fact that value-choices are involved also indicates that decisions are no longer readily measured against any single metric. Technical standards can be measured against a performance metric. However, decisions regarding the structure of domain name space, or the relative authority that various parties should have in allocating domain names, are not purely technical questions and cannot be measured against a performance metric. Indeed, there may be no single solution that is identifiably "optimal"; many different structures may be quite possible. Moreover, different structures will have differing impacts on the various parties involved. Under such circumstances, claims of expertise are not readily acknowledged, much less deferred to.

Furthermore, the scale and popularity of the Internet today suggest that exit from the system is no longer a realistic possibility, and that "voluntary" compliance with existing standards is no longer so voluntary.[118] In the past, the legitimacy of Internet technical standards was based, in part, on the idea that compliance was entirely voluntary. While in theory, individual computers on the Internet can choose to follow a different domain name authority, in practice, powerful network effects bind all of the computers on the Internet onto the current system.[119] Opposition to the current network will be extremely difficult, given the distributed nature of the Internet. Unless such opposition results in a credible alternative to the current network, parties will be bound together in a kind of "tyranny of the network."[120] The difficulty of collective action in a distributed network means that the few points of central control wield a disproportionate amount of power.

Finally, neutral and trusted institutions may be few and far between where domain names are concerned. It is no coincidence that the questioning of NSI's authority became particularly acute as the NSF began to withdraw its seal of approval.[121] The NSF's presence in the background had served as a potential

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118. This illustrates the important general point that conditions that existed in the past may no longer exist today or in the future. The Internet of today presents a different coordination challenge than the Internet of the past.

119. I thus tend to disagree with Johnson and Post about the "voluntary" nature of participation in Internet standards. *See* Johnson & Post, *supra* note 1, at 74 ("The rules instead evolved from the decentralized decisions by individuals to adopt a promising standard because it served their own interests."). Because of strong network effects, computers participate "voluntarily" only because the Internet is the only game in town. Johnson and Post acknowledge this point later in their article, *see id.* at 75, but this acknowledgment would seem to undercut the legitimacy of the common standard, to the extent it rests on any ideas of voluntary participation.

120. *See generally* Lessig, *Path of Cyberlaw, supra* note 4 (discussing how code regulates behavior); James Boyle, *Foucault in Cyberspace: Surveillance, Sovereignty, and Hard-Wired Censors* (visited Nov. 11, 1998) <http://www.wcl.american.edu/pub/faculty/boyle/foucault .htm>; Krol & Hoffman, *supra* note 33, at 4-5 (analogizing Internet standard-setting to the doctrines of a church). "If you go to a church and accept its teachings and philosophy, you are accepted by it, and receive the benefits. If you don't like it, you can leave. The church is still there, and you get none of the benefits. Such is the Internet." *Id.* at 5.

121. *See* Gigante, *supra* note 11, at 421-22 ("When DARPA and later the NSF controlled the Internet, these sponsoring agencies provided the necessary authority for the *ad hoc* groups to allocate among themselves jurisdiction over the various operational aspects of the *federal government's* computer network.") (each emphasis in original).

public-interest check on the activities of NSI in the registration process. (Indeed, the rosy view of consensus building prevalent in the technical standards coordination process may, in part, be illusory, to the extent that this background government presence served as a basis for adherence to the technical standards.) As that presence recedes, concerns have arisen over NSI's role as a private institution entrusted with management of a limited, quasi-public resource. Maintenance of purely technical standards is primarily an administrative task, involving comparatively less value judgment. The important thing is not who holds the information, but that someone holds the information. In the domain name context, however, registration of domain names is not a purely neutral ministerial task, and the identity of the registrar matters.

B. Implications for the Standard-Setting Approach

The inapplicability of the above assumptions means that any attempt to implement change through a pure standard-setting process, as earlier proposals had attempted, faces several problems.[122] First, the existing technical standard-setting process faces serious legitimacy problems when applied to the domain name problem. Any solution arrived at, whether by the IETF or by parties outside, that is, through the MoU or between IANA and NSI, does not truly represent a "rough consensus" among _all_ of the relevant stakeholders. For example, the MoU was drafted by many of the same parties that participate currently in Internet governance. Other interested parties, such as content providers, Internet service providers, marketers, et cetera, were not fully represented.[123] Similarly, the wider population of users of the Internet had no effective voice in the process.[124] Although various public interest groups did comment upon the MoU, it is difficult to say to what extent these groups accurately reflect the beliefs of the wider population of users, absent any formal mechanism for preference aggregation.[125]

To the extent that "rough consensus" is achieved through the existing standard-setting process without input from these parties,[126] standards based on such

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122. 1 address in this Part the earlier proposals to reform the domain name system. The more recent attempts currently being implemented 1 discuss _infra_ Part IV.C.

123. _See_ Management of Internet Names and Addresses, 63 Fed. Reg. 31,741, 31,743 (1998); Gillett & Kapor, _supra_ note 21, at 32-33.

> But it is fantasy to suggest that authority for the domain name appeals process will be perceived as legitimate if it is assigned to IANA in its present incarnation, the Internet Society (ISOC), or the Internet Architecture Board (IAB). The stakeholder community for domain name assignments is the whole world, and none of these organizations comes close to being representative.

_Id._ at 32.

124. _See OIC Annotated Version of the gTLD-MoU_ (last modified June 11, 1997) <http://www.interactivehq.org/oic/html2/anngtld.htm> (questioning, at times quite vociferously, the IAHC's authority to speak for the Internet community as a whole).

125. _See_ Cukier, _supra_ note 107 (noting that the IAHC "has been buffeted by international criticism both of its controversial plan and of its consultative process").

126. Even without inclusion of all of these points of view, rough consensus among the smaller group of Internet insiders may still be exceedingly difficult, if not impossible, to achieve, as indicated by the current status of many domain name proposals.

consensus represent little more than the preferences of a minority of Internet participants.[127] Before consensus can legitimately be reached and subsequently invoked to justify a particular action, the relevant stakeholders must all have been consulted. Without such an inclusive sweep, reliance on industry "self-regulation" begs the question of who is the "self" doing the regulating. In a world of competing value judgments, the rejection of "voting" in David Clark's description of the technical standards formation process is troubling.[128] Where policy issues are involved, voting may be the only viable option.

Indeed, in many ways, the pure technical standard-setting process, at least as applied to the domain name problem, is rather undemocratic.[129] Instead of seeking out, through some more formal process, the preferences of all of the relevant stakeholders in the domain name debate, the standard-setting process relies on rough consensus among a more limited range of participants, who may or may not accurately represent all of the interests on the Internet. There is little room for voice.[130] The very distributed nature that makes the Internet so difficult to govern, in turn, makes it difficult to organize any resistance to the few centralized points of control. It may be that the existing participants have arrived at an objectively good solution to the problem.[131] However, there is at least a feeling of being governed by a group of (benevolent, to be sure) platonic guardians.[132]

At the same time, any conscientious attempt to include the universe of relevant stakeholders will likely result, for the above reasons, in an inability to come to any consensus at all. Even within the engineering community, consensus on the domain name problem has been difficult to achieve.[133] When the views of a broader segment of the population are taken into account, consensus will likely be impossible. Moreover, even aggregating such preferences would be logistically quite difficult. The practical functioning of the current standard-setting process (e.g., open meetings, working groups) assumes a relatively limited set of

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127. *See* Lessig, *Zones of Cyberspace, supra* note 4, at 1410 ("Engineers write the code; the code defines the architectures, and the architectures define what is possible within a certain social space. No process of democracy defines this social space, save if the market is a process of democracy.").

128. *See Dialogue, supra* note 50; Shaw, *supra* note 21, at 124 ("The Internet has become far too commercial and strategically important as a global communications tool to simply perpetuate the same informal arrangements that have kept it glued together until now.").

129. *But see* Johnson & Post, *supra* note 4, at 1389-91 (advancing a positive view of Internet democracy).

130. Indeed, voice may be particularly difficult for newcomers who hold values that differ markedly from those held by the dominant Internet community. Thus, for example, parties with primarily commercial interests may have a more difficult time getting their interests seriously considered.

131. Given that domain name governance raises complex, nontechnical policy questions, there may be reasons to believe that the lack of full participation may have resulted in a substantively less-than-optimal result.

132. Indeed, as Gigante points out, to the extent that these groups act together in concerted fashion, their coordination of the Internet may raise antitrust concerns. *See* Gigante, *supra* note 11, at 430; *see also* Goldfoot, *supra* note 11, at 909.

133. *See* Management of Internet Names and Addresses, 63 Fed. Reg. 31,741, 31,743 (1998) (detailing the failed attempts by the engineering community to achieve consensus).

participants. Even in the purely technical standard-setting area, this model has become increasingly stretched as the Internet has become more and more prominent. It would be stretched well past the breaking point if it truly tried to accommodate all of the stakeholders in the domain name problem. The New England town meeting does not function so well on a national (much less international) scale.

The existing standard-setting process's lack of legitimacy highlights another related problem, the lack of actual authority to compel adoption of changes.[134] Formal legal authority has been unnecessary in the consensus-based realm of technical standards, as these standards are largely value-neutral and the process of arriving at them has been considered legitimate. In the domain name context, however, the lack of clear legitimacy in any of the competing processes means that voluntary coordination is substantially in doubt.[135] The lack of formal authority becomes extremely problematic, as no given entity can guarantee the implementation of a given standard, even if one were established. The result is a "policy vacuum."[136] No institutions can effectively serve as fora within which to resolve the numerous policy issues presented by the domain name issue. Any attempts by specific parties to engage in policy making are met with stiff resistance, as in the case of both NSI[137] and the IAHC. The authoritative bodies are thus reduced to suggesting only incremental improvements (e.g., IAHC's MoU) or clinging to arid, policy-neutral processes (e.g., NSI's first-come, first-served allocation process).[138] Larger policy issues remain unaddressed.

C. A Partial Solution: The White Paper and ICANN

In many ways the involvement of the Department of Commerce, its specific proposals in the White Paper, and the current implementation of these proposals through ICANN can be seen as an implicit recognition of, and response to, the above failure of the standard-setting approach to achieve a sustainable and legitimate "rough consensus" about the future of the domain name system. It addresses the problem of lack of authority by wielding the background threat of more intrusive government action in this area, as well as its control over the contract with NSI and other coordinating Internet bodies. There is little doubt that the government has the ultimate authority to legislate a result in this area.[139] It

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134. *See* Gillett & Kapor, *supra* note 21, at 32 ("Authority can only be readily exercised if it is perceived as legitimate by all stakeholders.").

135. *See* Gigante, *supra* note 11, at 428 ("[T]he private sector's acquiescence is critical to the IAHC's assumption of the role of overall Internet governing body. However, such acquiescence is unlikely where the IAHC system threatens fundamental rights.").

136. Johnson, *supra* note 23.

137. *See* Oppedahl, *supra* note 16, at 172 ("NSI, the holder of a position of public trust regarding nearly all of the domain names on the Internet, cannot be permitted to continue to develop its policies with no meaningful stakeholder involvement.").

138. *See* Johnson, *supra* note 23.

139. This is true, at least domestically. International interests have been more critical of the U.S. Government's role in domain name coordination. *See infra* text accompanying notes 147, 168-70; *see also* Communications Assistance for Law Enforcement Act, 42 U.S.C. § 1001 (1994); Telecommunications Act of 1996, 47 U.S.C. §§ 230, 560-561 (Supp. II 1996) (seeking

addresses the problem of lack of legitimacy by publishing its proposal and soliciting comments from the public at large, from literally nearly anyone who wishes to comment. In this way, the draft Green Paper and subsequent discussion of the White Paper provided a truly public forum for the consideration of differing views about the future of the domain name system.

At the same time, however, the specific proposals advanced in the White Paper and their implementation in ICANN fail to satisfy both of these requirements of authority and legitimacy, and do not go far enough in recognizing the policy aspects of the domain name problem. Specifically, rather than addressing the difficult substantive policy problems concerning the domain name system, the White Paper vests authority over such issues in a private, not-for-profit corporation, ICANN. In some ways, this solution is an improvement over the status quo. Because ICANN's board of directors consists of members of various Internet stakeholder groups, decisions by the corporation would be more representative than decisions by an unaccountable individual (even one as well-regarded as Jon Postel) or an unaccountable private corporation (such as NSI). Thus, ICANN at least establishs some sort of quasi-representative process through which conflicting policy claims could be resolved.[140] Moreover, the decisionmaking process is centralized, formalized, and derives some level of authority from the background approval of the federal government. Finally, as the White Paper itself points out, private management will likely be more responsive than government to changes in technology and the market.[141]

By vesting policy-making authority in a private corporation and eventually moving toward complete government withdrawal, however, the White Paper fails to put completely to rest questions of authority and legitimacy. Most generally, why should questions of domain name policy be placed in the hands of a purely private entity, even one that is somewhat more representative of the interests of many current Internet stakeholders? Although basic coordination functions (e.g., maintenance of the root directory) might usefully be managed by such an entity (through contract with the government), broader questions about the structure of the domain name system (e.g., the shape and number of additional top-level domains) do not seem legitimately settled in this fashion. What will guarantee that this private corporation will adequately represent the interests of the Internet

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to regulate the architecture of the Internet).

140. The Green Paper itself recognizes that there are "substantial differences among Internet stakeholders on how the domain name system should evolve." Improvement of Technical Management of Internet Names and Addresses, 63 Fed. Reg. 8826, 8827 (1998) (to be codified at 15 C.F.R. ch. XXIII) (proposed Feb. 20, 1998).

141. *See* Management of Internet Names and Addresses, 63 Fed. Reg. 31,741, 31,744 (1998).

community as a whole?[142] How will it account for changes in the make-up of that community?[143]

More specifically, if this private corporation has control over Internet policy decisions, then questions of legitimacy will inevitably revolve around the make-up of the corporation's board of directors and its procedures. The Green Paper originally proposed that three seats be given to IP number registries, two seats to domain name registries, two seats to representatives of the technical community, and seven seats to representatives of Internet users in general, both commercial and noncommercial.[144] The specific proposal eventually implemented in ICANN included a different distribution.[145] Predictably, much criticism has arisen over these distributions, as specific interest groups seek to obtain greater representation.[146] After all, if true consensus is not likely, then the composition of the board takes on much significance.[147]

The White Paper's implementation of its substantive proposal through ICANN thus represents an awkward combination of a standard-setting and representation-based approach to domain name coordination. It recognizes that differing interest groups may have very different views concerning the future of the domain name system, and that rough consensus may not be achievable. Accordingly, it seeks to construct a process through which various interests may be accommodated and differing views may be resolved. At the same time, however, it attempts to place this process in a purely private context, within the structure of a not-for-profit corporation, and anticipates complete government withdrawal from domain name coordination by the year 2000. This latter approach indicates a continuing underlying adherence to the idea that the domain name problem is primarily a

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142. The White Paper limits its prescriptions on this score to suggestions such as: "The new corporation should operate as a private entity for the benefit of the community as a whole," Management of Internet Names and Addresses, 63 Fed. Reg. at 31,749, or, "The organization and its board should derive legitimacy from the participation of key stakeholders," *id.* at 31,750. The White Paper studiously avoids, however, the difficult details.

143. Once again, the White Paper declines to grapple with any of the tricky details, instead simply noting that "the new corporation's charter should provide a mechanism whereby its governing body will evolve to reflect challenges in the constituency of Internet stakeholders." *Id.* at 31,750. Indeed, as of the time of this writing, ICANN has begun to seek to transform itself into a membership-based organization in an effort to address precisely these concerns.

144. The White Paper subsequently backed away from such specifics. *See id.* at 31,745.

145. *See IANA Draft Bylaws—Fifth Iteration* (last updated Sept. 28, 1998) <http://www.iana.org/bylaws5.html>.

146. *See* Management of Internet Names and Addresses, 63 Fed. Reg. at 31,745 ("Most of those who criticized the proposed allocation of Board seats called for increased representation of their particular interest group on the Board of Directors."); *see also* Elinor Mills, *Complaints Prompt Fifth Draft of Domain Name Plan* (visited Jan. 27, 1999) <http://www.infoworld.com/cgi-bin/displayStory.pl?980930.eidomain.htm> (explaining that domain name plans lack consensus).

147. Much criticism has also legitimately been directed by international corporations and governments at the exclusively U.S. focus of the Green Paper's and White Paper's proposals. *See* Management of Internet Names and Addresses, 63 Fed. Reg. at 31,748; Douglas Hayward, *Europeans Disappointed by Net Names Plan* (visited Jan. 27, 1999) <http://www.techweb.com/wire/story/domnam/TWB19980130S0009>.

technical standards problem best left to resolution by private industry, rather than through public coordination.[148]

Ironically, the very debate (both in general and in the comments submitted in response to the Green Paper) over the White Paper's proposals reveals the inherent limits of the White Paper's substantive proposals. By setting forth the proposal for comment, the Department of Commerce provided a valuable forum in which the wide variety of current Internet stakeholders had a voice.[149] Moreover, the government's involvement in creating the forum lent it a certain degree of legitimacy, and few appear to dispute the government's ultimate authority in this area. Yet the very breadth of the comments reveals the limits of the White Paper's approach, in funneling the discussion over the future of the domain name system artificially through a quasi-representative, private corporation's board of directors. The proposal satisfies the coordination function, but does not fully address (although it does somewhat ameliorate) the underlying and more fundamental legitimacy and authority problems. The scope of the response to the proposal reveals the difficulties in returning to a consensus-based view of private standards-coordination.

V. ESTABLISHING AUTHORITY AND LEGITIMACY FOR DOMAIN NAME COORDINATION

The above analysis suggests that the fundamental problems that dog the domain name system, lack of legitimacy and authority, will not be resolved without some rethinking of the domain name coordination process. A number of possible options present themselves. One would be to eliminate the awkward confluence of technical standards and substantive policy by eliminating the source of the policy problems, the domain name system. Another option would be to create a process through which interests of Internet stakeholders could fairly and neutrally be taken into account. In the end, however, some continuing degree of background government presence will probably be necessary in order to maintain both the operative degree of legitimacy and control over the coordination process.

A. Abolish Domain Names

One radical solution to the existing domain name coordination problem would simply be to recognize that the technical standard-setting process has inadvertently stumbled into a nontechnical policy arena, and that the proper course of action is simply to withdraw, that is, to get rid of the domain name

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148. Indeed, shortly after being appointed, the directors of ICANN scheduled numerous open meetings at various locations around the world in an effort to build trust among the Internet community.

149. In response to the initial RFC, the Department of Commerce received more than 430 comments totaling some 1500 pages. *See* Management of Internet Names and Addresses, 63 Fed. Reg. at 31,741. In response to its Green Paper, the Department of Commerce received more than 650 comments. *See id.* The RFCs, the Green Paper, and the submitted comments are available at *National Telecommunications & Information Administration* (last modified Jan. 4, 1999) <http://www.ntia.doc.gov>.

system entirely.[150] This, in many ways, would be an ideal result. In creating the domain name system, the founders of the Internet never imagined or intended that it would eventually give rise to difficult questions about distribution among the current, broad group of Internet stakeholders.[151] Under this approach, numerical or unintelligible text-basis addresses would now be the only source-indicators for computers on the Internet. The loss of the mnemonic value of domain names would be more than compensated by the gain from the reduction in wasteful litigation and other activity surrounding domain names. Internet directories or other technical solutions could then develop to fill the gap, as, indeed, existing search engines already do (though somewhat inefficiently).·

Such a solution would, in many ways, be most in keeping with the decentralized nature of Internet coordination in general. Instead of referring to a single (though decentralized and distributed) database for the "naming" of particular areas of the web, Internet naming would be layered on top of the underlying system by numerous different Internet directories. The naming function could thus be decentralized and open to competition. Different Internet search engines might structure cyberspace in different ways. Individuals could then vote with their feet.[152] Trademark issues would be settled at the private search engine level, rather than at any central point of coordination. The technical standard itself would thus return to a purely technical standard, one that does not raise troubling distributional and policy questions.

Unfortunately, it is probably much too late in the day for this option to be successfully implemented, at least through the current standard-setting process.[153] Interests are already firmly entrenched. Domain name holders and existing domain name registrars would raise howls of protest. Moreover, the displacement of such interests would, at this stage, be a political decision, not a purely technical one. Having ventured into this arena, the technical standard-setting process cannot easily extract itself. And although the government could dictate this result by fiat, resistance by the larger Internet community would likely be quite fierce.

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150. *See, e.g.,* Vixie, *supra* note 59 (calling for issuance of meaningless "license plates" instead of domain names); *see also* Gigante, *supra* note 89, at 145 (discussing Vixie's proposal).

151. *See Dialogue, supra* note 50.

152. For this proposal to work, search engine technology would have to improve from its existing state of the art. Moreover, certain criteria (such as whether the search engine accepted payment from companies to be listed at the top) would need to be made transparent.

153. *See* Maher, *supra* note 89, at 4 ("Moving to a DNS with meaningless word and number combinations would likely make all the trademark problems disappear, but this proposal seems to have almost no support."); Peter S. Menell, *The Challenges of Reforming Intellectual Property Protection for Computer Software*, 94 COLUM. L. REV. 2644, 2651-54 (1994) (From a political economy standpoint, "the opportunity for comprehensive reform is most propitious before interest groups form around a new technology.").

B. Direct Internet Democracy

Another possibility would be to construct a process that formally takes into account and aggregates the interests of the various stakeholders, that is, the engineers, the Internet users, domain name owners, and domain name registrars. This is basically a strategy that takes the White Paper's proposal to its logical conclusion. Instead of governance by a quasi-representative, private corporation such as ICANN, whose board structure and processes are subject to legitimacy questions, a process could be constructed to actively take into account input from all walks of the Internet population and aggregate this input into a substantive policy decision. The idea would be to create something akin to a direct Internet democracy on questions of policy, such as the structure of the domain name space. Indeed, the most recent efforts of ICANN to turn itself into a "membership organization" constitute an attempt, in some limited way to create just such a structure.

In many ways, the Internet is ideally suited to aggregation of such preferences in an informed way. Various position papers could be presented on-line, along with threaded discussions. Such virtual town meetings could then be followed up with an Internet referendum. Assuming that the various parties could come to an accommodation on a legitimate process, the result of such a process would then have a much greater claim to legitimacy, as it would more truly reflect the interests of the wider Internet population.

One problem with this option is that no system currently exists to aggregate such preferences, and the creation of such a process would be extremely difficult, as the current debate over ICANN's membership policies indicates. Even assuming that the various parties could come to some agreement on process, the details of such a process would be dauntingly complicated.[154] Moreover, there may be good reasons to believe that the relevant parties would not come to agreement on the process, given that the specific matter to be determined is already defined. Jockeying for advantage based on predicted voting patterns could well make agreement on the process impossible.

In addition, there is also the risk that such direct democracy will not be adequately informed, particularly if technical issues are implicated by the substantive policy debates. Although much of this Article has focused on the fact that domain name issues are not purely technical, neither are they purely public policy questions. Indeed, a full appreciation of the available options may require both a grasp of the policy implications and the possibilities allowed by the technology. Thus, for this reason, too direct an influence on domain name governance is likely not warranted.[155]

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154. *See* Carl S. Kaplan, *A Kind of Constitutional Convention for the Internet* (last modified Oct. 23, 1998) <http://www.nytimes.com/library/tech/98/10/cyber/cyberlaw/23law.html> (analogizing ICANN to a "unique form of government for the global Internet").

155. *But see Deliberative Polling*ᴛᴍ *in Cyberspace* (visited Jan. 27, 1999) <http://cyber.law. Harvard.edu/9-10mtg/idp.html>.

Given the above concerns, it will be interesting to see whether ICANN can successfully create a representative structure that is viewed as sufficiently legitimate. The most recent proposals are beginning to open up the structure to more participation, but still place the bulk of authority in the hands of the governing board. However, if ICANN is ultimately successful in creating such a structure, and if such a structure is both sufficiently inclusive and widely regarded as legitimate, then many of the concerns will have been addressed. The difficulties noted above, however, suggest that this will not be an easy task.

C. Continuing Background Government Presence

Constructing a new process may, however, be unnecessary given the availability of an existing body for aggregating preferences in determining the public interest: the government. There is a reason why difficult policy questions in other areas are not addressed through appeals to "consensus." Policy questions are far too messy and people have far too divergent views. While consensus-seeking might work in the New England town meeting, it tends to fail at the national level. Government, for all of its faults, provides the mechanism through which the preferences of a larger population are aggregated and expressed in public policy. The Internet today, and in the future, will implicate the interests of a broader and broader population. In the domain name context, the time for town meetings may well be past.

Continuing government involvement, if properly limited, would not mean a radical change in the status quo; in fact, it would mean less change. In many ways, the current problems facing the domain name system can be directly traced to the federal government's (and the NSF's) stated intention to withdraw from Internet coordination altogether. The NSF's presence (and the presence of DARPA) in the past served, in effect, as a kind of government guarantee that issues concerning administration of the domain name system would never get that far out of line from the public interest. In the absence of such a guarantee, crippling issues regarding legitimacy and authority have arisen.[156] Although the government's recent involvement in handing control over the domain name system to ICANN has eased some of these concerns in the short run, legitimacy concerns will continue to dog ICANN, particularly after the government eventually withdraws from domain name governance, as it intends on doing.

Such problems may be obviated if the NSF or the Department of Commerce (or some similar organization[157]), instead of withdrawing from domain name governance entirely, simply maintains some limited continuing background role

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156. *See* Gigante, *supra* note 11, at 423.

157. The Federal Communications Commission ("FCC") very likely has statutory jurisdiction over Internet issues, *see* 47 U.S.C. §§ 151-152 (1994), but has expressly disavowed any interest in getting involved in Internet governance issues, *see* Gigante, *supra* note 11, at 421-22. Instead, the FCC has adopted the very hands-off attitude that has been characteristic of the Clinton Administration's approach to Internet governance issues. *See A Framework for Global Electronic Commerce: Executive Summary* (visited Jan. 27, 1999) <http://www .whitehouse.gov/WH/New/Commerce/summary.html> (setting forth the Administration's approach to Internet issues).

in Internet coordination. Indeed, the renewal of NSI's contract presented the perfect opportunity for a fresh consideration of the terms of that contract, perhaps after a period for notice and comment. In light of the Internet's widespread dissatisfaction with NSI's handling of various allocation issues, any new contract could have been structured to avoid preexisting problems. Indeed, the contract could have been structured to offer competition among various registrars. The rights of the various parties could have been better defined. Coordination with the trademark office might have been made possible.[158] Alternatively, a more limited version of the not-for-profit corporation envisioned by the White Paper could be given some delegated power to engage in domain name management functions, so long as a background accountability to the federal government is maintained (for example, through a contractual relationship, as with the NSF or the Department of Commerce).

While the details would take some effort to work out, the important feature of such involvement is that the questions of legitimacy in domain name coordination would be substantially addressed by the continuing background government presence. Of all the parties involved in the domain name dispute, the NSF has the strongest claim to management of and responsibility for the domain name space. Up to now, despite dissatisfaction with NSI, none of the other parties has challenged the NSF's underlying authority to confer the Internet management responsibilities upon NSI. The NSF is, moreover, expressly a public-regarding institution, charged with a public mandate.[159] It is ultimately accountable through the democratic process. It does not rely on any private interests, or coalition of private interests, for funding. This presents a contrast with existing Internet stakeholders or groups of stakeholders, such as the IAHC, NSI, or ICANN, who would seek to take on this role and who have accordingly been subject to challenge by other members of the wider Internet community. By once again contracting out coordination responsibilities, the NSF could delegate these responsibilities to the private sector while maintaining a useful background check on the private sector's execution of these responsibilities (as in the case with the NSI contract).

In addition to conferring legitimacy and authority on the coordinating and technical management bodies, the NSF, or some other agency,[160] could also take a role in actively asking some of the larger policy questions concerning domain

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158. *See* Shaw, *supra* note 21, at 127-28 (suggesting ways in which various government agencies might be involved).

159. Under its charter, the NSF is authorized to foster the development of computer technologies. *See* 42 U.S.C. § 1862(a)(4) (1994); *see also* High-Performance Computing Act (HPCA), 15 U.S.C. §§ 5501, 5521 (1994) (authorizing the NSF to promote development of network computing). *See generally* Gigante, *supra* note 11, at 414.

160. In this Article, I have focused in particular on the NSF and the Department of Commerce as the two most likely agencies, mostly because of their existing role in Internet issues. It may well be that an alternative agency may be better structured to address the particular types of issues raised by the domain name system. For the purposes of this Article, however, I am primarily concerned that some government body accept responsibility for this issue. The identity of that government body is a question I have not expressly addressed in this project.

name allocation.[161] Indeed, the response to the Department of Commerce's White Paper illustrates the value of government as a forum for expressing and aggregating interests, and coordinating the effectuation of such interests on questions of policy. Prior to the Department of Commerce's involvement, the future status of the domain name system was substantially in doubt. Moreover, no organized mechanism existed for the consideration of various perspectives on the domain name problem. Attempts to organize and coordinate change on a private basis met with significant resistance and uncertainty over authority. By setting forth the Green Paper and soliciting comments, the Department of Commerce, whatever the merits of its substantive proposal, at least established a process that many Internet participants appear to view as legitimate.[162] This suggests, at the very least, that the government could have a valuable role in continuing to foster debate, not so much over who should decide the shape of domain name space (the current debate offered by the White Paper), but what that shape should look like. Although a private organization, such as ICANN, can seek to take on this role, it will, by its very nature, constantly be subject to lingering questions about its legitimacy and possible conflicts of interest.

It is true that government involvement, even in the background, may, to some extent, make domain name governance less responsive to technological change. To some extent, this may be a necessary price of a more legitimate process. On the other hand, the conflicts and struggles currently resulting from the existing private coordination model cast some doubt on its claims at being significantly more responsive to technological change. Indeed, as pressure increases on ICANN to make its procedures more formalized and transparent, we can expect that its responsiveness will be reduced.[163] Moreover, technical input may be incorporated by the government agency through reliance on advisory committees. Similarly, traditional concerns about the risk of agency capture are less acute, since the alternative, an organization such as ICANN, is subject to even greater critique on this score.[164]

It is important to note here that this policy-shaping role would be limited to certain questions, such as those about the domain name system (e.g., how many and what kinds of top-level domains), that strongly implicate substantive policy and involve a wide range of stakeholders; it would not apply to primarily technical questions, such as those involving the underlying Internet protocol. Such latter questions are appropriately left to the existing standard-setting process, since that process is (at least for now) well adapted to answering them

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161. This Article has not sought to articulate a particular substantive solution to the issues facing the domain name system. Instead, it has focused on the underlying flaws in the existing processes, which have structurally prevented adequate consideration of such issues.

162. But not all Internet participants view the process as legitimate. *See Comments on the Registration and Administration of Internet Domain Names* <http://www.ntia.doc.gov/ntiahome/domainname/email/> (including comments submitted by WIPO, EU, and IAHC).

163. The more formalized and transparent (and therefore legitimate) the processes become, the more ICANN itself begins to resemble government, and the less it can claim some inherent advantage over government regulation.

164. ICANN is, by definition, captured insofar as its board members come from the industry that it is designed to regulate.

and surely better suited than government involvement. Instead, the government's role as a coordinator and mediator of differing interests would be implicated only in those limited areas, such as the domain name controversy, where broader policy issues are at stake, and perhaps even then only after the existing standard-setting process and other decentralized coordination mechanisms have failed to arrive at an appropriate consensus or solution.[165] This Article has argued that the domain name controversy is just such an area.

More broadly, the example of the domain name dispute suggests that government has a valuable though limited role to play in maintaining, through its very background presence, the stability and authority of those few areas of the Internet requiring centralized coordination. It also has a role in recognizing when discussions about the Internet reflect substantive policy issues, rather than purely technical issues, and stepping in to resolve conflicting interests that cannot be legitimately settled under the standard-setting model of Internet governance. Although the government should rightly be wary of stifling technical innovation through ham-handed intervention, it should also be wary of being so pessimistic about its ability to deal with technology that it abdicates too quickly its traditional role in mediating differing substantive policy positions raised by technology.[166] Conversely, proponents of the decentralized, standard-setting model of Internet governance also need to be aware of the limits of that model of coordination, particularly when applied to issues that involve conflicting value and distributional claims. Too often, government participation is viewed as all-or-nothing. Yet a more nuanced and lighter involvement may be possible and even desirable. With all of the anarchic rhetoric of the Internet, it is often easy to forget that the very existence of the current Internet took place, not in a government vacuum, but with substantial government funding and support.[167]

It is also important to note that the government referred to is the U.S. Government, and cannot purport to speak for other governments, who may have legitimate claims over the generic domain name space. Thus, to the extent that some modest government involvement may be necessary to facilitate Internet

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165. To be sure, some questions may closely implicate both substantive policy and technical standards, and in such cases we might envision some sort of closer interaction between the two processes. Or, relatedly, there may be debates over when the standard-setting process has in fact "failed."

166. Some might be concerned that government involvement in domain name issues might make it more likely that the government would use such involvement to engage in other, more intrusive, forms of regulation, such as over content. *See, e.g.,* Kaplan, *supra* note 154. My feeling is that such concerns are overstated. To the extent the government wishes to engage in such regulation, it already has the available means to do so, and this background role in domain name coordinators would add little to its existing power.

167. Johnson and Post argue that any single government will be unable to adequately exert control over global domain name registration and that any attempt to do so amounts to an "illegitimate extra-territorial power grab." Johnson & Post, *supra* note 4, at 1380. In my view, this takes too literally the concept of Internet as a separate "space," and neglects the fact that real-world institutions (e.g., IANA and NSI) in fact exert just this sort of control over the domain name system. As previously discussed, real-world institutions currently control the databases that coordinate the existing domain name system, and powerful network effects, as a practical matter, prevent exit from the network.

coordination, the generic top-level domains may need to be reconfigured to account for at least this limitation in government authority. Thus, the ".com" and ".edu" domains may need to be expressly made parts of the ".us" top-level domain.[168] This would be, at least on its surface, a dramatic change in the shape of domain name space. Yet the simple addition of ".us" would merely recognize the fact that many ".com" domains are located in the U.S. and the fact that the U.S. Government has little legitimate claim to governing domain name space outside its borders.[169] Coordination between governments may require that some role be played by relevant international organizations, such as the United Nations or the WIPO.[170]

Such a limited government role is not inconsistent with the current administration's concerns regarding leaving Internet development to the private sector.[171] Indeed, as the domain name problem has illustrated, premature withdrawal of government support may not result in a flourishing of private sector initiatives, but may instead result in substantial uncertainty and inefficiency. Because of the difficulty of reaching consensus and the lack of clear authority, lack of government involvement in a distributed network environment may not result in freedom, but in paralysis and an inability to organize and actively pursue the public good. Although the government is rightly aware of its limitations in effectively predicting the course of technological development, it should also recognize those few areas where a centralized coordinating role is necessary to facilitate future development.

CONCLUSION

The domain name problem is unique in many ways, yet it may be a precursor to future debates regarding technical standards. As the Internet becomes more and more important in our daily lives, its methods of governance will come under increasing scrutiny. Issues that were once purely technical may now have serious distributional consequences. Conversely, issues that were once purely substantive may soon have a large technical-standards component, as more and more Internet regulation becomes written into the underlying code.[172] Take, for example, the

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168. *See* Management of Internet Names and Addresses, 63 Fed. Reg. 31,741, 31,748 (1998) (noting that "there is much opportunity for enlarging the .us domain space").

169. Moreover, future browsers might be configured simply to place a default term on the end of a given address, depending on where you are located. Seen this way, the addition of ".us" to the end of a domain name is akin to the country code used to reach U.S. phone numbers from abroad.

170. *See* Foster, *supra* note 55, at 201-06. "The United Nations and its specialized bodies have a critical role to play in registering the Internet domain name system." *Id.* at 201.

171. *See Summary of Comments, supra* note 63 (summarizing comments submitted in response to the National Telecommunications and Information Administration's ("NTIA") RFC, and documenting the NTIA's position that "[t]he private sector, with input from governments, should develop stable, consensus-based self-governing mechanisms for domain name registration and management that adequately defines responsibilities and maintains accountability").

172. *See* Post, *supra* note 4, ¶ 23 (treating network technical specifications as part of the "law of cyberspace").

discussions currently raging over standards for rating and filtering Internet content, or over the addition of copyright management information.[173]

As the above analysis indicates, care will need to be taken to ensure that adequate processes are in place to take into account the interests of the relevant stakeholders. As the division between technical standards and law narrows,[174] we may see a similar convergence in the processes for achieving such standards in the future. More broadly, care should be taken in importing the dominant standard-setting model of Internet coordination into other arenas. Unthinking use of the standard-setting model, without an understanding of its underlying assumptions, may result in the exclusion of parties who have a legitimate claim to the process and, accordingly, a false "consensus." In many ways, the Internet is quite exceptional, but it is important to keep in mind precisely what those ways are.

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173. *See* Lessig, *Constitution of Code, supra* note 86, at 183-84 (discussing other areas in which the code regulates).

174. *See id.*; Lessig, *Zones of Cyberspace, supra* note 4, at 1408.