
# A Proposal to Introduce Market-Based Principles into Domain Name Governance

*The following paper addresses competition in the domain name industry. New.net hopes that this paper will stimulate discussion regarding the name space and help bring all points of view to the table. New.net may publish other papers in the future concerning issues affecting the domain name industry, which could include issues regarding intellectual property rights, privacy, and international domain names, among others. In the spirit of fostering an on-going dialogue, New.net welcomes suggestions for future topics.*

# A Proposal to Introduce Market-Based Principles into Domain Name Governance

We believe that the current Domain Name System (DNS) – the system that enables persons to use easy-to-remember, common language names instead of numerical Internet Protocol (IP) addresses to locate other computers and users on the Internet – suffers from an artificial scarcity of names that is detrimental to Internet users worldwide. The current system, administered by the Internet Corporation for Assigned Names and Numbers (ICANN), is one that hampers the release of top level domains (TLDs) and is the product of a legacy, consensus-based system of governance that inherently cannot serve the diverse and large groups that have varying and even diametrically opposed stakes in how today's Internet is operated. As a possible solution, we propose a hybrid consensus/market-based system in which the technical aspects of the DNS are run by consensus through a central organization such as ICANN, but the political and economic aspects of the DNS – those involved in choosing which TLDs to use and who will operate them – are best served by companies competing in an open marketplace. (For those who are new to issues relating to the DNS, we present as background a brief history of the DNS in the attached appendix.)

In understanding the DNS, one must keep in mind the difference between naming and addressing. As Dr. Jon Postel, who had coordinated different Internet protocols including the assignation of names and numbers in the DNS, stated with admirable clarity, "A name indicates what we seek. An address indicates where it is."[1] In other words, naming allows one to find a given computer more easily; addressing refers to the way in which a computer is identified.

This distinction is not academic: there is a clear difference between (1) the decisions regarding addresses – which relate to the way in which machines function on the Internet including the assignment of IP addresses, the establishment of Internet protocols and the manner in which names are mapped to addresses; and (2) decisions regarding names – which relate to exactly what names should be used by humans to locate the machines within the system as well as who should administer those names. One set of decisions – addressing and its attendant issues – is technical; the other – naming – is political and economic.[2] For example, why must a TLD be ".COM" or ".INFO"? The answer is simple: it need not. There is no technical reason for that choice.[3] As Paul Vixie, the author of the DNS server software BIND, has stated, "A million names under "." isn't fundamentally harder to write code or operate computers for than are a million names under "COM"."[4]

Currently, however, one organization administers both the addressing and the naming space of the DNS, and as such it must try to balance all three areas – technology, politics and economics – in its work. In so doing, ICANN has attempted to preserve the consensus-based decision-making model out of which the technical parameters of the Internet grew. Along the way, ICANN has faced criticisms and questions regarding its administration, decision-making procedures, rules, and even its legitimacy.[5] It is no surprise that any such administrative body would encounter these

issues when trying to address political and economic matters, and especially so when trying to apply a consensus-based decision process to such matters.

Indeed, those who originally laid out the parameters for moving the control of the DNS out of the U.S. Department of Commerce were aware of the benefits of a competitive marketplace. Specifically, in setting forth the "Principles for a New System" (a key section of the Statement of Policy entitled "Management of Internet Domain Names and Addresses" -- commonly known as the "White Paper"), the Department of Commerce stated:

> Competition. The Internet succeeds in great measure because it is a decentralized system that encourages innovation and maximizes individual freedom. Where possible, market mechanisms that support competition and consumer choice should drive the management of the Internet because they will lower costs, promote innovation, encourage diversity, and enhance user choice and satisfaction.[6]

In keeping with the White Paper's principle of competition, we propose that a market-based approach in conjunction with a consensus approach will allow the DNS to achieve high efficiency and broad representation. This result is possible because such a combination allows the technical aspects of DNS to be separated from the political and economic questions concerning the creation of new TLDs. Under such a system, technical matters would be decided using a consensus-based decision-making process, and political and economic matters would be determined by market forces. Accordingly, under this proposal, consensus- and market-driven decision-making processes are used where they are best suited rather than forcing one into the other's realm. This hybrid approach will allow the DNS to serve best the group with the most at stake: Internet users.

### *A History of Consensus-Based Decision-making*

Since the early days of the ARPANET, most questions of Internet architecture have been resolved using a consensus-based system. Indeed, the very nature of the Internet allows a consensus-based system to work extremely effectively in situations where technical issues can be carefully considered by knowledgeable parties across the world. The evolution of the RFC (request for comments) process – which allows individuals or groups to publish technical proposals for the rest of the Internet community to comment and build upon – has been and continues to be an essential component in resolving technical issues quickly and efficiently.

It is also clear that consensus works well in certain situations but is unwieldy -- if not impossible -- as the numbers of persons engaging in the consensus process grow large.[7] Indeed, a consensus process loses its effectiveness as it tries to function beyond a fairly homogenous group.[8] In the case of domain names today where a heterogeneous group seeks to govern technical, political, and economic matters, consensus administration becomes unworkable and often produces undesirable results.[9] Accordingly, it may be that the natural limits of consensus-based decision-making prevent it from achieving an efficient and broadly representative result.

Appreciating the limits of consensus-based governance may be difficult for many involved in the continuing administration of the Internet. It involves reassessing, with an open mind, the state of the success or otherwise of a consensus-based approach to Internet naming as a whole. We assert that the evolution of the Internet has resulted in such a wide diversity of parties having an interest in the naming space that the current approach, applying a consensus-based process to all aspects of naming, is no longer the best way to ensure maximum efficiency and consumer benefit.

From early 1982, decisions as to how the domain name system would work (and the attendant modifications to the technical aspects of the system) used the RFC process, as did many other aspects of the Internet's operation.[10] This process issues standards, informational pieces and commentary. The standards do not create a law per se in that someone can choose to operate outside the standards, but deviating from the standards obviously makes it harder to work with those who have adopted them.[11] Insofar as changes to these technical matters are required, the tested method of the consensus-generating RFC makes sense and is desired. This process brings the benefits of the appropriate group, the technical community – which is focused on and passionate about making the Internet operate well from a technical standpoint – vetting protocols and giving each other input. Technical innovation is positively encouraged rather than stifled.

***Limits of Consensus***

In contrast, we and many other groups feel that the current naming process falls short of such interaction and constructive procedures. Regardless of the various actions that brought about ICANN as the current body governing the name space, suffice it to say that no single body could use the process described above for TLD naming issues today. The TLD name space is not comprised of a small independent group as was the case with Internet Assigned Numbers Authority (IANA) with its rules and procedures regarding adding extensions that meet a minimum specification threshold,[12] or the Internet Engineering Task Force (IETF) consisting of engineers developing protocols via occasional meetings and email discussion groups to discuss and evaluate those protocols.[13] Rather, the TLD name space consists of numerous, disparate interests, and thus any governing body must always attempt to serve many masters at once. In so doing, it attempts to resolve political and economic issues relating to which TLDs should be created, how they should be run, who should reap the economic benefits of running them, and so on.

Any organization addressing political and economic matters runs into questions of legitimacy and related questions of representation and due process. As such, it is easy to understand why ICANN, whose regulatory or commercial nature has been debated, faces numerous questions regarding legitimacy, fairness, undue influence and accountability, to name a few.[14] Indeed, it is no surprise that ICANN, in an attempt to get anything done at all in the non-technical policy arena, has, according to its critics and even neutral observers, chosen to marginalize many of its constituencies and heed the counsel of a relatively like-minded, more homogeneous subset of

affected groups. Whether well founded or not, all of these issues and questions surrounding ICANN further hamper the process of creating new generic TLDs. In fact, many of these questions need not have arisen and will actually be ameliorated by opening up the naming space to competition and moving away from a position of artificial scarcity of names.[15]

***The Market/Consensus Approach***

Something more than consensus-based decision-making is required when addressing the non-technical aspects of the name space and trying to expand it.[16] We believe that the market can serve that purpose. In a market-based name space, while ICANN keeps guard over the manner in which the Internet evolves on a purely technical level, the market invites individuals and companies to innovate regarding how those technical gifts are used. To be clear, anyone trying to innovate would by necessity have to comply with the technical parameters for the portion of the Internet in which they operate in order to achieve commercial acceptance.

There are numerous examples of innovation in the name space that have occurred without ICANN's official sanction, but which have been widely embraced by Internet users and provide significant consumer benefit. These include: (1) New.net's introduction of domain names with more descriptive and useful TLDs that are accessible by users that choose to support New.net, (2) VeriSign's sale of multilingual domain names that require use of a client application to enable resolution, (3) AOL's use of "keywords" that are accessible only by AOL users, and (4) RealNames' offering of key words that can be resolved by many, but not all Internet users.

By having ICANN focus on its core technical competency, Internet technology can continue to use consensus to keep it technically vibrant and stable. The market, in turn, will drive private companies to address the name space in a manner that is both efficient and responsive to Internet users' needs, thus keeping the name space vibrant.

The market side of the equation allows groups to find new ways to work within the current DNS, thus providing consumers with more options. As with any innovation, adoption by consumers will drive growth of the product and related commerce.[17] Insofar as those options are limiting on how the consumer interacts on the Internet, any innovator must inform the consumer of that issue and demonstrate its offerings' value if there will ever be widespread adoption. Consumers thus can make the choice as to whether they wish to be part of a certain naming system within the Internet or not.[18]

Perhaps the simplest analogy is to the cable television industry in the United States.[19] For some time, a home cable subscriber was beholden to his or her cable operator. Programming was broader than with broadcast television, but one could not deviate from the set of channels offered by the cable operator. As new cable channels launched, the economics of the marketplace, either through direct incentives or customer demand, allowed the new channels to gain better carriage. Cable channels often bought advertising educating potential viewers about the benefits of their

programming, thus encouraging viewers to call their cable operator and ask that the channel be part of the line-up. The most famous of these advertisements may be MTV's "I Want My MTV" campaign. In addition, competition introduced through the emergence of satellite television further accelerated the cable television industry's efforts to be more responsive to its user market.

Similarly, companies with new TLD or "alternative naming" strategies can use incentives to persuade ISPs to "turn them on" and reach Internet users. In addition, Internet users can ask that their ISPs enable their domain name servers to recognize New.net's or others' TLDs. The ISPs will be able to choose whether to do so based on the incentives in place and the demands of their customers. Yet unlike the cable situation, users can switch ISPs fairly easily (admittedly with some potential switching costs such as changing email addresses) to get access to domain names that the users want to access.[20] Users also are empowered by the availability of software that enables them to use alternative domain names if they happen to use an ISP that chooses not to provide the user with access to such domain names. Accordingly, users are given a large amount of freedom of choice and control over how they wish to use the Internet.

ICANN's current insistence on a constrained set of TLDs is analogous to a user being locked into a single cable operator that decides that it alone – absent any pressures from economic forces or consumer demand – should choose what channels the user can view, claiming that too many choices would be confusing to consumers or break the delivery system. It's clear that the facts don't support the latter claim, and we believe that the former is overly paternalistic at the least.

The benefits of a market-based approach are clear. By allowing companies to develop new ways of working within the DNS technical system, to raise capital, to market their products, and to do everything in their power to serve their users, ICANN and Internet users will benefit in two ways. First, ICANN will be able to conserve its resources and focus on developing better technical standards to enhance the DNS. Second, if a company is trying to serve customers without the shield of the virtual monopoly of being an ICANN registry, it will by necessity be more responsive to serving its users to gain acceptance.

In a market-based/consensus name space, ICANN would no longer use its test-bed procedure and no longer need to issue new TLDs. Innovators could introduce their TLDs and develop them to the best of their abilities. Though inclusion in ICANN's or another root is not necessary, once an innovator achieved success with its TLD, it ought to be included in the root servers controlled by the U.S. Department of Commerce as a matter of course. A more broadly representative ICANN could assist in setting an objective standard for inclusion in the root servers, which might include minimal technical operating standards and a minimum number of domain names being used by disparate users. Once the standard is established, there would be little room left for discussion (and thus politics), and the process would be essentially an administrative one. ICANN could return to spending more of its time and resources on setting appropriate technical standards, fulfilling its originally intended role.

In other words, by allowing companies to rely on their own resources to develop new ways of using the DNS, the root system can essentially deploy an ongoing test-bed with little political or economic cost to the root system. Internet users would gain by having innovators strive to find new ways in which to serve Internet users using the DNS while complying with the technical standards set by ICANN and other Internet engineering bodies. As innovators succeed, Internet utility is increased, and users gain from broader ways in which they can use the Internet. After a company has proven itself, ICANN could bring that company into its system and thus reward the innovator with lower costs for further adoption on the Internet. In addition, ICANN would be liberated from the financial and political drains associated with non-technical policy matters and that raise questions regarding its legitimacy.

***Competition Will Enhance the Internet, Not Harm It***

It is our belief that the benefits of innovation in the name space outweigh any perceived costs. As discussed above, innovators within the name space include those issuing new TLDs as well as those seeking to use DNS functionality to expand the way in which we find information through browsers or other means. When suggesting that innovation or competition in the name space or the deployment of new roots be allowed, the cost most often offered as the reason not to do so is that those actions will somehow "break the Internet." This argument is sometimes called splitting the root.[21] At bottom, the argument equates universal resolvability with stability, but the two are not inherently the same. Put simply, one can have stability without universal resolvability. A system can be stable in that it works for those within that system. The system may not be universally resolvable until it performs well enough that it gets accepted as a standard, but it is still stable.

Enabling more competition is not likely to result in many competing companies releasing numerous conflicting top level domains. A competitor choosing a TLD that conflicts with a widely registered TLD would have to commit resources to an economic battle that it would most likely lose, or win only at a high price, rather than choosing a TLD with few or no collisions. Though choosing a conflicting TLD is a possibility, assuming that Company A has achieved some success in establishing a user base with ISPs and software distribution, Company B would be hard pressed to convince ISPs, users, and the market in general that its offering of the same TLD as Company A should be recognized or is worthwhile. Faced with such a decision, rational market players would choose developing new TLDs. That decision in turn, would have the result of further opening up the name space and producing further consumer choice, thus enhancing the Internet rather than harming it.

Another way of looking at the issue of competitive systems is to consider the current situation regarding operating systems and Internet browsers. If all users used Microsoft Internet Explorer, then Web design would be easier and less expensive. Yet, we are all better off with choices. Even in the case of having only a few options, consumers get some ability to choose between competitors. In the case of browsers, we have gone from Viola and Midas to NCSA Mosaic to Netscape Navigator and Internet Explorer. Along the way, certain browsers supported some features such as the use of frames while not supporting the Marquee, or scrolling function, and vice

versa. Today, however, to be competitive, browsers tend to support more rather than less functionality. The presence of competition and consumer choice pushed the browsers to provide functionality they might not have otherwise supported. Accordingly, despite dominance by one player, the existence of competitors forces the dominant player to maintain a higher level of service and utility than if it were the only option. Of course, should one player or a small group of players get so dominant as to be anti-competitive, antitrust laws would act to limit such control.

To summarize, competition within the name space will enhance the Internet and does not threaten the existence of a root system. At worst, competition may threaten the existence of the current means of governing the name space in what is currently the dominant root. Yet, even that possibility is remote – to have the chance to be successful within that name space, a company must adhere to the technical rules of the name space and avoid conflicting with other widely used TLDs. At best, by encouraging more players to develop either new ways to use the current system or encouraging them to develop entirely new functionalities based on the current system, competition and innovation in the name space only threaten to put the Internet back into a creative, user-oriented posture. In the end, by letting the consensus and market approaches each thrive in the arena in which it is most effective, we open the way to a more vibrant Internet that delivers more benefits to a ready and willing world.

## APPENDIX 1: Background

This section provides a brief overview of the development of the Domain Name System (DNS).

1971-1994 - *IP addressing and the development of the DNS.*

In the early days of the Internet, relatively few computers were part of the network that comprised the Internet. As such, the administration of how computers were identified and found on the network was a fairly straightforward process. Computers on the network were given an identifying number called an Internet protocol (IP) address.[22] If a user knew the address, he or she could simply use that address to contact that computer. Early users of the Internet typically would look up the IP address for a particular computer from a white pages style list that was stored on every computer.[23] This process worked well in the early days of the Internet, but became overly cumbersome as the numbers of computers on the network grew significantly. Just keeping the list up to date, let alone finding the computer within the list, became quite difficult.[24]

The Internet started as a scientific project and was managed by the people using it the most: scientists and academics. This group used the Request For Comment (RFC) process to circulate proposals, comment on them and finally issue a standard as to how a certain portion of the Internet should function. As a response to the problem of locating computers on the Internet, a group of scientists at the Institute for Scientific Information (ISI), including Dr. Jon Postel, used the RFC process to develop the "domain name system" (DNS).[25] The domain name system was designed to use a hierarchical database structure, which enabled different people on different computers to manage different parts of the naming hierarchy. The initial top level domains (TLDs) included seven generic TLDs, designed to identify the type of host, such as .com for commercial organizations, .net for network providers, .org for not-for profit organizations and .mil for the military root domain name servers. In addition, there were two-letter country code top level domains such as .jp, .us, and .fr to identify geographical locations.

1994-1998 – *the DNS gains in commercial value; Postel and others advocate the introduction of competitive forces into the running of the addressing and naming space.*

From around 1994, the combination of the introduction of the World Wide Web and a useful Internet browser, Mosaic, fueled recognition of the commercial value of the Domain Name System as the potential of the Internet became clear to a community increasingly made up of commercially-minded players. At this point, the National Science Foundation (NSF) who had taken over funding the Network Information Center, entered into a cooperative agreement with Network Solutions, Inc. (NSI).[26] Under the agreement, NSI took over the registration services previously run by the Stanford Research Institute.[27] This meant that NSI ended up registering second-level domains in .com, .net, .org, and .edu and administrating the main root server, or the "A" root server.[28] Policy authority however, remained with Postel and

the Internet Assigned Number Authority (IANA).[29]

By 1995, many more people around the world outside of the scientific community were using the Internet and the World Wide Web for an increasing amount of non-research activities. Domain name registrations were correspondingly increasing. In response to this change, the NSF decided to no longer pay for registrations and executed an amendment to the cooperative agreement with NSI that allowed NSI to charge a $50 annual fee to each domain name registrant.[30] This change was a fundamental shift in the operation of the Internet addressing system. Rather than only a group of scientists interested in and running the DNS for researchers and scientists, an outside corporation with a distinct financial interest became involved and now served an international community using the Internet for a wide variety of non-research purposes.

Consequently, there was growing unhappiness in certain sectors with the new fees being charged by NSI and the structure of the DNS. Some wondered why they should be stuck with the service provided by and fees charged by NSI when registering domain names with generic top level domains. NSI also generated animosity with its domain name dispute policies, under which it asserted the right to (and did) suspend any domain name upon receiving a complaint from a registered trademark holder, without regard to whether the registered trademark holder had a superior legal claim to the domain name.[31]

This same period saw the beginning of a scarcity of easy-to-remember domain names as domain name sales increased dramatically. At the same time, Postel and others in the technical community began to agree that many more TLDs were technically possible and needed to address increasing demand. Indeed, in 1996, Postel suggested that IANA authorize up to 150 new generic top level domains to be operated by new registries. Postel's view was clear: "…positive market forces dictate that diversity [in the top level domain space], obtained through free competition, is the best means available to insure quality service to end-users and customers."[32]

As Postel's proposal regarding adding new TLDs was developed, IANA and the Internet Society created the "Internet Ad Hoc Committee" (IAHC) to consider the question of adding new top level domains. IAHC members included representatives from several international organizations representing corporate interests, including the International Telecommunications Union, the International Trademark Association (INTA), and the World Intellectual Property Organization, which marked the introduction of corporate influence into DNS policy-making. In one example of this corporate influence, the INTA representative, worried about the effect of new TLDs on trademark interests, argued that the number of new domains be limited rather than broadly expanded as Postel and others had suggested.[33] The trademark lobby was successful, and the IAHC proposed that only seven new top level domains be added as an initial matter.[34]

At around the same time, the U.S. government established a working group that included representatives from numerous government offices, including the National Telecommunications and Information Administration (NTIA), the Patent and

Trademark Office, and the NSF, among others, to determine what should be done with the administration of the burgeoning Internet naming and addressing space. As a result of that working group, in July 1997, the NTIA issued a request for comments addressing the best way in which to govern the Internet and the DNS.[35] At the same time as it developed the request for comment, members of the working group began negotiating with Postel regarding turning IANA into a more structured, corporate body with greater accountability to the international Internet community.[36]

1998 to the present day – *The U.S. Government and the creation of ICANN.*

In January 1998, the U.S. Government released a paper entitled "A Proposal to Improve Technical Management of Internet Names and Addresses,"[37] which became known as the "Green Paper." By the time the Green Paper was issued, the IAHC process had stalled, having run into resistance from NSI regarding adding new TLDs to the "A" root server without express approval from the U.S. Government, which the U.S. Government had not provided. As such, the Green Paper made no reference to the IAHC process.[38]

The Green Paper proposed the creation of a new not-for-profit corporation, "operat[ing] as a private entity for the benefit of the Internet as a whole," to administer the DNS. To allow this new corporation to have such control, the Green Paper proposed that the IANA staff would be folded into the new organization with the U.S. Government handing over existing IANA functions, the root system, and the appropriate databases to the new corporation and "participat[ing] in policy oversight to assure stability" for up to two years. The Green Paper made clear that the new organization and its board "must derive legitimacy from the participation of key stakeholders," envisioning a continued process of consensus as the best means to run both the addressing and the naming space. To achieve this goal, the new organization's board was to consist of representatives from various membership organizations relating to the technical aspects of the DNS, such as IP addresses and Internet technical standards, as well as representatives of "the direct interests of Internet users"—including individual, corporate, and non-profit interests.[39]

Four months later, after extensive consensus-based commentary on the Green Paper, the U.S. Government issued its "White Paper." In a broad non-specific document, the Department of Commerce acknowledged the value of introducing competition into the name space: "The pressure of competition is likely to be the most effective means of discouraging registries from acting monopolistically."[40]

Yet the White Paper did not give exact details regarding how the new corporation would be formed. It offered the U.S. Government's support for a new organization that was created by "private sector Internet stakeholders" in the form of contracting with it, advocating for it internationally, and guaranteeing that NSI would give the necessary access to its databases and software. The actual creation of the corporation was left an open issue.

Shortly after the U.S. Government's release of the White Paper, the International Forum on the White Paper ("IFWP") formed and met often to discuss the

way in which this new corporation should be run.[41] Indeed the U.S. Government's key policy adviser on domain names, Ira Magaziner, attended two meetings and " 'blessed' the IFWP process."[42] At the same time as the IFWP was meeting and discussing how to implement the mandate of the White Paper, IANA, the Internet Society (which comprises the Internet Engineering Task Force (IETF) and the Internet Architecture Board (IAB) among other groups), ISOC, Postel, attorney Joe Sims, IBM, Magaziner, and some foreign governments met and drafted their own plan for the new corporation.[43] Following those discussions, Postel sent the Department of Commerce the articles of incorporation for a newly incorporated company, the Internet Corporation for Assigned Names and Numbers (ICANN), as well as biographies of the board of directors and bylaws for the company. Postel described the materials as representing "the consensus judgment of the global Internet community as to how to form a corporation that will include the IANA function."[44] Postel died two weeks after delivering the corporate documents to the Department of Commerce. After reviewing three proposals regarding the new corporation, the Department of Commerce accepted the ICANN proposal despite controversy regarding which proposal was the best.[45]

The White Paper called for the new corporation to have "the functional and geographic diversity of the Internet and its users."[46] To meet this mandate, ICANN currently has a 19-member board that operates with the help and advice of three supporting organizations, the Address Supporting Organization, Domain Name Supporting Organization and Protocol Supporting Organization and the At-Large Membership. The organizations are in turn made up of constituencies ranging from business to intellectual property to addressing groups such as the American Registry for Internet Numbers to the IETF. Individuals are represented through the At-Large Membership. All four groups get seats on the ICANN board with the supporting organizations getting three seats each and the At-Large Membership getting five seats. The organizations establish working groups to address questions regarding the DNS by gathering information and then making recommendations to the board.

Despite ICANN's efforts to be representative, the structure has met with some criticism that ICANN's structure is too complex; its operations are not truly representative; its decision process does not work; and that ICANN itself is illegitimate.[47] The paper to which this history is appended presents a solution that would address many of these criticisms.

[1] *See* Jonathan Weinberg, ICANN and the Problem of Legitimacy, 50 DUKE L.J. 187, 195 n. 35 (2000).
[2] *See generally* Milton Mueller, ICANN and Internet Governance, Sorting Through the Debris of "Self-Regulation" 1 J. OF POLICY REG. AND STRATEGY FOR TELECOMMUNICATIONS INFORMATION AND MEDIA 497 (1999) (examining origins of ICANN and arguing that ICANN does not embody self-regulation or governance and detailing political actors within the creation and operation of ICANN).
[3] *See* Milton Mueller, Technology and Institutional Innovation: Internet Domain Names 5 INT'L. J. COMM. LAW AND POLICY 1, 7 (2000).
[4] *See* Paul Vixie, [wg-c] reposted for Paul Vixie, online at http://www.dnso.org/wgroups/wg-c/Arc01/msg00203.html.
[5] *See* A. Michael Froomkin, Wrong Turn in Cyberspace: Using ICANN to Route Around the APA and the Constitution, 50 DUKE L.J. 17 (2000) (arguing that the Department of Commerce's creation and use of ICANN violates the Administrative Procedure Act and is the non-delegation doctrine); Joseph P. Liu, Legitimacy and authority in Internet Coordination: A Domain Name Case Study, 74 IND. L.J. 587, 616-18 (questioning wisdom of putting policy issues in private hands and noting legitimacy issues for any such action regarding make up of corporation's board of directors and procedures); Jonathan Zittrain, ICANN: Between the Public and Private Comments Before Congress, 14 BERKELEY TECH. L.J. 1071, 1084-88 (examining three principles, "openness, representation, and due process" necessary for acceptance of ICANN and finding that ICANN has tried to apply the principles but has further to go to meet their requirements); *see generally* Weinberg supra note 1 (examining the "legitimacy questions besetting ICANN" and concluding that neither administrative law techniques, representation, nor consensus "can deliver ICANN legitimacy").
[6] *See* Management of Internet Names and Addresses, 63 Fed. Reg. 31,741 (1998).
[7] *See* Margaret Jane Radin and R. Polk Wagner, The Myth of Private Ordering: Rediscovering Legal Realism in Cyberspace, 74 CHI.-KENT L. REV. 1295, 1309-10 (1998) (discussing limits of self-ordering and coordination); Liu, supra note 5 at 598-99 (noting "belief" in "rough consensus" as assumption driving advocacy of technical standard setting approach to Internet issues and requisite requirements for consensus including "shared values" of "small communities"); *see generally* Weinberg supra note 1, (tracing ICANN's history and examining problems of ICANN's attempts at consensus based process of governance).
[8] *See* Id.
[9] *See* Id. and supra note 5.
[10] *See* ELLEN AND PETER RONY, THE DOMAIN NAME HANDBOOK: HIGH STAKES AND STRATEGIES IN CYBERSPACE at 104-115, R&D Books, (1998) (detailing the naming system's design and growth).
[11] *See* Weinberg supra note 1 at 193 n.24; Zittrain, supra note 5 at 1078-79.
[12] *See* Rony and Rony supra note 10 at 121.
[13] *See* Zittrain supra note 5 at 1079-80 (describing nature of IANA and IETF).
[14] *See* supra note 5.
[15] *See* A. Michael Froomkin, ICANN Governance, Prepared Statement before Senate Commerce, Science and Transportation Committee Communications Subcommittee at http://personal.law.miami.edu/~froomkin/articles/senate-feb14-2001.htm (noting ICANN has not claimed that introduction of new gTLDs would threaten technical stability and stating position that large scale, orderly introduction of gTLDs would minimize the social concerns such as consumer confusion and "land rush mentality" related to releasing new gTLDs) (last visited May 24, 2001).
[16] NSI's attempts at a fair domain name dispute policy demonstrate the difficulties in trying to navigate the political and economic questions even outside of a consensus-based system of policy making. *See* Rony and Rony supra note 10 at 141-48 (discussing NSI domain name policy and controversies around it).
[17] As discussed below, cable television and its proliferation of networks present a good example of the way in which consumers can demonstrate their preferences. The DVD vs. DivX player is another good example of consumers exercising choice for one technology over another.
[18] To an extent consumers already do so insofar as the open root movement has achieved success on the Internet.

[19] *Cf*. Karl Auerbach, "Multiple Roots Are a Good Thing," What I Would Say to the House Commerce Committee Were I Invited to Testify, (July 17, 1999) online at http://www.cavebear.com/cavebear/growl/issue_2.htm#multiple_roots
[20] It should be noted that in today's cable market the advent of satellite systems has pushed cable companies to provide digital cable and ISP services to remain competitive. Thus, consumers get a wider range of options. If nothing else, innovators in the name space should push the registry business in general to provide better service and be more responsive to customer needs.
[21] *See* Milton Mueller, The Alternate Root, ICB Toll Free News online at http://www.icbtollfree.com/Article.cfm?ArticleId=5297, last visited May 17, 2001, on file with New.net (questioning idea that ICANN "administers 'the one true root'").
[22] *See* Weinberg supra note 1 at 194.
[23] *See* Weinberg supra note 1 at 194-95 (citing Froomkin supra note 5 at 51-52; Elisabeth Feinler et al., RFC 810, DoD Internet Host Table Specification, online at http://www.rfc-editor.org/rfc/rfc810.txt (Mar. 1, 1982); M.D. Kudlick, RFC 608, Host Names On-Line, online at http://www.rfc- editor.org/rfc/rfc608.txt (Jan. 10, 1974)).
[24] *See* Weinberg supra note 1 at 195.
[25] *See* P. Mockapetris, RFC 882, Domain Names--Concepts and Facilities, online at http://www.rfc-editor.org/rfc/rfc882.txt (Nov. 1983).
[26] *See* Froomkin supra note 5 at 57.
[27] *Id*.
[28] *See* Weinberg supra note 1 at 199.
[29] *Id*.
[30] *See* Rony and Rony supra note 10 at 149; NSI-NSF Cooperative Agreement No. NCR-9218742, Amendment 4, at http:// www.networksolutions.com/legal/internic/cooperative-agreement/amendment4.html (Sept. 13, 1995).
[31] *See* Rony and Rony supra note 10 at 147; Carl Oppedahl, Avoiding the Traps in the New Rules for Registering a Domain Name, N.Y. L.J., Aug. 8, 1995, at 5.
[32] *See* Weinberg supra note 1 at 201 (citing Postel ("It is considered undesirable to have enormous numbers (100,000+) of top level domains for administrative reasons and the unreasonable burden such would place on organizations such as the IANA. It is not, however, undesirable to have diversity in the top level domain space....").
[33] *See* Weinberg supra note 1 at 201-02.
[34] *Id*.
[35] *See* Department of Commerce, Request for Comments on the Registration and Administration of Internet Domain Names, 62 Fed. Reg. 35,896 (1997).
[36] *See* Weinberg supra note 1 at 204.
[37] Department of Commerce, National Telecommunications and Information Administration, Improvement of Technical Management of Internet Names and Addresses, 63 Fed. Reg. 8,825 (1998).
[38] See Weinberg, supra note 1 at 205-06 note 92 and accompanying text.
[39] *See* Weinberg, supra note 1 at 206.
[40] *See* Management of Internet Names and Addresses, 63 Fed. Reg. 31,741 (1998).
[41] *See* Mueller supra note 1 at 506.
[42] *Id*.
[43] *Id*.
[44] *See* Weinberg supra note 1 at 209.
[45] *See* Mueller supra note 2 at 507.
[46] *See* Froomkin supra note 5 at 74 (quoting the White Paper).
[47] *See* supra notes 1, 2, 5 and 7.