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Location, location, location: the geography of the dot com problem

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Abstract. Cyberspace is often portrayed as a seamless expanse, with browsers of the web rarely made aware of the geographic location of a page. For all its professed aspatiality, however, analysis of the organization of cyberspace offers continuing proof of the presence of geographically determined influences. Beyond the core domain names suffixes (.com, .gov, .net, and .org) domains usually carry geographic identification (.uk, .au, .jp, and so on). As desirable domains are registered, organizations and individuals seek web locations in new areas to claim high visibility on the Internet. After examining the regulation, legal jurisdiction, and geography of domain name registration, in this paper I analyze the experience of six countries that have commercially attractive top-level domain names: American Samoa, Moldova, Nuie, Tonga, Turkmenistan, and Tuvalu. These domains illustrate how geographic issues can emerge in the practice of electronic interaction and identity.

"Sorry, www.com is not available.
Sorry, wwww.com is not available.
Sorry, wwwww.com is not available.
Sorry, wwwwww.com is not available.
Sorry, wwwwwww.com is not available.
Sorry, wwwwwwwww.com is not available.
Sorry, wwwwwwwwww.com is not available.
Sorry, wwwwwwwwwww.com is not available.
Congratulations! Wwwwwwwwwww.com is available!"

Neuman (2000)

Introduction

On the surface, cyberspace can be seen metaphorically as a seamless expanse, escaping from the constraints of distance and location. Use of the World Wide Web (WWW) allows users to travel from site to site, location to location, with few, if any, geographic indications of their location or journey. Browsing the web offers few signals about the source and route of the information viewed. This rhetoric, of being spaceless and timeless, further reinforces images of the aspatial medium that has brought death to distance. Abbate (1999) notes the pervasive rhetoric of spacelessness that appears in work by William Mitchell, Bill Gates, and Nicholas Negroponte, among others, as the WWW is reinforced as the death of distance. For all its intangibility, however, analysis of many elements of cyberspace offer continuing proof of the applicability of terrestrial concepts to electronic phenomena. As soon as elements of cyberspace are analyzed, the power of space is strongly reasserted. If cyberspace is indeed territory, the past five years have witnessed a land rush as individuals, organizations, and firms have raced and battled to settle on the most desirable tracts of this territory.

At the core of many issues associated with locations in cyberspace is the dot com problem, the rapid appropriation of domain names that leaves few or conflicting

options for staking a claim to Internet territory. The domain name system offers many choices for an online identity or brand, but the challenge is not just a place in cyberspace, but a good location on the net. In this regard, commercial success in cyberspace takes on some similarities to high street retailing, in that a good location is an essential element to attracting customers and capturing passing traffic. The Internet equivalent of a main street address is a domain name that is easily recognized and remembered by the public. The supply of desirable domain names is limited by the domain registration system, where only one suffix is commonly recognized as being commercially attractive—.com. This artificial limitation caused by the domain name system translates into a shortage of Internet territory available for commercial use, and the resultant bidding up of Internet locations and accompanying legal action to capture contested names and locations. The dot com problem offers a valuable example of how seemingly aspatial cyberspace quickly reveals an underlying geography shaping its development and growth.

Geographic perspectives on cyberspace offer many insights. Wilson and Corey (2000) identify several geographies associated with cyberspace. First, there are the geographies of the physical infrastructure that allows electronic interaction, the flows of information and finance that rely upon electronic infrastructure, and the economic activities that depend and derive from information technologies (see, for example, Bakis et al, 1994; Batty, 1993; Brunn and Leinbach, 1991; Castells, 1996; 1997; 1998; Hepworth, 1990; Kellerman, 1993). Second, is spatial variation and disparity. In this context, geography indicates the boundaries between 'have' and 'have not' areas in virtual space and in real space.[1] Finally, geography also is concerned with demarcation of places and interaction. What is the role of boundaries and borders in cyberspace? Some perceive cyberspace as being without boundaries, yet jurisdictional borders do, in fact, play a role in political space, and therefore in real space. The spatial organization of regulation, taxation, and enforcement of law critically raises the element of space in analysis of cyberspace. As market pressures are applied to the seamless blanket of cyberspace, the underlying topography of place and border emerges dramatically.

In this paper I use the dot com problem to examine how the underlying geography of cyberspace emerges through the domain registration system, and how the seeking of territory in cyberspace has both metaphorical and real geographic elements. I proceed by first addressing the naming conventions and the legal standing of domain names. Superficially, domain names may appear aspatial, but for many locations on the WWW the name is often tied to a specific location. Equally important, the allocation and use of domain names is often tied to policies and registration methods that apply at the national level. In the latter part of the paper, I provide case studies of six countries that, by happenstance, received attractive top-level domain names. These countries illustrate how geographic issues can emerge in the practice of electronic interaction and identity.

A domain by any other name

Identity in cyberspace is often tied to the names used by individuals and organizations to claim an address on the Internet. The domain name system (DNS) is a way to identify and to regulate individuals, firms, and organizations on the WWW. Domain names represent the numeric codes used to claim addresses in cyberspace. For example, the use of www.msu.edu is a user-friendly and easily identifiable form of Michigan State University's IP address of 35.9.2.151.

[1] Additional details provided by Schon et al (1998), and the "Falling through the net" reports by the US Department of Commerce (NTIA, 1998a).

Responsibility for domain name registration and management has progressed through several stages in the brief history of the Internet. Initially, domain name responsibility lay with the US government and its agencies, although in 1992 the National Science Foundation developed a cooperative agreement with Network Solutions Inc (NSI) to manage domain names, the same year that commercial Internet applications were allowed by the US Congress. The assignment of numerical addresses was undertaken by the Internet Assigned Numbers Authority (IANA), and domain name registration was the right of NSI. In 1998, the US National Telecommunications and Information Administration (NTIA, 1998) recommended an industry-supported nonprofit entity to manage domain names, called the Internet Corporation for Assigned Names and Numbers (ICANN). The US government transfered to ICANN the following responsibilities:

> "the management of the domain name system, the allocation of IP address space, the assignment of protocol parameters, and the management of the root server system" (www.icann.org/general/fact-sheet.htm).

Domain names are constructed as a hierarchy, with the highest order being the top-level domain names (TLD). These take two forms. The generic TD (gTLD) refers to seven domains, .com, .net, and .org can be used by any entity, and the remaining four are limited—.int for international organizations, .edu for four-year colleges and universities, .gov for agencies of the US government, and .mil for US military use. Although the seven core domain names may appear spaceless, they are overwhelmingly claimed by entities in the United States. Also, because they were the first suffixes to be widely used and were obtained when US-based NSI was the sole source of domain names, the core domain names are all subject to legal claims through the US court system.

The second naming format is the use of country-level TLDs (ccTLD). 242 country TLDs were established between 1995 and 1998, with Bangladesh added in 1999, and Palestine in 2000. When domain names were allocated for each country, the choices were conveniently associated with two-character terms tied as closely as possible to the locations they represented. In this allocation .us for the United States, .uk for the United Kingdom, or .de for Germany the terms captured common elements of each nation's identity. For many countries, however, their TLD was part of a nomenclature developed without their participation Many countries were slow to organize or manage their TLDs and many did not even know they were part of an international naming system. For a short period of time, Tuvalu's domain name, .tv, was stolen and used to register firms without the country's knowledge. Today, most country-level domains require some presence or residency, although NetNames (www.NetNamesUSA.com) estimates that there are 80 countries that accept domain registration by an entity. In addition to the TLDs noted, alternative domains are available from Alternic (www.alternic.org), which offers domains such as .med for medical uses, .exp for experimental use, and .porn for pornography.

When the Internet and cyberspace were considered to be tools for scientists and computer users alone, the value of locations in electronic space was low. With little demand for a place in cyberspace, the value of a good place was limited. Rapid growth of the Internet changed this perception quickly, and what were once unwanted neighborhoods suddenly became the place to be found electronically. Minor (1997) writes about CNET, a computer and technology portal, and its efforts to claim a wide variety of domain names such as www.news.com, shareware.com, download.com, and search.com. Notable is the convoluted route to claim java.com from a coffee machine maker Mr Coffee, ending up with several trades, the purchase and later swap of the domain name www.mrcoffee.com, and a cash payment of US$20 000.

In the short span of two or three years, as the potential of electronic commerce became apparent, the value of a location in cyberspace grew dramatically. Cyberspace evolved to a business form and, as a result of this change, the shop fronts and main streets of the Internet attracted fierce bidding for attractive locations. As Burk (1995) notes in an early review of domain name issues, the value of domain names becomes critical when money is at stake, as is increasingly evident as electronic commerce expands. Among the most valuable domain names in recent trades were business.com at US$7.5 million, wine.com for US$3 million, and wallstreet.com for US$1 million (MacIver, 1999). By May 2000 there were almost 9.5 million dot com domain names registered out of 11.9 million registered names in total.[2]

Staking a claim in cyberspace

The real estate metaphor is a good description of finding a location on the Internet. Firms and organizations seek the best 'places' in order to be easily found and identified by their customers and the public. In addition to an expected return through sales from Internet operations, firms also can enhance their stock value through Internet activities. Cooper et al (2000) found that adopting Internet names increases the stock price of firms:

> "This 'dotcom' effect produces cumulative abnormal returns ... of approximately 125% for the ten days surrounding the announcement day."

Property developers are also active in developing an Internet alternative location. The Simon Property Group, a major US owner and manager of retail property is launching clixnmorter.com as a digital initiative (Inman, 1999). Staking a claim on the web requires selection and registration of a domain name. Five motivations and types of domain names are listed below.

First, there are domain names that immediately identify an organization, firm, or individual, such as www.microsoft.com, www.britishairways.com, or www.toyota.com. The use of well-known corporate identities and brand names also captures the trust, goodwill, and name recognition that firms have spent considerable time and money developing. These names are an investment that firms seek to transfer to the Internet through their domain names. Conflict arises when several claims are made for the same domain name, such as Desknet Systems Inc. and Desknet Inc. going to court over ownership of desk.com.[3] There is significant competition at this level as global brands represent significant investments over many years, and on the WWW the name of the organization is its most visible asset.

With only one domain name globally, and many possible and legitimate claims, speed and preemptive action in order to capture current and future domain names is essential for many firms. The merger of Time Warner and AOL may require a range of new domain entities, and the firm registered 21 new domain names in the 24 hours before the announcement of the merger (Bloomberg News, 2000). The timing was important as the lag between registering a name and its appearance on 'Who is' lists is less than 24 hours. As domain name registrations are important indicators of corporate change, the registration records are often mined for indicators of changing commercial relationships.

Second, there are domain names that identify an activity or service, such as Proctor and Gamble's use of www.headache.com as one of many generic routes to its home page. Generic domain names hope to attract browsers who need information about a

[2] Breakdown of domain names registered by InterNIC available at www.domainstats.com/internic.cfm.
[3] Desknet Systems Inc versus Desknet Inc., United States Patent Quarterly (Bureau of National Affairs) 42:1954, US District Court for the Southern District of New York, 14 May 1997.

general topic or product, but who do not know or use a brand name or corporate web site. The goal is to attract passing traffic that may not have loyalty to a particular brand. The generic strategy is less controversial as many organizations may have reasons to seek a particular generic domain name, which is not associated with any one firm or organization. The prior investment in a generic name is low, and if one name is claimed there may well be similar names that would achieve the same effect. In some countries, such as Australia, generic domain names cannot be registered because they do not refer to a specific entity.

Third, domain names may be claimed to prevent their misuse. For example, in the United States, the civil rights group, the National Association for the Advancement of Colored People (NAACP) registered a range of domain names that may be favored by hate groups. As Tammy Hawley, the Chief Operating Officer of NAACP notes, "We prefer to have control of the names and use them for antidefamation purposes, rather than let hate groups control them" (Festa, 1998). Organizations and firms seek to register domain names that may be used against them and to preempt opponents from using easily recognizable terms that may reference them in a poor light. Examples of why firms actively try to preempt domain names are well illustrated by www.northworstair.org which is directed to disgruntled passengers of Northwest Airlines, or www.microsoft-sucks.com, which serves as a portal for disaffected Microsoft users.

Fourth, domain names can be claimed for strategic advantage. Taiwan.com was registered by China.com, which is a web site owned in part by China's Xinhua, the state-operated news agency. Many in Taiwan are dismayed by this development and are urging the Taiwanese government to take action. As China.com is a publicly traded firm listed on Nasdaq it is potentially open to legal action by Taiwan through the United States' legal system (Friedman, 1999). Some domain names are claimed to mislead by using addresses similar to leading organizations. For example, pornography sites www.whitehouse.com or www.cnn.org hope to capture some of the web traffic destined for large-volume web sites. Cable News Network (CNN) sued cnn.org over its domain name early in 1999 (*USA Today* 1999a).

Finally, considerable commercial activity takes place around speculation in domain names. Domain names are claimed by parties that hope to sell the name, or by employees who register names associated with their employer. Registering a domain name is a simple, low-cost transaction, that allows speculators, 'cybersquatters', opportunities to hold domain names in the hope that they would be able to sell them later. Court decisions have shown some clear directions about domain name ownership. Kozlowski (1999) notes:

> "Courts have typically sided against 'cybersquatters' when it comes to trademarked names, but when a company wants a name they haven't trademarked, the options dwindle. Sometimes businesses pay a smaller business or individual for the rights to an already registered name, as Compaq, the parent company of the search engine known as 'Alta Vista', did when it paid $3.35 million last year for www.altavista.com."

Dispute resolution has become a major issue for the domain name system, and new procedures have been developed to limit conflict over names and identities. ICANN (1999) implemented the "Uniform domain name dispute resolution policy" in October 1999, which has been adopted by all registration organizations to manage conflict over domain names. The policy calls for mandatory administrative proceedings to resolve issues, such as confusing or similar domain names, cybersquatting, or the use of a domain name in bad faith.

Cyberlaw

Despite the potential to develop as a supranational system, the naming convention for cyberspace reinforces the existing geographic delimitation of space. As legal convention and applications are well-established in geographically delimited areas (countries, states, provinces, and so on), the evolution of cyberlaws often follows existing geographic boundaries. Johnson and Post (1997) note the similarity of the 'law space' of the world with physical space and identity of nation-states. By retaining a national foundation for the registration of many domain names, the geography of cyberspace in many ways parallels the economic, political, and legal geography applying in most arenas of commercial interaction. In particular they note (page 6) that global computer systems challenge the place-based structure of law with regard to:

(1) the power of local governments to assert control over behavior;
(2) the effects of behavior on individuals or things;
(3) the legitimacy of the efforts of a local sovereign to enforce rules applicable to global phenomena;
(4) the ability of physical location to give notice of which sets of rules apply.

The challenge of cyberlaw is twofold, first, to maintain legal consistency by translating existing practices and norms for use in cyberspace, and second, to grapple with the issues of legal jurisdiction on the Internet. In the first case, legal issues over domain names, for example, are seen in terms of intellectual property and trademarks. The World Intellectual Property Organization (WIPO) notes the growing significance of protecting and managing intellectual property as wealth becomes tied to information and knowledge. To the WIPO:

> "A trademark enables consumers to identify the source of a product, to link the product with its manufacturer in widely distributed markets. The exclusive right to the use of the mark, which may be of indefinite duration, enables to owner to prevent others from misleading consumers into wrongly associating products with an enterprise from which they do not originate" (1999).

The Internet takes issues associated with intellectual property to an international level, and introduces the second element of cyberlaw, that of jurisdiction. As Mickens (1999) notes, "Many, if not most, internet users do not consider legal jurisdiction when they access information on the internet or engage in transactions online. However, jurisdictional questions and problems are never far from their use of the internet." At the core of jurisdiction is the power of courts to consider and rule on legal issues. In the United States this arises at the state level, with jurisdiction precedents used to determine where an issue is resolved and, in doing so, what laws would apply.

Jurisdiction issues are many and complex, for example, a purchase or contract transacted over the Internet may link parties in different locations or countries that have different legal systems. In cases where issues arise, which court would be responsible? Internet gambling is illegal in the United States, but US residents can access gambling sites in other countries where such activity is legal. A pornographic Californian web site accessed from Tennessee was sued for obscenity (*United States versus Thomas*) in Tennessee, even though the site and its owners were not in the state (Wilske and Schiller, 1997).

If issues within one country challenge jurisdiction, the international scale of the Internet introduces far greater problems as the range of laws dealing with contracts and trademarks varies significantly across states and countries. For example, Prince, a British IT training firm registered the domain www.prince.com which was also sought by Prince, the US maker of tennis equipment. Prince UK sued for its rights in a UK court. Under current policy, registering a domain name carries with it agreement to arbitration in a dispute. Parties can take a dispute to court, but it must be a court in

the jurisdiction where the registrar of the domain name is located. As most domain name registrations take place through United States' organizations, legal remedy in most cases would require a suit in a US court (Macainta, 1999).

Geographic identity in cyberspace

Identity on the web, and the geographic foundation of part of the domain name system, come together most dramatically when examining extreme applications of corporate and geographic domains. One reaction to the shortage of commercially valuable domain names, the dot com problem, is to utilize domain names from other countries that offer similar and legal alternatives to dot com identities, or offer unique linguistic characteristics that appeal to web users. This section explores how six countries, through geographic or alphabetic accident, are represented by ccTLDs that are now valuable real estate in cyberspace. Each of the six countries—American Samoa, Moldova, Niue, Tonga, Turkmenistan, and Tuvalu—exemplifies how the seeming spacelessness of cyberspace can be grounded by the geographic reality of the marketplace.

American Samoa

American Samoa comprises a group of islands in the South Pacific, with a population of almost 64 000 people. American Samoa is an "... unincorporated and unorganized territory of the US; administered by the Office of Insular Affairs, US Department of the Interior." In 1995, the GDP was estimated at $150 million, or $2600 per capita. The telephone system is well developed, with international access through Comsat and Intelsat.[4] The TLD for American Samoa is .as, with domain name registration managed by American Samoa Network Information Center (ASNIC, nic.as), charging US$45 per year with an initial two year charge of US$90. ASNIC correspondence is directed to a New York City location, and domain name registration is bound by the laws of American Samoa and the United States.

The value of the .as TLD is that for a number of countries, especially in Scandinavia, the TLD corresponds to AS or the local equivalent of Inc. or plc. The .as TLD has attracted official web sites for Scania (www.scania.as is Scania's English-language site in Sweden), Volvo (www.volvo.as is an English-language site titled volvo.com located in Sweden), as well as sites held by individuals for a number of other Scandinavian firms. The Internet Software Consortium's July 1999 survey of domain names identified 105 hosts using the .as TLD (Internet Software Consortium, 1999).

Moldova

Moldova is a former republic of the Soviet Union, independent since 1991, and located in Eastern Europe, northeast of Romania. Moldova has a population of almost 4.5 million people, and a GDP of $10 billion, or approximately $2200 per capita. International communications comprises two fiber-optic lines to Romania and worldwide access, with analog lines to Russia and access to Intelsat, Eutelsat, and Intersputnik.[5]

The popularity of Moldova's TLD, .md, is recent, targeting doctors in the United States who seek a domain name that incorporates their medical qualifications. In addition, the name can also be targeted to managing directors or residents of the US state of Maryland. The domain had 1034 hosts in mid-1999 (Internet Software Consortium, 1999). The .md TLD is licensed for English-speaking countries by the Moldovan government to Domain Name Trust (domains.md), renamed Dot MD in February 2000, which registers .md domains for US$299 per year. Although representing the Internet identity

[4] Information obtained from the CIA World Factbook, available at www.odci.gov/cia/publications/factbook/geos/aq.html.

[5] Information obtained from the CIA World Factbook, available at www.odci.gov/cia/publications/factbook/geos/md.html.

of Moldova, the Dot MD web site conducts all business online and lists an office in Florida. According to Domain Name Trust, when registering a .md domain name, the "Registrant agrees that this Registration Agreement shall be governed in all respects by and construed in accordance with the laws of the State of Florida, United States of America" (domains.md/agreement.html). Firms with a legal claim associated with the .md domain name would have to resolve issues in US courts.

In addition to Moldovan firms and organizations using the .md name, it is commonly sought as a suffix for a doctor's named web site, or for generic medical practices, such as www.facelift.md, www.eye.md, or www.heartdoctor.md (which transfers to www.heartdoctor-md.com). Of note is the burgeoning use of the web for medical purposes, with a subsidiary of Dot MD offering practice management programs to enhance use of the .md name. The .md web site offers the following online possibilities for doctors:

> "MediVation has developed a unique technology that allows your practice to be your patients' portal, ensuring that their information is personalized, accurate, and above all, controlled by you. MediVation's PatientPages solution generates an individualized web access point for each of your patients within your own web site. Because MediVation leverages data already contained within your practice scheduling and billing systems, patient web pages are created automatically, with no work required of you or staff. Patients can view pre and post-visit instructions, create their own medication list, request refills and appointments, and more.
>
> Every time a patient uses the web instead of the phone it saves your practice resources. Patients are better educated, more involved, more adherent, and more satisfied" (www.nic.md/manage.html).

Niue

Niue comprises one island in the South Pacific with a population of approximately 2100 people. Once a dependency of New Zealand, Niue became independent in 1974 in association with New Zealand, which conducts international relations on behalf of Niue. The coutry's GDP in 1993 was $2.4 million, or $1200 per capita. In the early 1990s there were 276 radios and 312 televisions in the country.[6] Surprising for such a small country, Niue had 6745 hosts in mid-1999, testimony to its aggressive marketing as a domain location (Internet Software Consortium, 1999).

Niue's TLD is .nu and the domain is licensed by Niue to a US firm, .NU Domain Ltd (www.nunames.nu), which in early 1999 was attracting 1500 registrations per month (King, 1999), with a registration fee of US$45 for two years. .NU Domain Ltd is based in Boston, and the legal jurisdiction for .nu domains is the United States, and the states of Massachusetts and Delaware. Niue receives 25% of the gross revenue after payment of commissions, with the funds used by the Niue Internet Users' Society to provide government and residents with free Internet access. Providing Internet access is a financial challenge as the only international telecommunications service for Niue is through a satellite system, with minimum charges of US$1 per minute.

A major market for the .nu domain is in countries where the suffix has a meaning, for example, Scandinavia and northern Europe, where it means 'now'. As testimony to its focus on Scandinavia, the domain now accepts a range of European alphabet characters (å, ä, ö, æ, or ø) and has also established a collocation agreement with Telia AB, a Swedish ISP. Among the domains are the Oresund link between Denmark and Sweden (www.oresundsbron.nu) which transfers to a Danish site, the Stockholm Skydive Club (www.fallskarm.nu), and the Netherlands Dance Theater (www.ndl.nu) trans-

[6] Information obtained from the CIA World Factbook, available at www.odci.gov/cia/publications/factbook/geos/ne.html.

fers to a commercial web site in the Hague serving as a search engine for dance companies. The domain has also attracted attention from entities in other countries seeking an unusual suffix, or marketing to Scandinavia.

Tonga

Tonga is located in the South Pacific and has an area of 748 square kilometers and a population of almost 110 000 people. Tonga is a constitutional monarchy that was a UK protectorate until 1970. The GDP is $232 million, or $2100 per capita. In 1994 Tonga had 6000 telephones and international service through Intelsat.[7] Tonga had 2934 hosts by July 1997 (Internet Software Consortium, 1999).

Tonga's TLD of .to is managed by the Tongan Network Information Center, or Tonic (www.tonic.to), through a server at Tonga's San Francisco consulate. Unlike the other countries profiled here, where outside organizations are the primary marketers of domain names, Tonga's initiative was started by its royal family (Crown Prince Tupouto'a) who is the majority owner of Tonic, a private firm operated by two Americans under license from the Tongan monarchy (Eisenhard, 1999). Tonic offers a number of registration options through its web site, starting at US$50 per year for two years to US$25 annually for 100 years. Tonga plans to use its share of revenue to develop distance education capacity for the country (Abate, 1998). This goal is particularly important to Tonga as many of its citizens leave the country each year for further study. The Royal School of Science for Distance Learning (www.tongatapu.net.to/tonga/convictions/schools/uni/rss/rss.html) provides access to distance education courses at universities in the United States, United Kingdom, Australia, and New Zealand.

The attraction of the .to domain lies in wordplay rather than in reference to corporate or legal terms. As with many domain names, many common firms have reserved or have their names held by others under this TLD. In addition, the Kingdom of Tonga rejects offensive domain names. *USA Today* reports that a request for an inappropriate name produces the following automated reply from the Tonic web site:

> "You filthy minded pervert! The Kingdom of Tonga admonishes you. Now go back and think of a name that you wouldn't be embarrassed to say to your mother" (*USA Today* 1999b).

Among the active .to domain names are www.volvo.to (transferring to its English home page in Sweden) and www.burri.to eventually leads to the Spyglass software home page. A significant user of the .to TLD is V3, an internet identity firm founded in the Netherlands. V3 uses many forms of the TLD (fly.to, go.to, welcome.to, etc) to provide memorable and short URLs for redirection purposes by owners of cumbersome domain names. V3 offers to redirect URLs using the .to domain for free if users allow advertising to be linked to their site, or charges US$18 annually for an advertising-free name.

Turkmenistan

Turkmenistan is a former Soviet republic, which became independent in 1991, and is located in central Asia. Turkmenistan has a population approaching 4.5 million people, and a 1998 GDP of $7 billion, or $1630 per capita. International communications are by cable and microwave radio relay to other Commonwealth of Independent States republics, and through leased connections to Moscow. International traffic is also sent through Iran and Turkey.[8] In mid-1999, Turkmenistan had 268 hosts, according to the Internet Software Consortium (1999).

[7] Information obtained from the CIA World Factbook, available at www.odci.gov/cia/publications/factbook/geos/tn.html.

[8] Information obtained from the CIA World Factbook, available at www.odci.gov/cia/publications/factbook/geos/tx.html.

Turkmenistan's TLD, .tm, has currency in the domain name market because of its suggestion that the preceding term is trademarked. The common use of 'tm' to identify trademarked terms makes it an expected term for the public, and another way for firms to claim their product identity. The use of the .tm TLD, however, has no meaning in law and capitalizes on appearance rather than legal standing. The TLD is managed by a UK firm, NetNames (www.netnames.com, www.netnamesusa.com, www.netnames.com.au) which reached a profit-sharing agreement with the government of Turkmenistan in early 1998 (Ayres, 1998). Turkmenistan intends to use the proceeds of the partnership to subsidize the cost of domain names for its citizens (Ward, 1998). The cost of the .tm name is £30 (US$50) per year. Companies with .tm names include British Telecom (www.bt.tm and www.yellowpages.tm); www.volvo.tm refers to its corporate home page in Sweden, and www.Esso.tm transfers browsers to the parent company Exxon's site for Esso UK.

After four months of rapid adoption of several thousand .tm names, the Turkmenistan government temporarily stopped NetNames' registration of names as a number of the domains were considered to be obscene according to Turkmen standards (*The Lawyer* 1998). NetNames has asked for a list of terms considered offensive to Turkmenistan before continuing to register the .tm TLD. By mid-1999, NetNames was presenting itself as a global manager of domain names at a charge of US$129 per year, with no explicit reference to Turkmenistan on its web site. Information provided by NetNames through www.nic.tm in mid-2000 continues to state that registration of the .tm TLD remains suspended owing to obscenity issues, with resumption pending the development of an appropriate naming policy.

Tuvalu

Tuvalu is an island group in the South Pacific, with a land area of 26 km^2 and a population of 10 500 people. A member of the British Commonwealth, achieving independence from Britain in 1978, Tuvalu has a GDP of almost $8 million, or $800 per capita. Tuvalu has limited telephone service and no television service.[9] The TLD for Tuvalu is .tv, although the nature and value of this designation were not known by the government of Tuvalu for several years.

Tuvalu's domain name has had, perhaps, the most complex history of the cases presented here. The value of the .tv domain was recognized early, and Andrew Rubin, the communications manager for WebTV, sought and received rights over the name by simply asking Network Solutions to be the domain representative. When Tuvalu's government learned that they did not control the .tv domain name, Rubin offered US$10 000 per name to maintain registration control. Tuvalu intervened with the IANA to regain control of .tv, and then auctioned rights to the domain. The winning bid by a Canadian firm, Information.CA and its subsidiary .TV Corporation, was for US$50 million (McCarthy, 1998). Tuvalu's Prime Minister, Bikenibeau Paeniu is quoted as saying about the domain name, "This is a gift from God" (Nickerson, 1998). The .tv domain name may well be Tuvalu's most valuable asset and export industry.

The .tv domain was the most contested and potentially valuable TLD of the first years of the Internet. Those seeking a .tv name had to provide a US$1000 deposit and, if more than one organization sought a name, an auction would be called. Successful bidders for .tv names then paid a US$500 annual renewal fee. In February 1999, .TV Corporation missed its first payment to Tuvalu and delayed the registration of the .tv domain (*Asiaweek* 1999). Despite its fame as a TLD, difficulties in managing the name

[9] Information obtained from the CIA World Factbook, available at www.odci.gov/cia/publications/factbook/geos/tx.html.

have meant that by mid-1999 there was not even one Tuvalu TLD identified by the Internet Software Consortium (1999).

After the failure of the .TV Corporation, the Tuvalu domain rights were obtained in early 2000 by Idealab!, which manages the domain through its DotTV start up. DotTV (www.tv) and has a ten-year agreement with Tuvalu, paying US$50 million in royalties for the rights to the domain. In addition, the country has a 20% stake in the company and several government officials sit on the DotTV board (Kaplan, 2000). Unlike most domain registrations, DotTV operates by auction with a minimum annual registration fee of US$1000. Most domain names for .tv bid US$5000 – 10 000 annually, although high profile names are listed at up to US$100 000 annually. DotTV is based in Los Angeles, and all legal claims must be resolved according to US law and through courts in Los Angeles.

The geography of the dot com problem is most dramatically exemplified when countries with memorable top-level domain names market their location in cyberspace. Analysis of the country-level domains reveals a number of geographic ironies. First, many of the organizations responsible for country-level domains are managed by nonresidents, who may not even have a local presence. Second, the servers to which the domain names are attached are often not located in the domain host country or they immediately redirect web traffic to another country. Finally, despite the attention these six countries have received, little profit or commercial advantage seems to have developed. Cyberspace has drawn these locations from the periphery to the center, but has not provided the growth and development desired.

Conclusions

Analysis of the domain name registration process shows that the seemingly aspatial Internet often masks a complex geographic realm. Cyberspace is firmly rooted in the existing institutional framework and, despite appearances, is very much shaped by the underlying geographies of law politics and infrastructure. Two issues that emerged as significant in this investigation are that the choice and selection of domain names are based in the role of law, and in the use of country-level domain names to find alternative WWW addresses and a possible solution to the dot com problem. In both cases, geography reasserts itself as a significant element in the management and operation of cyberspace.

The domain name system is evolving, as naming conventions and legal issues are examined and tested. In May 2000, *Network News* (2000) reported that the European Commission had approved the use of a European domain name, .eu, which ICANN will consider at its July 2000 meeting. ICANN's Working Group C on domain names made a series of recommendations in April 2000 to extend the range of generic top-level domain names. Specifically:

> "Working Group C has reached rough consensus on two issues. The first is that ICANN should add new gTLDs to the root. The second is that ICANN should begin the deployment of new gTLDs with an initial rollout of six to ten new gTLDs, followed by an evaluation period" (ICANN, 2000).

The growing significance of domain names is formalized and set in law as electronic commerce grows. Domain names can be seen by using a real estate metaphor that transfers the significance of a physical location to an electronic presence. A second geographic element for domain names is shaped by the legal system and its treatment of intellectual property and web site content. Online identity and intellectual property issues pit legal systems and nations against each other as order is sought and imposed in cyberspace.

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