#### A NIE Analysis of the governance of the .au Domain Name Space

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## Abstract

This paper examines the governance of the .au (Australian) country-code Top-Level Domain since 1986. After a relatively non-controversial start, this period involved a significant increase in the awareness by stakeholders of the increasing value of the .au domain (as a resource), which resulted in a protracted battle over control of the distribution of power and wealth inherent in the ability to influence / control policy over that resource. This paper analyses the structure of the .au domain industry, applying transaction cost analysis to explain institutional change in the .au policy-control body and highlights how government preference for "buying in regulation" rather than "making" it underpinned elements of that institutional change. This paper provides further (admittedly incomplete) evidence to support the claimed power of NIE to explain events within society.

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## Introduction

Perhaps the greatest achievement of the Internet has been the myriad ways in which it has reduced transaction costs<sup>1</sup> throughout society, facilitating social connections, economic growth and the development of new business models, engagement with the "long tail" and increased civic engagement. Although not couched in the language of NIE, the domain name system (DNS) was originally created to reduce transaction costs for end-users arising out of network effects due to the growth of the ARPANET (which eventually expanded to become known as the Internet). As a distributed, hierarchical database, the DNS controlled efficient access to a resource (content hosted on servers connected to the Internet), the full technological, economic, social and political value of which was not fully recognised at the time of its creation in the 1980's.

This paper examines the .au domain name space, which is only a small facet of the complex story of the DNS, and forms part of a larger case study in which NIE tools are being applied to better understand the institutional creation, institutional change, governance and regulation of the .au domain over the last two decades.

## **Technology Background**

To communicate with each other over a network, computers need to know the "address" of the other computers<sup>2</sup>. Consequently, as more computers are connected and the network grows, the addressing system quickly becomes complex. From 1971 until 1984, connections on the ARPANET relied upon knowing the numerical address of the computer to which a

<sup>&</sup>lt;sup>1</sup> North, D.C., (1990), Institutions, Institutional Change and Economic Performance, Cambridge University Press, Cambridge.

<sup>&</sup>lt;sup>2</sup> See, for example, RFC 1086, (1988), ISO-TP0 bridge between TCP and X.25 available at: <u>http://rfc.sunsite.dk/rfc/rfc1086.html</u> (last accessed 30 April 2007).

user wished to connect<sup>3</sup>. The Stanford Research Institute allocated numerical addresses on the ARPANET and maintained a listing of those addresses in a computer file known as "hosts.txt".

## **Technology provokes institutional change**

By 1981, growth in the number of computers connected to the ARPANET meant that this centralised administrative system was no longer able to efficiently handle the volume of requests for addresses, nor was it able to update and distribute its hosts.txt file rapidly enough for ARPANET users to be able to be able to consistently connect to all nodes on the ARPANET<sup>4</sup>. Attempts by network engineers in 1982 and 1983 to gradually develop a distributed hierarchical database to replace the inefficient hosts.txt file can be seen in Requests for Comment ("RFCs") 814, 819, 881, 882 and 883<sup>5</sup>. These concepts were further refined in 1984 and 1985 and implemented in 1986 by Jon Postel, the Project Director of the Internet Concepts Project at the University of Southern California's Information Sciences Institute which was operating under a funding contract with agencies of the federal government of the United States of America<sup>6</sup>.

<sup>&</sup>lt;sup>3</sup> RFC790, (1981) Assigned Numbers, available at: <u>http://rfc.sunsite.dk/rfc/rfc790.html</u> (last accessed 30 April 2007).

<sup>&</sup>lt;sup>4</sup> RFC 799, (1981), Internet Domain Names, available at: http://rfc.sunsite.dk/rfc/rfc799.html (last accessed 30

April 2007). <sup>5</sup> RFC 814, (1982), Names, Addresses, Ports and Routers, available at: <u>http://rfc.sunsite.dk/rfc/rfc814.html</u> (last available at: http://rfc.sunsite.dk/rfc/rfc819.html (last accessed 30 April 2007). RFC 881, (1983), Domain Name Plans and Schedule, available at: http://rfc.sunsite.dk/rfc/rfc881.html (last accessed 30 April 2007). RFC 882, (1983), Domain Names: Concepts and Facilities, available at: http://rfc.sunsite.dk/rfc/rfc882.html (last accessed 30 April 2007). RFC 883, (1983), Domain Names: Implementation and Specification, available at: http://rfc.sunsite.dk/rfc/rfc883.html (last accessed 30 April 2007).

<sup>&</sup>lt;sup>6</sup> See, for example, RFC 921, (1984), Domain Name System Implementation Schedule, available at: http://rfc.sunsite.dk/rfc/rfc921.html (last accessed 30 April 2007). See also RFC 1034 (1987), Domain Name Concepts and Facilities, available at: http://rfc.sunsite.dk/rfc/rfc1034.html (last accessed 30 April 2007).

Domain names are a virtual resource and whilst not particularly scarce in and of themselves in a technical sense, the use of names as identifiers in the real world means that some domain names have greater meaning to humans (and hence greater value) than others<sup>7</sup>. Consequently, highly human-identifiable domain names (eg <u>www.cocacola.com</u>) exhibit features of scarcity, just like other resources.

The advantage of a distributed hierarchical database structure of domain names for storing and communicating computer addresses included<sup>8</sup>:

- 1. no single point of failure;
- 2. the ability to scale rapidly along with the growth of the network;
- 3. reduced bandwidth congestion for the host of the root zone file;
- 4. reduced administrative delays in adding and removing entries from the databases; and,
- the ability to maintain different policies most appropriate for different communities of network users.

The domain name system involved a series of roles<sup>9</sup>: a policy-setting body for that domain ("the Responsible Person"); the registry operator (who have a monopoly on maintaining and updating the database of names and IP addresses for that particular domain); registrars (who sell licences over domain names) and registrants (end-users who wish to operate a website and therefore purchase a licence over a domain name). Some domains merge the roles of the policy setting body, registry and registrar into one organisation<sup>10</sup>. Others maintain a strict

<sup>&</sup>lt;sup>7</sup> RFC 921, (1984), Domain Name System Implementation Schedule, available at: <u>http://rfc.sunsite.dk/rfc/rfc921.html</u> (last accessed 30 April 2007).

<sup>&</sup>lt;sup>8</sup> RFC 882, (1983), Domain Names: Concepts and Facilities, available at: <u>http://rfc.sunsite.dk/rfc/rfc882.html</u> (last accessed 30 April 2007).

 <sup>&</sup>lt;sup>9</sup> Telnic, (2007), FAQs, available at: <u>http://www.nic.tel/faq.html</u> (last accessed 30 April 2007).
 <sup>10</sup> See, for example: the .uk domain discussed in: Nominet, (2007), History of Nominet, available at:

http://www.nominet.org.uk/about/history/ (last accessed 30 August 2007).

separation of roles. Registrars may be affiliated with more than one Registry and therefore be governed by the rules set by more than one policy-setting body<sup>11</sup>.

In 1986, Jon Postel created a series of Country-Code Top-Level Domains ("ccTLD") based on the list of countries named in ISO-3166 (Postel did deviate occasionally from that listing, eg: implementing .uk (United Kingdom) instead of the ISO-3166 listing .gb (for Great Britain))<sup>12</sup>. These ccTLDs represented entries within the distributed, hierarchical root domain database file he had jointly created and de facto controlled.

The fourth ccTLD Postel ever delegated was the .au domain which represented the Australian component of the root domain<sup>13</sup>. In March 1986, upon receiving a request from Robert Elz, a computer science and law graduate employed as a technical officer by the Department of Computer Science at the University of Melbourne, Australia, Postel delegated the .au ccTLD to Elz<sup>14</sup>.

## **Uncertainty over Property Rights**

For the transfer of rights over a resource connected to a country, this delegation was procedurally informal, passing "from one wizard to another"; it involved no treaty, no written contract, no pomp or circumstance and no national government sanction (indeed, at the time, the Australian government officially could not support the DNS as it was sponsoring

<sup>&</sup>lt;sup>11</sup> See, for example: Melbourne IT (2007), Domain Names, available at:

http://www.melbourneit.com.au/cc/domainname/index (last accessed 30 April 2007). <sup>12</sup> See fn5 in RFC 920, (1987), Domain Requirements, available at: <u>http://rfc.sunsite.dk/rfc/rfc920.html</u> (last accessed 30 April 2007).

<sup>&</sup>lt;sup>13</sup> World Wide Alliance of Top Level Domain Names, (2002), History of the Internet: ccTLDs in Chronological Order of Top Level Domain Creation at the InterNIC, available at:

http://www.ccwhois.org/ccwhois/cctld/ccTLDs-by-date.html (last accessed 30 April 2007).

<sup>&</sup>lt;sup>14</sup> IANA, (2001), IANA Report on the Request for Re-Delegation of the .au Domain, available at: http://www.iana.org/reports/au-report-31aug01.htm (last accessed 30 April 2007).

development of a competing "Internet", using the X.400 and OSI protocols<sup>15</sup>). The informality of the delegation was also arguably consistent with the relatively antiestablishment cultural norms within the community of graduate students, academics and computer scientists who had developed the ARPANET and the Internet and were its only active stakeholders at that point in time.

Due to the hierarchical nature of the DNS, the bundle of rights and obligations delegated by Postel to Elz (as a "Responsible Person<sup>16</sup>") included<sup>17</sup>:

- the exclusive right of Elz to notify Postel of the IP address/es of the official .au
  nameserver/s controlled by Elz (which Elz used to host a text-file database of the IP
  addresses of the nameservers that, in turn, hosted second-level .au domain databases);
- the corollary commitment by Postel to instruct the Stanford Research Institute ("SRI") to only include a reference to that IP address within the .au component of the root zone database file (which was under Postel's policy control with SRI maintaining the hardware) in California;
- the commitment by Postel to propagate that root zone file to other mirror root servers and to use its information to provide responses to domain-lookup queries sent by Internet user's computers;
- the corollary commitment by Elz to reliably operate and update that .au nameserver and to ensure it responded to look-up queries from Internet users computers;
- 5) the commitment by Elz to promote the .au ccTLD to Australian Internet users; to facilitate registrations of sub-domains within the .au ccTLD under policies to be established by Elz, and to respond to problems caused by mis-configured domains and sub-domains.

<sup>&</sup>lt;sup>15</sup> Personal email from John Klensin to the author, October 2005

<sup>&</sup>lt;sup>16</sup> RFC 881.

<sup>&</sup>lt;sup>17</sup> RFCs 881, 882, 897 and 920.

Although Postel (given his experience and position within the USC-ISI) was clearly cognisant that technology projects were usually regulated by contracts governed by Californian (or US federal) law, as discussed above, there is no evidence to show that Postel and Elz entered into a written contract setting out the rights and obligations discussed above<sup>18</sup>. Indeed, the Auditor-General of Victoria noted "this delegation had no statutory or clear basis for legal enforcement and a legal document did not exist"<sup>19</sup>. Despite this lack of certainty, under Californian law it is possible to mount an argument that an "implied in fact" contract was created which bound the parties (USC-ISI with Postel acting on their behalf as their agent, and Elz) to their obligations $^{20}$ .

This uncertainty over property rights extended to the rights granted to registrants of domain names in the .au space (who were not granted outright title to their domain names, instead only being granted a two-year "licence" to specify the IP address of the computer they controlled which would be linked to that domain name)<sup>21</sup>. This control right is the vital right within the domain name space, because when Internet users type in to their browsers the name of a website (eg: www.mq.edu.au), what is technically occurring in the background is the sending of a request from their computer to the their ISP's nameserver to see whether it

<sup>&</sup>lt;sup>18</sup> Touch, J., (1997), Curriculum Vitae of Jonathon B. Postel, available at: <u>http://www.postel.org/postel-cv-</u> <u>1997.txt</u> (last accessed 30 August 2007).
 <sup>19</sup> Auditor General of Victoria, (2000), Privatisation of MelbourneIT Ltd, para 3.1.108, available at:

http://www.audit.vic.gov.au/old/mp2000/mp00doe.htm#3.1.108 (last accessed 30 April 2007).

<sup>&</sup>lt;sup>20</sup> This analysis is too lengthy to discuss within this paper. See for example: Main Line Pictures v Basinger, Los Angeles Superior Court Case No. BC03180 (unreported); on appeal No. B077509, 1994 WL 814244 (Cal. Ct. App. Sept. 22, 1994); Dossick H.J., (1998), Shake On It: Oral and Unsigned Contracts in the Film Industry, Los Angeles Daily Journal, 27 July 1998, p7; Smith, R., (2003), Why Hollywood Should Kiss the Handshake Deal Goodbye, Vol. 23, Loyola of Los Angeles Law Review, p503.

<sup>&</sup>lt;sup>21</sup> See for example, MelbourneIT, (2007), Terms and Conditions for .au Domain Names, clause 16, which states: "The parties agree that neither Melbourne IT nor the Licensee has any right of ownership in a registered Domain Name.", available at: http://www.melbourneit.com.au/policies/aupolicy.php (last accessed 30 April 2007).

has a record of the IP address associated with that domain name<sup>22</sup>. If the user's ISP does not, it will ask an Internet root server for information on the IP address of the computers controlling the .au domain. After receiving that information, the user's computer will forward its request for information on the IP addresses of the computer controlling the .edu.au to the .au domain name server. After receiving back the answer to that request, the user's computer will then send a request to the .edu.au name server for the IP address of the .mq.edu.au web server. Having received that information, the user's computer will request data from the .mq.edu.au webserver and, upon receiving that data, the user will see the homepage of Macquarie University's website.

From this technical description, it can be seen that the critical property right associated with the registration of licence over a domain name is the exclusive right to specify which IP address will be listed as connected to that domain name within the domain name server's database. The consequence of changing the IP address linked to a particular domain name within the name server database is that, after typing in the domain name, Internet end users' receive information from a different computer, and if those computers are under the control of different entities, different website information. Data from the previous website effectively disappears from end users unless it is found by typing in the specific IP-address, or through using a search engine such as Google.

The rights a "Responsible Person" possesses when managing a domain name space includes many non-technical rights, which have serious legal, political, social and economic consequences. For example, the "Responsible Person" has the ability to determine<sup>23</sup>:

 <sup>&</sup>lt;sup>22</sup> See the descriptions set out in RFC 1035, (1987), Domain Names: Implementation and Specification, available at: <u>http://rfc.sunsite.dk/rfc/rfc1035.html</u> (last accessed 30 April 2007).
 <sup>23</sup> ICANN, (2001), ccTLD Sponsorship Agreement (.au), available at:

http://www.icann.org/cctlds/au/sponsorship-agmt-25oct01.htm (last accessed 30 April 2007).

- the types of second-level domains available within a TLD;
- the rate at which new second-level domains are added;
- the requirements for registration of a third-level domain;
- prohibitions or censorship on the registration of particular domain names;
- whether the rights of trade mark holders should be privileged;
- the grounds on which registrations may be terminated;
- the price charged for registration; and
- how disputes over who has the valid right to a domain name are resolved.

These are not technical issues, but regulatory issues. The structures created by the "Responsible Person" to facilitate stakeholder participation, committee membership and voting structures, funding mechanisms, etc are not technical issues, but governance issues.

Significant disputes do not appear to have arisen during the first decade of Elz's management of the .au domain name space<sup>24</sup>. Amidst relatively low, but growing, demand for .au domain names, he introduced a series of policies to facilitate registration of third-level domain names. Without public consultation, Elz created the following second-level domains within the .au domain<sup>25</sup>:

- .asn.au (for Australian associations, political parties, unions, clubs, etc);
- .com.au (for Australian corporations and other business entities);
- .conf.au (for short term websites for conferences held in Australia);
- .csiro.au (for the Australian Commonwealth Scientific and Industrial Research Organisation);
- .edu.au (for Australian educational institutions);

<sup>&</sup>lt;sup>24</sup> IANA, (2001), Report on the Request for Re-Delegation of the .au ccTLD, available at: <u>http://www.iana.org/reports/au-report-31aug01.htm</u> (last accessed 30 April 2007).

<sup>&</sup>lt;sup>25</sup> Caslon Analytics, (2006), auDA Profile, available at: <u>http://www.caslon.com.au/audaprofile1.htm</u> (last accessed 30 April 2007).

- .gov.au (for Australian government agencies at all levels);
- .id.au (for Australian individuals);
- .info.au (for general information about Australia);
- .net.au (for Australian commercial entities related to the Internet, such as ISPs);
- .org.au (for Australian non-profit organisations, such as charities);
- .oz.au (for domains which originally existed on the internal Australian messaging system .oz)
- .telememo.au (for mapping over Australian X.400 network addresses).

Once the value of the .au domain name space became recognised, the higher-level norms of the political party in power at the federal level heavily influenced its institutional form. In 1996, the conservative Liberal Party was elected to power with a platform which included promoting self-regulation as a vehicle for solving regulatory problems<sup>26</sup>, especially for the Internet<sup>27</sup>. The opposition political party does not appear to have shared that norm, preferring (at least at that time) direct government regulation of the .au domain name space<sup>28</sup>. This higher-level political-cultural norm re-inforced the technical-cultural norm amongst the earliest adopters of the Internet in favour of self-regulation<sup>29</sup>. The Australian government slightly back-tracked from its expressed desire for self-regulation in 2000, when it created a

 <sup>&</sup>lt;sup>26</sup> Howard, John, MP, (1997), Statement by the Prime Minister: More Time for Business, p77, available at <a href="http://www.daf.gov.au/reports/more\_time\_for\_business.pdf">http://www.daf.gov.au/reports/more\_time\_for\_business.pdf</a> (last accessed 19 February 2006).
 <sup>27</sup> Hughes, M., (1998), Top Ten Issues for EC Summit in Canberra, email posted to

http://mailman.anu.edu.au/pipermail/link/1998-March/032174.html (last accessed 30 April 2007). <sup>28</sup> Carli, C., Labor Spokesperson for Information Technology & Multimedia (1998), Response to NOIE Discussion Paper on a Self-Regulatory Regime for the .au Domain Name Space, archived at: <u>http://web.archive.org/web/19991012215345/http://www.noie.gov.au/dns/aucommen.html</u> (last accessed 30 April 2007).

<sup>&</sup>lt;sup>29</sup>See, for example, Barlow, J., (1996), A Declaration of the Independence of Cyberspace, available at: <u>http://homes.eff.org/~barlow/Declaration-Final.html</u> (last accessed 30 April 2007).

co-regulatory legislative regime to facilitate government intervention in the event of the failure of the self-regulatory regime for the .au domain<sup>30</sup>.

The domain name space exhibits features of Margolis and Liebowitz's analysis of path dependence, as it arises out of many "seemingly insignificant" decisions which have large negative consequences over time<sup>31</sup>. Whilst it would not have been possible to determine, in 1986, which of those decisions would have been better avoided, the cost of changing those decisions (once implemented in a network as popular as the Internet) can be inordinately large<sup>32</sup>. At the time of the decision, there may have been rational reasons for making what turned out to be a sub-optimal decision – particularly if the decision maker is unaware of the progressively increasing returns available from alternatives (i.e. that the decision maker is boundedly rational).

For example, in contrast to the open registration policies favoured by Postel in the .com domain (anyone could register any domain and disputes over ownership would be resolved later<sup>33</sup>), Elz placed relatively strict restrictions on who could register particular .com.au domains, which was by far the most popular second-level domain amongst applicants<sup>34</sup>. Elz required that the domain name be identical or a derivative of the registered business name or company name of the applicant and each applicant could only register a single domain name.

<sup>31</sup> Margolis, S. and Liebowitz, S., (1997), An Overview of Path Dependence, available at: <u>http://www2.ncsu.edu/ncsu/grad/econ\_grad\_pgm/working\_papers/gmu6.pdf</u> (last accessed 16 February 2007), at pp1-2.

<sup>&</sup>lt;sup>30</sup> Telecommunications Legislation Amendment Act, Act 152 of 2000, available at: <u>http://www.austlii.edu.au/au/legis/cth/num\_act/tlaa2000n1522000433/</u> (last accessed 30 April 2007).

<sup>&</sup>lt;sup>32</sup> Margolis, S. and Liebowitz, S., (1997), at p5.

<sup>&</sup>lt;sup>33</sup> See for example, Register.com, (2007), Master Services Agreement, clause 1.d, available at: <u>http://www.register.com/retail/policy/servicesagreement.rcmx#1</u> (last accessed 30 April 2007).

<sup>&</sup>lt;sup>34</sup> See Schedule C to auDA's 2005 Domain Name Eligibility and Allocation Policy Rules for the open 2LDs, available at: <u>http://www.auda.org.au/policies/auda-2005-01/</u> (last accessed 30 April 2007).

Postel permitted .com domains to be re-sold whilst Elz prohibited this from occurring for .com.au domains<sup>35</sup>.

From a transaction cost analysis, it is clear that the .com.au registration rules imposed by Elz created much higher up-front transaction costs for applicants than the .com registration rules imposed by Postel. For the first decade of the operation of the DNS (where there were comparatively few disputes over the ownership of domain names)<sup>36</sup>, Postel's policy appears far superior to Elz's. The total number applications in the .com.au domain were lower than that of the .com domain, which is not surprising given the global nature of the .com domain. Given the significant positive economies of scale present when operating a registry, it is also unsurprising that the price paid by applicants to register a .com domain name was significantly lower than the price paid to register a .com.au domain<sup>37</sup>.

Whilst the above factors may appear to suggest that the Postel-model was optimal as compared to the Elz-model, a broader and longer-term transaction cost analysis suggests that this issue is more complex than it appears. Although up-front registration costs were higher in the .com.au domain, the rate of domain name disputes per 100 000 domains was significantly lower than in the .com domain. The average cost for each of the parties to a contested domain name dispute is often over \$A50 000 (once filing, legal advice and lost executive time is included)<sup>38</sup>. Even in an uncontested domain name dispute, the plaintiff commonly incurs \$30-\$50 000 in legal costs. Thus, the relatively low differential cost of facilitating easy

<sup>&</sup>lt;sup>35</sup> See auDA's 2005 Policy: Clarification of Domain Name Licence – Prohibition on Sale of Domain Names, available at: <u>http://www.auda.org.au/policies/auda-2005-05/</u> (last accessed 30 April 2007).

 <sup>&</sup>lt;sup>36</sup> The UDRP was only introduced in 1999. See ICANN, (2002) Implementation Schedule for Uniform Dispute Resolution Policy, available at: <u>http://www.icann.org/udrp/udrp-schedule.htm</u> (last accessed 30 April 2007).
 <sup>37</sup> GoDaddy (<u>http://www.godaddy.com</u>) offers registrations of .com domains for \$US8.95 per year. AsiaRegistry http://www.asiaregistry.com/domains/domains\_AU.html) offers registrations of .com.au domains for \$US12.45 per year.

<sup>&</sup>lt;sup>38</sup> See analysis in Selby, J., (2006), Submission to DCITA Inquiry into the .au Domain, available at: <u>http://www.dcita.gov.au/ data/assets/pdf file/55836/John Selby - Macquarie University.pdf</u>, at p4 (last accessed 30 April 2007).

registration must be weighed up against the much higher cost of resolving additional disputes. Hence, whilst Postel's model was optimal initially, arguably its overall benefits did not scale as rapidly as in the .com.au domain once the costs of resolving a higher rate .com disputes was taken into account. Even once this issue is identified, path dependency suggests that it is not realistic to now attempt to implement Elz's model in the .com space – there is no consistently recognised global corporate identifier for registrants and the powerful lobby of trade mark attorneys would be highly likely to resist such a change.

It is interesting to compare the distributional benefits of the Elz- and Postel-models. The Elzmodel distributes benefits to Internet users by providing them greater certainty and predictability in relation to .com.au domains they visit, whilst slightly disadvantaging legitimate .com.au domain registrants through slightly higher up-front costs and severely disadvantaging .com.au cyber-squatters. The Postel-model significantly benefits intellectual property attorneys who resolve domain name disputes and cybersquatters who are able to arbitrage .com domains to legitimate rights holders for slightly less than the cost of resolving the dispute, whilst providing slight benefits to .com domain registrants through lower upfront costs. The Postel-model disadvantages Internet users through a reduced degree of certainty and predicability in relation to the .com domains they visit.

Given the non-commercial nature and relatively low volume of third-level .au domain name registrations in the late 1980's and early 1990's, it is not surprising that Elz personally managed all facets of the registry and the registration process. Elz relinquished some elements of his absolute control in 1990 when he delegated responsibility for the management of the .edu.au and .gov.au second-level domains to Geoff Huston, who was at the time an academic at the ANU.

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#### Growth Sometimes Reveals Weaknesses in an Institution

There were some complaints by entities who had been unsuccessful when seeking to register .au domain names that the policies implemented by Elz were difficult to find and hard to follow. When Elz went on holidays, his appointed fill-in did not apply those policies with the same consistency as Elz, causing further minor uproar as a small number of domain name registrations were permitted which had previously been rejected by Elz<sup>39</sup>.

As Elz found the process of handling the ever-growing number of applications for .au domain names (particularly .com.au domains) tiresome, he granted (after considering a series of unsolicited applications from third parties) a five-year non-exclusive license to handle the administrative work of registering .com.au domains to a wholly-owned subsidiary, MelbourneIT Pty Ltd, of his employer, the University of Melbourne<sup>40</sup>. MelbourneIT then began to charge for Internet users for registering .com.au domain names, generating millions of dollars in the process. As Elz did not grant any other licenses, MelbourneIT's license constituted a de facto monopoly on registrations for the .com.au domain.

At the height of the dot-com boom/bubble in 1999, the University of Melbourne listed Melbourne IT on the Australian Stock Exchange<sup>41</sup>. This listing was controversial as the stockbroker pressured the university to accept a relatively low valuation for the company and the stockbroker then sold the vast majority of the shares \$A2.20 each to its favoured private-and institutional- clients. When the stock price closed at \$A7.90 on the opening day, the University of Melbourne received an up-front profit of ~\$A80 million dollars for its 13-years

<sup>&</sup>lt;sup>39</sup> Lance. K., (1998) The Domain Name System: Engineering vs Economics, available at:

http://www.anu.edu.au/people/Roger.Clarke/II/LanceSep98.html (last accessed 10 November 2005). <sup>40</sup> Caslon Analytics, auDA Profile, available at: <u>http://www.caslon.com.au/audaprofile2.htm</u> (last accessed 30 April 2007).

<sup>&</sup>lt;sup>41</sup> Auditor-General of Victoria (2001), Privatisation of MelbourneIT Ltd, available at: <u>http://www.audit.vic.gov.au/old/mp2000/mp00doe.htm#3.1.10</u> (last accessed 30 April 2007).

of involvement with the .au domain name space. If they sold on the opening day, the stockbroker's favoured private- and institutional-clients received up to \$200 million in profit for a 3-month investment. The Auditor-General of the State of Victoria subsequently investigated the process by which MelbourneIT was floated and made a series of recommendations to avoid such results in the future.

As a publicly-listed company, MelbourneIT was under significant investor pressure to increase its revenues to support its rising stock price (which reached a peak of \$A17 several months after the initial listing, before falling precipitously to \$A0.19 during the "dot-com bust"). Elz's decidedly non-commercial attitudes<sup>42</sup> and policies<sup>43</sup> constrained MelbourneIT's ability to raise its revenues. Consequently, the privatised MelbourneIT sought to ferment institutional change and entered into negotiations with a self-appointed group of Internet users, lawyers and representatives of trade mark holders who were seeking to take control of the .au domain from Elz<sup>44</sup>.

## New Stakeholders Foster Institutional Change by Challenging Pre-existing Norms

Lemley argues that norms develop mostly within static communities with homogeneous interests (because they take a significant period of time to emerge and to be internalised by the participants in that community). Norms (especially those without legal sanction) are also easier to enforce within those static communities. Increased heterogeneity of interests within the growing community will reduce the likelihood of consensus and community of interest,

<sup>&</sup>lt;sup>42</sup> Crawford, K., (1999), Name Your Price – A Net God Says Naught, Sydney Morning Herald, 18 December 1999: Elz refused to take a single share in the float of MelbourneIT, being reported as saying "he doesn't believe it's appropriate for national administrators like himself to be financially rewarded" and "I've got no money, no assets. I've no interest in money".

<sup>&</sup>lt;sup>43</sup> Each company/business could only register one .au domain and that had to match their company name or registered business name.

<sup>&</sup>lt;sup>44</sup> Caslon Analytics, (2005), auDA Profile, available at: <u>http://www.caslon.com.au/audaprofile2.htm</u> (last accessed 30 April 2007). Admittedly, MelbourneIt did later write to ICANN in support of Elz's right to manage the .au domain name space: Kloeden, A., (2001) Letter from Kloeden to Lynn, available at: http://www.iana.org/cctld/au/kloeden-to-lynn-03aug01.htm (last accessed 30 April 2007).

further weakening previously powerful norms. The arrival of large numbers of new members to the community who have not already internalised the norms pre-existing within that community will create tension and potentially cause such norms to collapse due to non-observance<sup>45</sup>. As the community grows in size, informal norms are likely to become progressively more formalised in an attempt to retain their effectiveness (eg by being encoded into laws or even software code<sup>46</sup>). If the norms of the small community imposed negative externalities on non-members of the community, those non-members may be motivated to seek redress through membership of the community (eg "no taxation without representation"), thus threatening the effectiveness of those norms which first defined the community.

There is significant evidence that a second technological change predicated a crisis of norm which led to further significant institutional change within the domain name system and the Internet. The advent in 1996 of the hyper-text transfer protocol (http) and the hyper-text markup language (html) spurred significant institutional change within the norms of the domain name space. These protocols simplified the creation and accessing of information on the World Wide Web portion of the Internet, encouraging adoption of the Internet by the mass public, in what colloquially became known as the "dot-com boom"<sup>47</sup>.

Despite attempts by pre-existing technically-oriented stakeholders to encourage adoption of their culture by newcomers to the Internet (eg: non-commercial focus, Netiquette<sup>48</sup>), the rapid

<sup>&</sup>lt;sup>45</sup> Lemley, M., (1999), The Law and Economics of Internet Norms, Berkeley Program in Law and Economics Working Paper Series, Paper No. 132, available at: <u>http://repositories.cdlib.org/blewp/art132</u> (last accessed 18 February 2007), at pp12-24.

<sup>&</sup>lt;sup>46</sup> Lemley, M., (1999), at pp37-8.

<sup>&</sup>lt;sup>47</sup> RFC 1866, Hypertext Markup Language 2.0, available at: <u>http://www.faqs.org/rfcs/rfc1866.html</u> (last accessed 30 April 2007).

<sup>&</sup>lt;sup>48</sup> See, for example, Shea, V., (1994), Netiquette, available at: <u>http://www.amazon.com/Netiquette-Virginia-Shea/dp/0963702513/ref=sr 11 1/103-4273664-0677425?ie=UTF8&qid=1177945839&sr=11-1</u> (last accessed 30 April 2007).

influx of these new stakeholders eventually led to changes to the culture of the users of the Internet and the emergence of significant negative externalities (spam, cyber-crime, cybersquatting, etc) and attempts by those newcomers to form themselves into groups which could claim to act as a variety of stakeholders within the pre-existing institutions of the Internet.

A group of these stakeholders engaged in an attempt at involuntary institutional change in 1996-8 when they tried to form a self-regulatory body, the Australian Domain Name Authority ("ADNA"), to seize control of the right to regulate the .au domain name space from Robert Elz<sup>49</sup>. This attempt failed because it did not attract sufficient support from a number of key stakeholders (the Australian Vice-Chancellor's Committee, network engineers within the Internet Society of Australia, and representatives of trade mark interests)<sup>50</sup>. ADNA was also unable to attract substantial financial support from stakeholders with deep pockets, facing situations where it was unable to afford its own legal bills<sup>51</sup>. With neither resources nor broad stakeholder support, it is not surprising that ADNA was unable to achieve its goals.

In 1998, out of the ashes (literally) of ADNA arose a second attempt at institutional change, the .au Domain Authority ("auDA")<sup>52</sup>. It is interesting to contrast the ability of ADNA and auDA to attract stakeholder support. auDA's policies provided enhanced support for intellectual property rights holders as compared to ADNA's. Timing was also critically important in auDA's relative success, as ADNA had been forced to deal with a critical stakeholder, MelbourneIT, whilst it was still owned by the University of Melbourne, a public

<sup>&</sup>lt;sup>49</sup> Caslon Analytics, (2005), auDA Profile, available at: <u>http://www.caslon.com.au/audaprofile2.htm</u> (last accessed 30 April 2007).

<sup>&</sup>lt;sup>50</sup> See discussion in Lance, K, (1998), The Domain Name System: Engineering vs Economics, available at: http://www.anu.edu.au/people/Roger.Clarke/II/LanceSep98.html (last accessed 25 November 2005). <sup>1</sup> ADNA, 1998, ADNA Board Meeting, January 1998, archived at:

http://web.archive.org/web/20000817054058/http://www.auda.org.au/archive/adna/Minutes/January1998.html (last accessed 30 April 2007). <sup>52</sup> Ibid.

body. By the time of auDA's engagement with MelbourneIT, it had been floated on the stock market and was under private-sector management. Consequently, auDA was able to negotiate a loan from MelbourneIT, which provided critical financial resources to auDA that ADNA had lacked<sup>53</sup>. Greater engagement with the federal government also facilitated auDA's success: the National Office of the Information Economy ("NOIE") hosted meetings for auDA and provided auDA with the imprimatur of Australian federal government support. The then head of NOIE, Dr Paul Twomey, later went on to found the Government Advisory Council ("GAC") within ICANN and in 2003 was appointed as the CEO of ICANN<sup>54</sup>.

# Entrepreneurs<sup>55</sup> facilitate Institutional Change

Dr Twomey's role in NOIE and in the GAC was critical to the success of auDA in achieving institutional change over the protests of Elz. Whilst Elz had transferred some policy authority to auDA in 1999 (over the .com.au domain), he had refused to transfer his right to manage the overall policy of the .au ccTLD. auDA negotiated with NOIE, and through a forum-shifting strategy<sup>56</sup>, had the GAC recommend<sup>57</sup> to ICANN a policy which would conveniently permit ICANN to unilaterally revoke the right to manage a ccTLD in certain circumstances (including on the request of a national government). In December 2000, the Australian government then wrote to ICANN requesting the re-delegation of the right to manage the .au domain from Elz to auDA<sup>58</sup>.

http://www.icann.org/committees/gac/gac-cctldprinciples-23feb00.htm (last accessed 30 April 2007). <sup>58</sup> Altson, R., (2001), Letter from Senator Richard Alston to Stuart Lynn, available at:

<sup>&</sup>lt;sup>53</sup> Evidence of auDA's need for transition funding is recorded in a board minute, available at: <u>http://www.auda.org.au/minutes/minutes-09042001/</u> (last accessed 30 April 2007).

<sup>&</sup>lt;sup>54</sup> ICANN, (2007), Biographical Data on Paul Twomey, available at: <u>http://www.icann.org/biog/twomey.htm</u> (last accessed 30 April 2007).

<sup>&</sup>lt;sup>55</sup> North, D.C., (1996), Economic Performance Through Time, in Alston, L., Eggertsson, T. and North, D., (eds), Empirical Studies in Institutional Change, Cambridge University Press, Cambridge, at 345-6.

 <sup>&</sup>lt;sup>56</sup> Crouch, C., et al (2005), Dialogue on 'Institutional Complementarity and Political Economy', Vol. 3, Socio-Economic Review, pp359-382. For a detailed discussion of forum-shifting as a strategy, see: Braithwaite, J. and Drahos, P., (2000), Global Business Regulation, Cambridge University Press, Cambridge, at pp564-577.
 <sup>57</sup> ICANN, (2000), Principles for Delegation and Administration of ccTLDs, available at:

http://www.iana.org/cctld/au/alston-to-lynn-04jul01.htm (last accessed 30 April 2007).

In June 2001, ICANN (using the nomenclature of IANA) exercised its de facto power to alter the entry within the root domain database, erasing the IP addresses of computers under Elz's control and substituting the IP addresses of computers under auDA's control. Consequently, auDA was effectively re-delegated the right to manage the .au ccTLD (granted on condition it sign an agreement binding itself to ICANN)<sup>59</sup>. There are certainly questions over whether ICANN had the legal right to unilaterally re-delegate the .au ccTLD over the objections of its Responsible Person, particularly when that Responsible Person had been praised by ICANN for the way in which he had managed the .au ccTLD<sup>60</sup>. Unfortunately, Elz was distinctly nonlitigious and his lack of resources meant that he was unable / uninterested in challenging the legitimacy of ICANN's redelegation of the .au ccTLD in the courts of California.

auDA then proceeded to introduce a series of new policies which distributed benefits towards a number of its stakeholders that had supported it<sup>61</sup>. Trade mark interests were rewarded by policy changes which permitted the registration of multiple domain names by a single entity and through the creation of the .auDRP which facilitated easier enforcement of trade marks against cybersquatters<sup>62</sup> (though Elz's prior policy of requiring a connection between company / business names and registrations applications for .com.au domain names meant that the trade mark owners did not need to resort to using the auDRP particularly often<sup>63</sup>).

<sup>&</sup>lt;sup>59</sup> ICANN, (2001), Second Report on Request for Redelegation of the .au Domain, available at: <u>http://www.iana.org/reports/au-report-19nov01.htm</u> (last accessed 30 April 2007).

<sup>&</sup>lt;sup>60</sup> These questions are beyond the scope of this paper. In a nutshell, this is an issue of the ability to unilaterally amend an implied in fact contract under Californian Law.

<sup>&</sup>lt;sup>61</sup> See generally, auDA, (2007), auDA Published Policies, available at: <u>http://www.auda.org.au/policies/policy-index/</u> (last accessed 30 April 2007).

<sup>&</sup>lt;sup>62</sup> auDA, (2002), .au Dispute Resolution Policy, available at: <u>http://www.auda.org.au/policies/auda-2002-22/</u> (last accessed 30 April 2007).

<sup>&</sup>lt;sup>63</sup> auDA (2007), .auDRP Proceedings Archive, available at: <u>http://www.auda.org.au/audrp/proceedings-archive/</u> (last accessed 30 April 2007).

Maintaining public records of the registered owners of domain names<sup>64</sup> (despite the introduction of national private sector privacy legislation in Australia) and refraining from introducing large numbers of new second-level domains<sup>65</sup> also favoured trade mark interests. Despite its initial funding of auDA, the dominant registrar, MelbourneIT, was not able to resist popular demands for the opening up of .com.au registrations to competition<sup>66</sup>.

## Conclusion

This paper has examined instances of institutional change within the .au domain name space. At first, technology and cultural norms re-inforced an informal, engineering-based institutional design. Further technological change lowered transaction costs which consequently facilitated the arrival of large numbers of new stakeholders (who refused to assimilate with pre-existing technical-cultural norms). Those new stakeholders then attempted to spur further institutional change in order to re-distribute benefits from the .au domain name space in their own favour.

The failed first attempt at institutional change, ADNA, highlights the importance of coordinating the resources of different stakeholders to achieve institutional change. A later attempt at institutional change, auDA, was successful because auDA's policies were designed to appeal to a broader range of particularly powerful stakeholders, and because several of those stakeholders formed an informal alliance with the Australian federal government (both sharing a common regulatory goal of self-regulation). Through a strategy of forum-shifting to ICANN, auDA was able to overcome the resistance of a previously powerful stakeholder

<sup>&</sup>lt;sup>64</sup> auDA (2002), WHOIS Policy, available at: <u>http://www.auda.org.au/policies/auda-2002-04/</u> (last accessed 30 April 2007).

<sup>&</sup>lt;sup>65</sup> auDA (2002), New Names Advisory Panel, available at: <u>http://www.auda.org.au/nnap/nnap-index/</u> (last accessed 30 April 2007).

<sup>&</sup>lt;sup>66</sup> auDA, (2001), Competition Model Advisory Panel, available at: <u>http://www.auda.org.au/cmap/cmap-index/</u> (last accessed 30 April 2007).

(Robert Elz) to achieve institutional change. Elz's lack of financial resources and the diminished relative power of engineering-based stakeholders who had previously supported him meant that he was unable to effectively counteract this forum-shifting strategy.

Uncertainty over property rights within the .au domain name space continues to cause friction amongst stakeholders, with some for-profit stakeholders (who operate registrar and re-seller businesses) seeking greater rights-certainty in order to re-distribute greater profits away from Internet users to themselves<sup>67</sup>. It debatable, however, whether the specific features of the domain name system imply that greater "certainty" of property rights is a net benefit to the Internet overall. Reduced reliability of the Internet for users seeking information online due to domain speculation, higher rates of cyber-squatting and the expense of resolving additional domain name disputes (symptoms perhaps akin to pollution of the domain name space) would arguably outweigh the narrowly distributed benefits of increased property rights over .au domains. As in many such situations though, it is recognised that as long as the benefits from greater property rights in .au domain names will flow to a concentrated group of stakeholders, this debate is likely to continue.

It is ultimately argued that through its (admittedly incomplete) analysis of the .au domain name space, this paper provides further evidence in support of the analytical power of New Institutional Economics to explain and critique real-world events.

<sup>&</sup>lt;sup>67</sup> Domain Industry, (2006), Submission to the DCITA Review of the Structure and Operation of the .au Internet domain, available at:

http://www.dcita.gov.au/ data/assets/pdf file/56614/Domain Industry FINAL WEB COPY.pdf (last accessed 30 April 2007).

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