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Linguistic diversity on the internet: Arabic, Chinese and Cyrillic script top-level domain names

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ABSTRACT

The deployment of Arabic, Chinese, and Cyrillic top-level domain names is explored in this research by analyzing technical and policy documents of the Internet Corporation for Assigned Names and Numbers (ICANN), as well as newspaper articles in the respective language regions. The tension between English uniformity at the root level of the Internet's domain names system, and language diversity in the global Internet community, has resulted in various technological solutions surrounding Arabic, Chinese, and Cyrillic language domain names. These standards and technological solutions ensure the security and stability of the Internet; however, they do not comprehensively address the linguistic diversity needs of the Internet. ICANN has been transforming into an international policy organization, yet its linguistic diversity policies appear disconnected from the diversity policies of the United Nations, and remain technically oriented. Linguistic diversity in relation to IDNs at this stage mostly focus on the language representation of major languages that are spoken in powerful nation-states, who use the rhetoric of national pride, local business branding, and inclusion of non-English speakers. This situation surfaces the tension between nation-states and the new international governing institution ICANN.

1. Introduction: International domain names

On the 40th anniversary of the Internet in November 2009, the Internet Corporation for Assigned Names and Numbers (ICANN), the governing body of the Internet, approved a new standard for fully internationalized domain names that use characters outside the range of the capital and small Roman letters from A to Z, the Arabic numbers of 0–9, and the hyphens as used in the English language (Cooper, 2008). Theoretically, international domain names consisting entirely of native character sets tend to benefit local companies and people who only speak their local languages and improve access to the Internet.

Domain names, textual names of web resources on the Internet, are descriptive markers with corresponding numerical addresses called Internet protocol (IP) addresses. When an end user types a web address or an email address, the domain names system (DNS) on the Internet resolves the entered web address into the IP address of the requested web host or email user addresses (Zook, 2000; see also Kleinwachter, 2000; Mueller, 2002; Síthigh, 2010). Special computers on the Internet, called name servers, resolve a web resource address (e.g. www.mol.mn) into an IP address (202.131.0.3 or an IP address

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block starting with 202.131). The reliability and security of the Internet depend on the effective resolution of domain names. Domain names consist of top-level domain names placed at the very end, and sub-domain names separated by dots. Top-level domain names are divided into generic top level domain names (gTLD) such as .com, .edu, .gov, .mil, .net, .org, .int, .asia, .africa and country code top level domain (ccTLD) names assigned to certain countries and territories such as .cn (China), .in (India), .ru (Russia) and .sa (Saudi Arabia). There were more than 233 million registrations across all top-level domains (TLDs) and 94.9 million registrations across all country code top-level domains (ccTLDs) in 2012 (Verisign, 2012). Prior to the initiation of fully internationalized top-level domain names (IDN ccTLDs) such as .رصم (Arab Emirates), .中国 (China), and .рф (Russia) in 2009, international characters were used in second-level (SLD) or subsequent level domains in both generic (gTLD) and country-code TLD (ccTLD) domain names, and they were referred to as international domain names (IDN) (Cooper, 2008; Xue, 2004).

Internationalized domain names have socio-economic, political and cultural entailments, and the initiation of ccTLD IDN raises a range of issues concerning competition policy, compatibility, name rights and trade protectionism. The full internationalization of domain names evokes also debates surrounding the US government's control of the DNS root, and the multilateral governance of the Internet (see Froomkin, 2011; Mueller, 2002; Síthigh, 2010). Furthermore, the initiation process of IDN ccTLDs shows the tension between the traditional state-centered international governance model and a new transnational institutional governance model personified by the ICANN regime. Even though nascent transnational networks of actors such as the Internet Engineering Task Force (IETF), regional Internet address registries, and ICANN have created radically different institutional arrangements than those of the traditional nation-state-centered international regime, the initiations of IDN in Arabic, Chinese and Cyrillic scripts have been spearheaded or backed up by the states in the respective countries.

This research analyzes the policy implementation of Arabic, Chinese and Cyrillic script domain names by ICANN and examines technical specification and security challenges in tandem with social and cultural issues of multilingual domain names. The paper evaluates ICANN policies by asking whether or not the initial goals of multilingualism are being achieved.

2. Review of the literature

2.1. Linguistic diversity and multilateral governance of the Internet

As the Internet becomes a mature medium, cultural diversity concerns endure. Diversity, “a rich multifaceted principle” has always been at the center of communications policy (Napoli, 2011). The rise of English as a lingua franca on the Internet is a reality (Hobsbawm, 1996; Warschaur, 2003), and despite the various efforts to integrate international languages and different character sets since the earliest stages, the extent to which the Internet is international “remains a matter of deep concern” (Braman, 2012, p. 28). Digital divide scholars have pointed out that the great discrepancy of language representation on the Internet is one of the contributing factors to the global digital divide (Baasanjav, 2012; DiMaggio, Hargittai, Celeste, & Shafer, 2004; Hamelink, 2000; Hargittai, 2003; Warschauer, 2003).

The United Nations (UN) sponsored a series of highly prominent international summits with the primary intent of addressing the global digital divide and to further develop a global vision pertaining to the information society, and these international summits have become known as the World Summits on Information Society (WSIS). WSIS to a certain extent mobilized and involved transnational advocacy groups, which promote global human rights and equality causes in policy making in relation to the development of global communication. The UN in Article 27 of *The Universal Declaration of Human Rights* (UDHR) states “everyone has a right to participate in the cultural life of the community, to enjoy the arts and to share in scientific advancement and its benefits” (UN, 1948). Theoretically, this statement protects the language rights of non-English speakers worldwide concerning their participation on the Internet. Many governments insisted on the need for multilateral, transparent, and democratic governance of the Internet based on the cause of language rights, and challenged the US centric and private-led governing of critical Internet resources (Mueller, 2010). That is how previously obscure technical issues concerning domain names systems (DNS) have become the center of WSIS debates. WSIS involvement in Internet governance resulted in the strengthening of the Governmental Advisory Committee (GAC) within ICANN, through which nation-states other than the U.S. increasingly influenced decision making (Froomkin, 2011; Mueller, 2010). As discussed in the section below, the multi-stakeholder arrangement of ICANN involving governments, private organizations, civil society institutions, and heterogeneous network actors around the globe led to its *sui generis* status (Mueller, 2010; Síthigh, 2010). This somewhat institutionally innovative ICANN regime has gotten into an uneasy relationship with the state-centered international regime when initiating IDNs. Furthermore, IDN initiation at the top level has brought unprecedented challenges to global media governance institutions that have been primarily concerned with the audiovisual exchange in transnational media space and telecommunications compatibility, standards, and resource allocations (see O’Siochru, Girard, & Mahan, 2002; Hamelink, 2000; Wilkinson, 2004).

2.2. International governance of IDNs: ICANN

The Internet Corporation for Assigned Names and Numbers (ICANN), a not-for-profit international organization, regulates domain name systems (DNS) and helps ensure the stability of the Internet. ICANN oversees the top-level domains, accredits domain name registries and registrars, registers and maintains the root zone of DNS, and establishes