Chapter 1
The Future of Internet Governance:
Modeling the Dynamics of the Internet Governance – A Bayesian Belief Network Approach

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ABSTRACT

The demographics of the Internet will experience significant changes in the near future. The developed countries are maximizing the number of citizens connected to the network while the developing countries, with the majority of the global population, increase their presence as the information technologies become more accessible. Leaders from the developed countries advocate the preservation of existing governance organizations regulating the network, such as the Internet Corporation for Assigned Names and Numbers (ICANN), on the basis of stability and security. New generations of Internet users are demanding new structures based on transparency, participation, accountability and legitimacy. In the absence of new agreements, uncoordinated changes to the existing governance structure could potentially affect the technical structure of the network and its functionality. Employing a Bayesian Belief Network model, this chapter analyzes the correlation between demographics, socio-economic factors and the feasibility of changes to the existing Internet governance structure. Favorable change conditions could initiate changes that could impact all Internet users. Results demonstrate that even when conditions for radical changes that could fragment the network are not present within the timeframe evaluated, conditions in support of changes increase with time, validating a need to modify the existing governance structure.

INTRODUCTION

The collection of connections that make the network that we know as the Internet has become an essential resource for our society and the world. As we depend more on the advances provided by new communication technologies, we voluntarily and involuntarily accept the risks and challenges resulting from our reliance on a system whose stability depends on numerous factors, most of them outside the control of a single entity. Among the most notable challenges is the definition of

the laws that regulate the Internet, specifically the rules for the control of the network infrastructure. Due to its borderless nature, the control of the Internet or Internet governance has been marked by conflicts since its early days and those conflicts are becoming more complex as the Internet continues expanding.

The main cause of the Internet governance conflict results from the absence of a coordinated global agreement on how to manage the Domain Name System (DNS). The DNS is a critical component of the Internet infrastructure as it allows the location of connected systems. In the United States (US) the idea of the DNS evolved under the close supervision of the United States government's Department of Commerce. The Department of Commerce has maintained some control of the DNS in spite of numerous requests from the global community to embrace a global governance structure. The Internet Corporation for Assigned Names and Numbers (ICANN), a non-profit corporation under contract with the US Department of Commerce, is the current DNS authority. ICANN is not accountable to any intergovernmental body and is only regulated by the corporate laws of the state of California. Over the years, ICANN has proposed a number of structural changes to its organization in an attempt to establish a more inclusive structure, however; none of the proposed changes have addressed the oversight expectations of the stakeholders.

As the Internet continues its global expansion, stakeholders unsatisfied with the current governance structure have recommended alternatives to the current DNS governance and management structure. In the development of the 2014 "Marco Civil" law, the government of Brazil evaluated more than 2,000 contributions from civil society using a multi-sector approach to protect Internet neutrality, equal access, and freedom of expression that some experts believe could become a new model for global Internet governance (Pinheiro, 2014). Those alternatives vary from the integration of ICANN into an existing global organization or

the transformation of ICANN into a truly global organization to the development of alternate DNS outside of ICANN. Decisions regarding the final outcome of the proposed changes could potentially result in significant impacts to the stability and functionality of the Internet. Even when the reactions derived from the Internet governance arguments have not produced any notable effects, some consider that the extreme case could be a fragmented Internet with multiple redundant and disconnected DNS structures. Note, a fragmented Internet would means that global connectivity over Internet wouldn't be a reality anymore. This would even lead to the emergence of multiple (isolated) Internets.

Previous research related to Internet Governance focused mainly on functional areas of the Internet governance such as domain name dispute resolution arbitration (Lindsay, 2007), the digital divide (Norris, 2001), and describing the evolution of the DNS. The history of the Internet governance dispute is well documented (Mueller, 2004; Mueller, 2010; DeNardis, 2009) from various perspectives and also the main causes of the disagreements are relatively well understood; in contrast, information about the potential consequences of the conflict is not abundant, mainly because the limited number of attempts to disengage from the existing DNS infrastructure has not been successful.

The importance of this type of analysis is validated by the impact that the conflict could have on a multitude of issues affected all Internet users around the world. Some of these issues include:

- There have been multiple attempts to include the representation of the community of users in the decision-making process; the decision-making process is still dominated by the ICANN stakeholders. In order to truly obtain representation from the constantly evolving Internet ecosystem, ICANN must actively identify methods to

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