Chapter 7.13
Socio-Technical Challenges of Semantic Web:
A Culturally Exclusive Proposition?

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ABSTRACT

The Semantic Web holds significant implications for learning, culture, and non-native speakers, with culture and non-native speakers rarely being addressed in the literature. In that light this chapter goal explores how Semantic Web disseminates learning, and it addresses critical socio-technical and cultural challenges facing semantic web, potential users, and learners using it. The chapter identifies some of the causes of the socio-technical challenges, looking at two major styles of learning and the position of Semantic Web structure in them. The chapter also offers recommendations for addressing selected challenges facing the Semantic Web.

DOI: 10.4018/978-1-60566-650-1.ch019

INTRODUCTION

In general, the Web holds a special place in information communication technologies (ICT) for information sharing among people globally. As a concept, Semantic Web implies and focuses on the new generations of World Wide Web (W3) architecture platforms that use formal semantics to enhance content delivery. According to Stojanovic, Staab, and Studer (2001), Semantic Web

implies that designers create content that best suits machine consumption rather than content for human consumption. However, from the standpoint of Berners-Lee (2000), Semantic Web provides an environment in which both human and machine agents communicate on a semantic basis. The Semantic Web can also be viewed from the standpoint of ontology, the organization of learning and services around a small domain of semantically enriched objects. From this standpoint, Semantic Web can partition and organize information and materials into customized learning, then deliver this information to end users on demand, according to users' preferred needs (Stojanovic, et al., 2001).

BACKGROUND

As a basis for intelligent applications, the Semantic Web is integral to achieving the goals of e-learning, distance, and global education. These intelligent applications will enable more efficient information use by drawing upon deep collections of repository knowledge (Schoop, deMoor, & Dietz, 2006). Beyond the internal world of web architecture paradigms, the organization of Semantic Web and its approach to learning holds significant implications for learning—in general, culture, and non-native speakers that are rarely addressed in the literature, however. This chapter addresses the Semantic Web's socio-technical and cultural challenges that are presented to users, learners, and the Semantic Web itself, while it disseminates learning.

The chapter accomplishes this by identifying selected causes of the socio-technical challenges, focusing on two major styles of learning and the Semantic Web structure position in them. Furthermore, to illustrate the nature of the challenges, the authors explore the foundation of knowledge acquisition tracing it as far back to the idea to Plato and Aristotle's positions on universalism and particularism ideologies. These two foundations help to illuminate the importance of culture and the challenges culture poses in Semantic Web deployment as a learning platform. The idea of cultural variation will be provided as a way to illustrate a key pitfall of Semantic Web which revolves around amplification of digital divide when taken together. For instance, human computer interaction (HCI) model of interaction in the Semantic Web environment and for enhancing communication between users and the computer occur at conceptual, semantic, syntactic, and lexical levels (Patil, Maetzel, & Neuhold, 2003). However, there are key discrepancies and mismatches between technology, and user needs and requirements, some of which are attributable to knowledge, general illiteracy, and information communication technology (ICT) illiteracy and different cultural demands. The chapter also addresses some key implications for Semantic Web regarding design, use, and general effectiveness or lack thereof. A call to action for policy makers, IT designers, and Users would also be made. First, however, is the need to offer a general background on the Semantic Web.

Semantic Web

The rise of the World Wide Web (W3) has significantly influenced the way people conduct research, education, commerce, and politics in the global world. Access to Internet and the W3 allows users to search information on billions of topics in infinite ways. However, the impact is not restricted to mere information searches, but the Internet has evolved as a means for bringing about political reforms and socio-cultural changes in societies. McLaughlin (2003) points to the significant role Web sites play in less than democratic countries to bring about political reforms and change. However, in spite of the great positives the Internet brings, a serious consequence of Web assessable information is information overload. It is not uncommon for one query to produce hits