Review of: "Creating ontological definitions for use in science"

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Potential competing interests: The author(s) declared that no potential competing interests exist.

The article “Creation of ontological definitions for use in science” is an interesting publication considering the role that ontologies play in promoting the discovery of classes and their relationships with others on the semantic web. However, the slow progress of the transformation of the semantic web in terms of indigenous African languages representation paints a bleak picture. While the establishment of platforms such as Qeios is commendable, the unavailability of ontologies that fairly represent indigenous languages of the global south is widespread. The widespread dominance of English as a universal medium of knowledge organization on the web remains a challenge. Prior to this review, the author conducted a Qeios search for ontological definitions of classes and their properties in one of the local languages (e.g. Sesotho sa Lebowa) in South Africa.

Of course, the results of the Qeios search were predictable. Out of the "classes" searched, none could be retrieved. A number of factors for the zero results search are worth noting. It appears that there are no ontological definitions in Sesotho sa Lebowa. If such ontological definitions exist, there are few or no tools for their development. Research on the verbalization of ontologies in indigenous languages (e.g. IsiZulu) shows that more needs to be done by governments and relevant institutions in developing countries to invest and coordinate projects in computational linguistics and human language technologies. Fewer computational resources exist for local languages in South Africa [1]. Whereas computer scientists and linguists can assist in tool development, information professionals can play a role in creating ontological definitions on available platforms. The task of creating ontological definitions cannot be left to other scholars and researchers in computer sciences and linguistics. Other than creation, information professionals should also evaluate, review and critically analyze the forces behind information flows in the global knowledge system. Whether you are a faculty, metadata or systems librarian, we all have a responsibility to contribute to the development of local languages in the semantic web.

In light of the lack of attention on the development of computational resources and tools for Nguni and Sotho languages in South Africa, this review begins by locating ontological definitions and the semantic web within a broader idea of society's [global] knowledge system[2], and implications for libraries and information workers[reviewer's emphasis]. This is followed by a look at current global events affecting the nature of the [global] knowledge system, the plight of indigenous African language characters in science, international protocols, standards, and universal character sets. The review concludes with recommendations on adapting the guide for the creation of ontological definitions to local [African] contexts.

The idea of society's knowledge system

Without diverting attention from the review, kindly allow the reviewer to have the benefit of hindsight. Recent research conducted between the reviewer and Professor Archie Dick at the University of Pretoria emphasized the importance of approaching library and information science research from a knowledge systems perspective. It is noted that library and information science (LIS) research on the African continent focuses on the knowledge society approach. The proposed model recommends the participation of academic libraries in other processes of society's knowledge system [3]. The work was based on the idea of society's knowledge system, which consists of knowledge production, organization and storage, dissemination and application. From these processes it is noted that libraries and information workers [reviewer's emphasis] only engage in the second and third processes [2]. There is no doubt that the traditional functions of [South] African libraries, and academic libraries in particular identify with the processes of organization and storage as well as dissemination of knowledge. However, most of the work related to knowledge organization and storage on the African continent falls short of engagement with the knowledge organization on the semantic web. There is a general tendency to focus solely on the organization and storage as well as dissemination of printed materials. Where library digital systems for knowledge organization are involved, focus is on maintenance and service than ontologies, knowledge platforms and knowledge management [4]. While others would argue the creation of ontological definitions for semantic web falls outside the scope of traditional library functions, and the job profile of information workers, a pro ontological definitions creation stance is necessary for transformation.

The reviewer contends that the knowledge system approach to research in LIS, and ontologies on the semantic web provides a comprehensive framework for debates and discussions on the substantial representation of indigenous African language vocabularies on the semantic web. More so because there has been a proliferation of research relating to the globalization of culture[5], global trading systems[6], and global politics [7]. A critical analysis of the creation of ontological definitions for use in science points to a need to evaluate the forces behind information flows and knowledge platforms.

Historical and current global events

It would be suicidal to ignore the influence of current global politics on the domain of knowledge and information organization . One overlooks the impact of the goals of the Enlightenment movement[8] of the 17th and 18th century in Europe and the West at their own peril. Since the end of World War II[9], the world has witnessed a shift in the global balance of power. Old empires fell and new ones arose as a new world order took shape. Led by the the United States of America (US) and its allies in the developed world, the post World War II order has been characterized by rapid technological developments, massive information flows and the military-industrial complex. The reality of the situation is that while there has been strides made towards an inclusive world characterized by the subject of human rights, Americanism and Eurocentrism have dominated most aspects of human life in the world. Ontologies and the semantic web have not been sparred. Studies on the comparison of the so called Global North and Global South economies[10] paint a bleak picture of knowledge organization initiatives for developing nations. Fast-forward to 2022, one wonders whether the war between Ukraine and Russia and events surrounding the situation signals the birth of new world order? Russia calls the war a “special operation” while the US calls it an invasion. These global events are important to

highlight considering the place of South Africa in the Brazil Russia India China South Africa bloc. Depending on which side one sits on either side of the divide, alternative media voices to Western mainstream media posit that the war creates conditions for a new world order. The question to ask is how will the unfolding new world order(if there is such a thing), impact on current trends in the field of knowledge organization on the semantic web? Historical and current events in the globe put a spotlight on the plight of indigenous African languages - an aspect that is not covered in the article.

The plight of indigenous African language characters in science, international protocols, standards, and universal character sets

It is a noble idea to create ontological definitions for use in science. However, challenges abound. Besides the fact that English dominates science in the global south, the lack of local languages use in scientific inquiry continues to pose challenges to an inclusive scientific enterprise. Research on the inclusion of indigenous knowledge systems in the mainstream global knowledge system indicates globalizing forces have either forced indigenous people to abandon their ways of living or use ancient ways of knowing as a foundation to interface with other knowledge systems[11]. Internationalized Resource Identifiers (IRIs) and Universal Character sets still favor countries in the developed nations over developing countries, with the latter focused mainly on languages such as Chinese, Japanese, Korean and Cyrillic characters. In addition to English, these languages form the core of stable classes that fit the automation processes of sample ontologies (e.g. Addiction Ontology). Although there are efforts to expand IRIs, standards sets for the semantic web are far from being inclusive of indigenous African languages. The question is: when will classes in indigenous African languages be considered stable to be part of automation processes in existing ontologies?

In conclusion, the intention of the review was not to rewrite the article but provide substantial evidence of why the reviewer is skeptical about the practice of creating ontological definitions for use in science in the global south. The guide provided for creating ontological definitions is welcome because it provides practical examples. The reviewer recommends the guide for scholars, researchers and information workers interested in creating ontological definitions for use in science. We **do not** need a proxy war for ontologies on the semantic web to transform and be inclusive of other races and languages of the world. What we need is a more progressive, inclusive, transformative, and representative global knowledge system.

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