Sociomateriality of Information Standards in Infrastructure: Structure, Organization, and Process Constraints

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Abstract

Information infrastructure comprises multiple disparate “worlds,” each of which may incorporate a distinct “regime of information” (Ekbia & Evans 2009). Different information regimes may be founded upon different types of information standards that do not interoperate with each other. In this paper, we develop a “sociomaterial” (Orlikowski & Scott 2008) perspective on information standards that illuminates such disjunctures through identifying fundamental distinctions between types of information standards: characterizing them in terms of structure, organization, and process constraints.

We start by surveying two groups of information standards: those designed for computational use, and those used in social ordering and organizational contexts. Because the separation between the two groups is unambiguous, we refer to these as “pure” versions of “machine oriented” and “human oriented” information standards respectively. We proceed to characterize fundamental differences between the logical structure(s) of these two groups in terms of differences between categorization and classification (Jacob 2004). Then we discuss key organizational processes integral to the management and use of each type of standard, and note fundamental constraints underlying differences between these organization processes.

We then move on to discuss “sociomaterial” standards – i.e. information standards the use of which entails imbricated combinations of computation and social practice. In addition to detailing structure and organizational process for each of these types, we argue that although these sociomaterial information standards are designed to bridge between formal computation and social practice contexts of use, fundamental distinctions remain such that all sociomaterial standards are ultimately either machine oriented or human oriented in their performance.

We briefly illustrate the power of our perspective with examples and provide a catalog of types of human oriented standards which we believe to be the first of its kind. We conclude by touching on implications for sociomaterial theory development and noting practical implications for developing information infrastructure.

Keywords: information standards, standardization, sociomateriality

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