## FEATURE ARTICLE

# TOWARDS AN INTERDISCIPLINARY STUDY OF COMMONALITIES

### Andrew Updegrove

*Abstract:  "Commonalities," or consensus-based tools of which standards are only the most recent and highly evolved example, have been developed since the dawn of humanity.  New types of commonalities, such as open source software, continue to be created organically, indicating that the concept of commonalities is intrinsic to how human beings address the world, how they solve problems, and how they choose to interact productively.  The author suggests that an interdisciplinary approach to the study of how commonalities are created and used can yield lessons that are useful in a broad range of applications, from optimizing the governmental process to providing greater insight into what it means to be human.*

*Introduction:*  It has become well recognized that many subjects can most productively be examined through the lens of more than a single discipline.  More may be drawn from a piece of 18th century literature (for example) when it is studied in the context of the times and the society in which it was written than from a purely aesthetic point of view.  Similarly, additional insight can be gained into the history of a prior time period by examining its literature.  Again, that same literature (or history) may be examined from an economic or even an ideological perspective to make additional connections.  In this article, we advocate applying the same approach in order to best study the significance of what we refer to as "commonalities."

*Commonalities as a worthy subject of study.*  Our definition of "commonalities" is this:  "Whatever tool we need -- that we need to agree on -- that is necessary to get the job done."  The three essential features of a commonality are best examined in opposite order.  Stated in another way, they are:

1.  A desired and beneficial goal.

2.  Recognition that in order to achieve that goal, the agreement of multiple parties will be required.

3.   A mutually agreeable and appropriate mechanism that can be used to achieve the goal.

The earliest known examples of commonalities include language, weights and measures and monetary systems.  Some of these commonalities (e.g., language) evolved organically and continue to develop in the same fashion, while others (such as weights and measures) with time became codified locally or regionally, and eventually were superseded globally with more coherent constructs (e.g., the metric system).

Today, voluntary consensus standards are by far the most numerous examples of commonalities.  But by limiting academic study to standards (as commonly defined), it is possible to miss many of the attributes of commonalities that are most interesting and worthy of examination.

Some of these attributes are the following:

***Their relationship to the human condition:*** The development and use of commonalities (in the form of language – spoken and signed) have existed from the very dawn of human consciousness. Commonalities are not only ancient, but also universal (at least in concept), arising in comparable forms in myriad cultures across the world and throughout time. The continuous development and use of commonalities therefore appears to be intrinsic to the very concept of being human, and more particularly of being a social being.

***Pervasiveness:*** There is no end to the variety of commonalities that have been developed over time, beginning with language, but becoming increasingly diverse and refined with the passage of time. By the definition offered above, commonalities also include musical instruments that have evolved to offer precise voices (e.g., violin, viola, cello, and bass) to fulfill very specialized roles in particular types of music. The result of such standardization permits music to be created and played over time and across international boundaries with predictable results.

***Voluntary consensus:*** In a world rife with conflict and oppressive governments, it is in many ways remarkable that formal, modern standards are as pervasive as they are, each one created through a formal process. Huge corporations, government agencies, universities and individuals from around the world participate in these processes voluntarily, and then implement the resulting standards of their own volition as well.

***Flexibility:*** The variety and ubiquity of commonalities is endlessly apparent, demonstrating not only the utility of the concept, but also its extensibility. In addition to musical instruments, one could add further examples as diverse as literary conventions (from the Greek Chorus to the Japanese Haiku), to the designation of time zones.

***Ability to continuously evolve:*** New types of commonalities are emerging all of the time. Recent examples include open source software, and the Creative Commons copyright concept. Each of these examples, in turn, has its own tailored variations and is the subject of continuing evolution.

***Durability:*** While new types of commonalities are being developed on a constant basis, others have existed for thousands of years and are still in use, such as the concept of weights and measures.

***Challenges:*** At the same time, commonalities, by their nature, have their own limitations, such as the phenomenon of "lock in." For example, someone raised in the English system of weights and measures is apt to find metric measures to be less than intuitive. And just as it is awkward and inconvenient to emigrate and face the need to learn a new language, so also is it expensive and tedious to migrate from one proprietary computer operating system to another.

**Rewards from the study of commonalities:** After the rich diversity and importance of commonalities is recognized, it is easy to imagine a broad range of topics worth studying. The following is a sampling:

***Robustness:*** Political systems continue to suffer from instability and abuse in many countries around the world, with democracies as well as autocracies frequently being subverted by one faction or another. In contrast, the standard setting process (while also often abused) nevertheless typically continues to function usefully. What are the aspects of the standard setting process that result in stability and the ability of opposing factions to agree? And are any of these aspects transferable into national, regional, or global governmental processes?

***Economic value:*** Data regarding the economic value of standard setting is surprisingly sparse. And yet when such studies are conducted, the results can be dramatic. The United States National Institute of Science and Technology (NIST) has conducted such analyses on occasion, and the results have never failed to be startling. In one recent study <www.nist.gov/public_affairs/techbeat/ tb2004_0830.htm#software>, NIST found that the absence of adequate software interoperability in non-residential American buildings cost over $15.8 billion dollars in lost efficiency in 2002 alone. What are the areas that could benefit most from the development and application of standards, and how can this process best be facilitated?

***Optimization:*** Given the value of standards, how could the standard setting process within existing organizations be optimized to make it more efficient and effective? With new types of technical

challenges to address and new stakeholders expressing interests in results, how should old techniques adjust to address new realities?

*Coordination:*  The same forces that are rendering standards more important are also exposing the limitations of the existing standard setting infrastructure.  With the convergence not just of information technology and communications technology, but of disciplines as diverse as nanotechnology and life sciences, how should that infrastructure evolve, and how should the various existing and new nodes in this system best coordinate their efforts to maximal benefit?

*Consumer interests:*  Does the current standard setting infrastructure adequately serve consumer interests, or does it serve users only to the extent that it also advances the interests of other stakeholders (and particularly vendors)?  If the latter, how can this deficit best be addressed?

*Conscious evolution:*  The development of new types of commonalities tends to be organic rather than deliberate, at the institutional level (the development of open source being an obvious example).  Perhaps just as biotechnology is learning to work at the genetic level, the process of creating new types of commonalities, and the processes for creating them, could be more deliberately conceived as well.

*Government support:*  What is the ideal relationship between voluntary consensus standards and government?   How can governments best support standard setting (from a policy, economic and participatory perspective), and how can the standard setting process best support the needs and priorities of government, in its role as servant of the public interest, and also as a consumer of goods and services?

*Social Policy:*  As the Web and the Internet play a greater and greater role in society, commerce, and education, how should its evolution and operation be managed and governed?  Should the standards that enable these vital resources continue to develop within self-selected and independent standards bodies, or should the services that they make possible be considered to be akin to utilities, and be subjected to regulation in the same fashion as electricity?

*Sociology:*  What does the process of commonality creation (both organic as well as formal) tell us about how people think and interact?  What does this particular exercise, viewed in microcosm, tell us about other ways in which people interact?  Are their lessons that can be learned from human behavior in standard setting that could productively be applied elsewhere, and vice versa?

*Governance:*  What can the ability of competitors to agree in a single standard setting process, and of national standard setting bodies to collaborate in global associations, teach us about governance structures?  What are the aspects of these processes that permit this result, and can they be applied in governmental and other contexts to advantage?

*Conclusions:*  While standards and standard setting have not been wholly ignored as a subject of scholarship, it is our view that they have to date failed to attract either the degree of attention, or the level of appreciation that they merit.  Further, we believe that there is a depth of meaning and a breadth of opportunity to learn lessons from commonalities that exceeds the traditional boundaries within which they have been viewed.  The time is ripe for standards to be recognized as a multi-faceted field of study where much remains to be done, and even more of value remains to be learned.

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