Editorial

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On behalf of the editors of Methods

Victor Maojo and colleagues submitted their article “Biomedical Ontologies: Toward Scientific Debate” [1] to Methods of Information in Medicine with the goal of stimulating discussion about a topic that is of great and current interest to the informatics community. On receiving the manuscript, we sent it out for peer review and once it was revised and accepted, we solicited comments from ten additional experts in the biomedical ontology field to comment on the article.

In this issue we publish both the original article and the article “Discussion of ‘Biomedical Ontologies: Toward Scientific Debate’” [2] which is a compilation of the comments by Mathias Brochhausen, Anita Burgun, Werner Ceusters, Arie Hasman, Tze Yun Leong, Mark Musen, Jose Luis Oliveira, Mor Peleg, Alan Rector, and Stefan Schulz. Each discussant took a slightly different point of view in commenting on the charge set by Maojo et al. Indeed, at times the comments were quite sharp and seemed to question the wisdom of publishing the original article at all.

The editors decided that in spite of this divergence of points of view, it made sense to publish both the original paper and the discussion paper. Readers may decide for themselves whether the sometimes acrimonious debates in this field (some of which are evident in both the original and in the discussion paper) represent a lack of understanding of the basic principles of sound ontology development and design, or whether there is a true difference in opinion on how best to build and evaluate domain ontologies.

It may be of interest to highlight some of the themes that emerged from the two papers published here. (In the following we use the term “authors” to refer to both the authors of the original paper and the authors of the discussion paper.)

First, it seems clear that in order for any meaningful debate to proceed it is necessary to reach clarity on what is being discussed. As was pointed out by several of the authors, any scientific field develops its own specialized terminology to denote the topics that are of interest within that field. If that terminology is not explicitly and clearly defined, then it necessarily leads to confusion and perhaps even to needless frustration. In the case under consideration here, the term “ontology” itself may be ill-defined. In fact, as several of the authors point out, its definition has become less rather than more precise over the last few decades. Ontology, albeit in informal use, has become the term of choice for any controlled terminology, thesaurus, taxonomy, etc., whether or not it follows any of the principles that have been proposed over the years for what should count as such. Given that this, perhaps, unfortunate tendency, has come to pass, it would make sense, at a minimum, that authors who use the term state as precisely as possible what they mean by that term.

A related point made by several of the authors is that the so-called “philosophical” or Aristotelian approach to the development of ontologies is complex (both in the difficulty of understanding its tenets and in its execution). One side would say that those who want to be involved in the debate need to read the current ontology literature with greater care, and the other side would say that the burden is on the proponents of that approach to be clearer
and more transparent about not only their assumptions but also what the benefits of their approach are. This is true no matter what position one represents.

Several of the authors noted that the debate itself needs to be more carefully framed. Arguments need to be methodologically sound, be grounded in the relevant literature, and use clear and unambiguous terminology. This latter may, as noted above, be one of the crucial problems in some of the ongoing debates in the field. Further, it may not be useful, for example, to frame the debate as one between computer scientists and philosophers, since that can easily lead to unnecessary personal attacks. There is also, as indicated by some of the authors, a tension between those who develop ontologies for practical applications and those who develop ontologies seemingly for their own sake. Framing the debate along these lines may also not be the most effective way to proceed, since, on the one hand, ontologies developed for practical applications need to be based on sound principles so that they are robust enough to evolve as the application evolves, and on the other hand, ontologies developed primarily as a research activity need to be useful for some purpose if they are to be valued by the community.

Finally, as mentioned by several of the authors, it is not enough to claim by “fiat” that one or the other approach is correct. Given that it is becoming increasingly clear that well-formed, sound ontologies are necessary for a broad range of important applications in health and in the biosciences, the field would be significantly better served if the community at large would develop explicit metrics for evaluating ontology efforts rather than engaging solely in theoretical debates.

References