

# Editorial

## Ontology, Logic, and Knowledge Organization

The keynote speaker, Mr. John F. SOWA, of the last day at the recent Vienna congress on *Terminology and Knowledge Engineering* (25-28 Aug., see our text on TKE'96 under Reports and Communications) entitled his speech "*Ontologies for Knowledge Sharing*" (1). On trying to take what is generally understood by "ontology" following Webster's definition, *viz.: the science or study of being* one would probably have had some difficulties in understanding what he was talking about. Of course I asked myself too, why is it that our colleagues from the computer sciences constantly come up with applying new meanings to existing terms when re-inventing existing wheels? All of a sudden what has been called a taxonomy or a classification system or a dictionary or vocabulary or just a list of terms is called an 'ontology' and since this seems to sound interesting, others start to fall prey to the same faddishness of wearing the 'Emperor's New Garments' without realizing that, what they want to show off with, is nothing but parading their own bareness.

At our 4th International ISKO Conference in Washington (July 15-18, see our reports under ISKO News 25) the Italian philosopher Roberto POLI had delivered a very useful and timely paper: "*Ontology for Knowledge Organization*" in which he clarified in a number of theses how the concept of Ontology is to be understood. The first one of these says:

"An ontology is not a catalogue of the world, a taxonomy, a terminology, or a list of objects, things or whatever else. If anything, an ontology is the general framework (=structure) within which catalogues, taxonomies, terminologies may be given suitable organization...." (2)

I can only recommend to read this worthwhile paper! Nevertheless, what John Sowa had assembled under the topic of his paper should not be neglected: it is indeed astonishing what is at present being elaborated, e.g. at Cycorp in Austin, TX: "100 person-years of work in hand-crafting a hierarchy of 100,000 concept types with over a million associated axioms"! And in Japan: "The Electronic Dictionary Research (EDR) project, which has developed a dictionary with over 400,000 concepts, with their mappings to both English and Japanese words"! And also *WordNet* - developed by George Miller and his colleagues: a "hierarchy of 166,000 word form and sense pairs"! Of course, one is now looking for a superstructure to organize these masses of concepts and terms and it seems that Sowa - on the basis of Ch.S. Peirce's distinctions of Firstness, Secondness and Thirdness - is about to elaborate such a Superstructure, as outlined in his paper. May he succeed!

Roberto POLI had also shown in the paper mentioned above that one can distinguish ontological levels of reality and this has precisely been the basis on which I once elaborated the Information Coding Classification, a universal classification system for subject areas, groups and fields

– already in the early 70ies (3). Therefore, ontology has indeed something to do with classification systems in the sense that what we need to organize are our concepts *about* reality, about the *Being* which we face and know of or learn about, thus creating our knowledge units, our concepts and our concept systems. But by doing this we are not at all developing 'ontologies' in the sense of the well-established philosophical subject field.

The articles in this issue are not related to Ontology but rather to Logic in the sense that each one of them uses logic to support her/his arguments. You will find Houda ARAJ's *Integration of an Analogical Reasoning Model in a Model of Case Resolution* of which she stated that it "is about modelling legal expert thought in the process of finding a precedent, and also it is about knowledge representation and abstract categorization through the use of metaphors".

The second article by Ephraim NISSAN and Solomon E. SHIMONY, entitled *TAMBALACOQUE: for a Formal Account of the Gist of a Scholarly Argument* shows - with reference (in extensive footnotes) to a wealth of AI works studied - how the logical structure of an argument can be "captured", using as an example a text from zoology.

The third article by Johannes HEINRICH'S *Language Theory for the Computer: Mono-dimensional Semantics or Multi-Dimensional Semiotics?* evolved through a critical study of a voluminous work (by Dr. M. Th. ROLLAND) which had found already controversial comments here but which is based on the theories of Weisgerber's emphasis on semantics and should be regarded as consequential along these lines. Heinrichs' logical argumentation and recommendation, not to exclude semiotics in considering language, finds a practical application in the fourth article of this issue by Fred W. RIGGS as his second article of his series *Onomantics and Terminology* with his stressing the adding of *notation* to the semiotic triangle for the representation of concepts, similarly being evolved by logically reacting to a given document, here the pertinent ISO Standard.

Thus, I hope our readers will note from these articles, how usefully logic can be applied in our field of Knowledge Organization. It need not necessarily be the classical *first-order logic* (FOL) of Frege and others to organize our thinking, although we may need it for telling the computer how to 'think' and use the products of our thinking. Thanks to GOD who gave us such a wonderful brain to make good use of in our worlds of interests!

Ingetraut Dahlberg

(1) Sowa, J.: *Ontologies for knowledge sharing*. Paper presented at TKE'96, Vienna, Austria, Aug. 28, 1996. email: [sowa@west.poly.edu](mailto:sowa@west.poly.edu)

(2) Poli, R.: *Ontology for knowledge organization*. In: Green, R. (Ed.): *Knowledge Organization and Change*. Proc. 4th Int. ISKO Conference, 15-18 July 1996, Washington, DC. Frankfurt: INDEKS Verlag 1996. p.313-319.

(3) Dahlberg, I.: *Ontical Structures and Universal Classification*. Bangalore, India: Sarada Ranganathan Endowment for Library Science 1978. XII,64p. = Sarada Ranganathan Lectures 11, 1977.