

Ontologies: An Update of Chapter 12

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The research field of ontologies has been among the most thriving themes in geographic information science over the last couple of years. The o-word is now a household term in geographic information science, although there still remains a lot of confusion about what an ontology actually is. The one issue that has been troubling the GIScience community at the outset of the ontology debate—the question as to whether one has a single ontology (the philosophers' perspective) or multiple ontologies (the software engineers' perspective)—seems to be resolved as one has started to refer to the singular version by capitalizing Ontology, whereas the lower-case version of ontology can also be used in the plural. Although this sounds like nitpicking, it has helped move forward from an otherwise heated debate, so that deeper research issues can be addressed.

The popularity of the research topic is highlighted by the share of paper published in competitive GIScience research outlets that deal with research in geo-ontologies. Seven of the 25 accepted full papers (i.e., 28%) at GIScience 2004 addressed explicitly aspects of geo-ontologies

(<http://www.giscience.org/GIScience2004/submissions.html#papers>).

Another two conferences held in 2005 had a strong focus on geo-ontologies: the proceedings of GeoS 2005 (GeoSpatial Semantics, <http://www.geosco.org/home.htm>) included 8 out of 19 papers (i.e., 42%) whose explicit focus was on geo-ontologies, and the proceedings of 2005 Workshop on Semantic-Based GISs (SeBGIS 2005) included 5 out of 15 (i.e., 33%) papers discussing issues related to geo-ontologies. The most pertinent subfields at this moment appear to be the design of geo-ontologies (from upper-level ontologies to domain-specific application ontologies), methods for exploiting geo-ontologies for spatial querying (in particular spatial similarity searchers), the role of geo-ontologies within the Geospatial Semantic Web, and methods to manipulate geo-ontologies, such as aligning and fusing geo-ontologies.

The upcoming special issue of Transactions in GIS on the Geospatial Semantic Web (guest editors: Fred Fonseca and Andrea Rodríguez,

http://www.personal.psu.edu/faculty/f/u/fuf1/geospatialWEB/TGIS_WEB.html)

promises to become yet another forum for advances in geo-ontology research. Likewise GIScience 2006 (<http://www.giscience.org>) and SebGIS 2006

(<http://www.cs.rmit.edu.au/fedconf/index.html?page=sebgis2006cfp>) are good candidates for state-of-the-art reports on geo-ontology research.

As an indication that this is not a purely esoteric topic, but one of immediate interest to industry, Todd Pehle from TASC and Jerry Hobbs from USC are organizing in June 2006 a workshop on "Spatial ontology for the semantics Web" to be held at NSF.

I hope this brief summary will contribute to your collection of activities related to the field of ontological foundations for GIScience.