

On Ontologies in Biomedicine and Petroleum Engineering

A Seminar with Barry Smith

18.–19. September 2006
NTNU, Trondheim

You are invited to a series of open talks on ontologies— the current state of the art, and principles for future developments— that will be given by Barry Smith on 18.–19. September. The talks are focused on issues of ontology development in two domains: biomedicine and petroleum engineering, but the general issues discussed are relevant in any other domain.

The talks will take place at:

- **NSEP**: Norsk Senter for Elektronisk Pasientjournal (Norwegian Center for Electronic Health Records), Elgesetergate 10, entrance C, http://www.nsep.no/index.php/en/kontakt_oss
- **R1, R4**: Realfagbygget, http://www.ntnu.no/etasjeplan/vis_etgplan.php3?bygg=real/
- **F1**: IT-bygget, http://www.ntnu.no/etasjeplan/vis_etgplan.php3?bygg=almenfys/
- **KJL1**: Varmeteknisk/Kjelhuset, http://www.ntnu.no/etasjeplan/vis_etgplan.php3?bygg=varmtekn/

Monday, 18. September

10:15–11:45, NSEP **The Nature of Disease: Future Pathways in Biomedical Ontology**

Current conceptions of health and disease focus on the signs and symptoms visible to the clinician and patient. Increasingly, however, the demands of molecular medicine will enforce a new understanding of diseases and of their molecular origins. We will sketch an outline of this new understanding and of its applications in clinical informatics.

13:15–14:45, R1 **A General Introduction to Biomedical Ontology**

Ontologies to support scientific research and clinical medicine have special characteristics, which we shall outline in terms of a distinction between three levels: (1) the level of reality; (2) the level of cognitive representations; and (3) the level of the publicly accessible concretizations of such cognitive representations. Against this background we shall clarify the relations between ontologies, terminologies, information models, databases, patient records, and similar artifacts, and we shall show how the ontologies of the future need to be constructed in such a way as to support the research and clinical needs of the future.

15:15–16:45, R4 How Ontologies Create Research Communities

We will describe the OBO Foundry, a collaborative experiment involving a group of influential biomedical ontology developers who have agreed in advance to the adoption of a growing set of principles specifying best practices in ontology development. The primary goal of the Foundry is to establish gold standard reference ontologies, one for each core domain of biomedical science. We shall describe how this objective is already being realized, and show how it can not only help solve familiar problems of data retrieval and re-use in the biomedical domain, but also help to foster the development of the powerful tools that will be needed to reason with biomedical data in the future.

Tuesday, 19. September

10:00–12:00, F1 Critical Comments on ISO Standard 15926

The world of ontology development is full of mysteries. Recently, ISO Standard 15926 “Lifecycle Integration of Process Plant Data Including Oil and Gas Production Facilities”, a data model initially designed ‘to support the integration and handover of large engineering artefacts’, has been proposed for general use as an upper level ontology. When examined in light of this proposal, however, ISO 15926 is seen to be marked by a series of quite astonishing defects, which may however provide general lessons for the developers of ontologies in the future.

14:15–15:45, KJL1 Clinical Coding and Terminologies: The Past and the Future

Ontologies, terminologies and coding schemes are now in common use in the domain of medical informatics: in electronic health records, clinical trials, epidemiological studies. We examine a representative collection of such terminologies, and draw (somewhat sad) conclusions as to the current state of the art.

Barry Smith

Barry Smith is Julian Park Distinguished Professor of Philosophy in the University at Buffalo (New York, USA) and Director of the Institute for Formal Ontology and Medical Information Science in Saarbrücken, Germany. He studied at Oxford University and at Manchester University, and has held faculty positions in Sheffield, Manchester, Liechtenstein and Leipzig, as well as visiting positions in Erlangen, Graz, Paris, Turku, Innsbruck, Padua, Hamburg, Konstanz, Malta, Leiden, Vienna and Koblenz.

*He is the author of some 400 scientific publications, including 15 authored or edited books, and editor of *The Monist: An International Quarterly Journal of General Philosophical Inquiry*. His research has been funded by the US, Swiss and Austrian National Science Foundations, the Volkswagen Foundation, and the European Union. In 2002 he received in recognition of his scientific achievements the 2.2 Million Euro Wolfgang Paul Award of the Alexander von Humboldt Foundation.*

[From: [http://en.wikipedia.org/wiki/Barry_Smith_\(ontologist\)](http://en.wikipedia.org/wiki/Barry_Smith_(ontologist))]

Find more about Barry Smith’s research at his homepage: <http://ontology.buffalo.edu/smith/>

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