

## **The Future of the Web**

University of Tilburg  
26-27 March 2003

### **Guus Schreiber (University of Amsterdam)**

#### ***“The Semantic Web”***

The speaker presented the main concepts and ideas behind the current initiative of developing a Semantic Web.

He shortly described his involvement in the W3C Web-Ontology Working Group pointing to the neat-scruffy debate. Knowledge modelers want expressivity while logicians stress decidability as a main requirement for Web ontology language. Finally the MIA (Multimedia Information Analysis) tool was presented giving an idea on how a semantic web for images might work.

### **Henry Lieberman (MIT Media Lab)**

#### ***“Static and Dynamics in Spinning the Semantic Web ”***

The speaker defined dynamic semantics with the following characteristics:

It is represented procedurally - it can be computed by programs running on the client or server side, based on immediate interactive user input

Changes relatively rapidly – a single user click can cause the semantics to be generated or to change, or it can be changed by the actions of programs continuously in real-time

Furthermore, the speaker expressed his view that problem-solving and inference should be a cooperative venture between one or more humans and one or more computer agents. The expensive component is not the net connection, the client computer or even the servers that store the information, it's the user's time. This means that the components of the future Semantic Web should be able to integrate not only text, pictures, links, and semantic descriptions, but also dynamic and procedural objects. And this can be achieved by the newly developed programming language Water. The remainder of the talk was devoted to introducing Water.

Water extends the semantics of the widely accepted HTML for markup and XML for static data, to encode procedural semantics in web pages.

According to the speaker the semantic web shouldn't sit on the tower of Babel.

Languages like DAML+OIL add new facilities that allow expressing formal semantics information embedded in traditional HTML documents and enabling inference. However, procedural information has not been covered by any of the existing proposals. That's what Water does.

Many of today's Web applications are programmed piecemeal in a bewildering array of programming languages. The disadvantages of such multilingual environments are: difficulty of learning multiple programming languages, difficulty of integrating Web data with multiple languages (the majority of these languages were originally designed for a purpose that has nothing to do with the Web), necessity of conversion between different formats, difficulty of debugging across multiple languages and systems, that plethora of languages prevents representing procedural semantics in any sort of principled way. The solution to the above mentioned problems is provided by Water which consolidates the existing Web functionality.

More information on the presented topic can be found at:  
<http://web.media.mit.edu/~lieber/Lieberary/Dynamic-Semantics/Dynamic-Semantics.html>

**Nicola Guarino (ISTC – CNR, Trento):**

***“The role of foundational ontologies for the semantic web”***

The speaker’s definition of ontology: “A specific artefact designed with the purpose of expressing the intended meaning of a (shared vocabulary)”

The speaker introduced the term foundational ontologies by first pointing out to the need of different kinds of ontologies depending on the way we use them. Thus there are ontologies that can be used for semantic access and others that can be used for meaning negotiation and explanation. Foundational ontologies are the ones devoted to facilitate mutual understanding.

The two important dimensions for evaluating and comparing ontologies are completeness and precision. The quality of an ontology also depends on its accuracy. The accuracy can be improved by developing richer axiomatization and by adopting a richer domain and/or a richer set of relevant conceptual relations.

Finally the speaker introduced WonderWeb – an ambitious project for developing ontology infrastructure for the semantic web. Extensive information about the project can be found at <http://wonderweb.man.ac.uk/index.shtml>

In the context of WonderWeb the speaker introduced DOLCE (Descriptive Ontology for Linguistic and Cognitive Engineering) – an upper level ontology, the first module of a Foundational Ontologies Library

**Steffan Staab (University of Freiburg):**

***“Natural language and ontology: Closing the loop”***

The speaker first summarized what had been said till that point about the Semantic Web. He further introduced the framework CREAM (CREATING Metadata for the Semantic Web) which allows the creation of metadata. The annotation mode of CREAM allows the creation of metadata for existing web pages while its authoring mode lets authors create metadata while putting together the content of a page. A characteristic of CREAM is that it allows the creation of relational metadata, i.e. metadata that describes how resource descriptions instantiate class definitions and how they are semantically interlinked by properties.

I will not reflect on the rest of the talks as they were, in my opinion, deviating from the Semantic Web issues our research is concerned with ( I don’t mean Lynda’s talk, of course)