Visual Analyses on Linked Data – An Opportunity for both Fields

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The Social Semantic Web (Breslin et. al. 2009) constitutes the next evolutionary step of the World Wide Web by combining semantic technologies with social computing paradigms. A core concept of the Social Semantic Web is Linked Data (LD), which allows for publishing and interlinking data in a machine understandable way on the World Wide Web (WWW). Linked Data uses established W3C techniques, such as Unique Resource Identifiers (URI) for uniquely identifying data sources, the Resource Description Framework (RDF) for semantic representation of those data sources and SPARQL as query language for data access. One recent result is the Linked Open Data (LOD) cloud, which aims in massively connecting available information in all domains, e.g., Friend of a Friend (FOAF), DBPedia, GeoData as well as Academic Data. The LOD cloud currently includes over 100 different datasets and has been growing from one billion triples and 250k links in mid-2007 to 25 billion triples and 395 million RDF links in September 2010.

However, the wealth of data contained in the Linked Open Data cloud can be hardly utilized by non-technicians. In contrast to traditional document centric search, semantic data contains a richer set of entities and relations among entities forming a typed graph. Aggregating and analyzing interesting patterns in such graphs poses a challenge going beyond classical document retrieval. Hence, new interfaces will be necessary.

Visual Analytics (Thomas & Cook 2011, Keim et. al. 2010) – a recently coined research field in the US - supports humans in analytical reasoning over large data sets by providing visual interfaces tailored towards analytical tasks. It is based on the assumption that through visual interfaces human background knowledge and intuition can be integrated easily into complex discovery processes. Linked Data would greatly benefit from developing such techniques to identify hidden, but valuable patterns within the LOD cloud. Visual Analytics on the other hand would benefit from a web based scenario for applying visual analysis techniques and from developing scalable visual analysis techniques for networks.

Knowledge Visualization focuses on the presentation and communication of knowledge via visual metaphors (cite). The aim is to develop visual metaphors which allow to communicate complex facts among humans. Linked Data would greatly benefit by developing tools for crowesourcing the creation of visual metaphors in order to communicate facts discovered in the linked data cloud. Generally users should be enable to discuss visualisations and to contribute to the linked data cloud through creating visualization for the community.

In fact, Linked Data will greatly benefit from more visual appealing tools and techniques provided by both fields, Knowledge Visualisation and Visual Analytics. Usage will be increased and with usage comes sustainability. On the contrary, Knowledge Visualisation and Visual Analytics will leverage their application scenarios towards the web, potentially changing the way on how information is consumed globally. So lets starting to exploit those synergies by bringing both fields closer together.

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