

How many stars do you see in this constellation?

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<<https://github.com/dgraux/RDFStarObservatory>>

RDF* and SPARQL* [1,2]

- To facilitate adding statement-level metadata, an RDF & SPARQL syntax extension has recently been proposed to the Semantic Web community: RDF* & SPARQL*.
- It allows data providers to shape statements about RDF graphs in an intuitive manner, while still being compliant with the RDF standard syntax.
- The extension can potentially bridge the gap between the RDF and Property Graphs worlds.

Towards an Observatory

- A simple test suite shows that current engines are not treating this extension in a uniform way.
- Our goals are (i) to review the current available engines, starting by observing their internal representations, and (ii) to raise awareness providing the community with a test suite for further evaluation.

Current RDF*/SPARQL* Engines

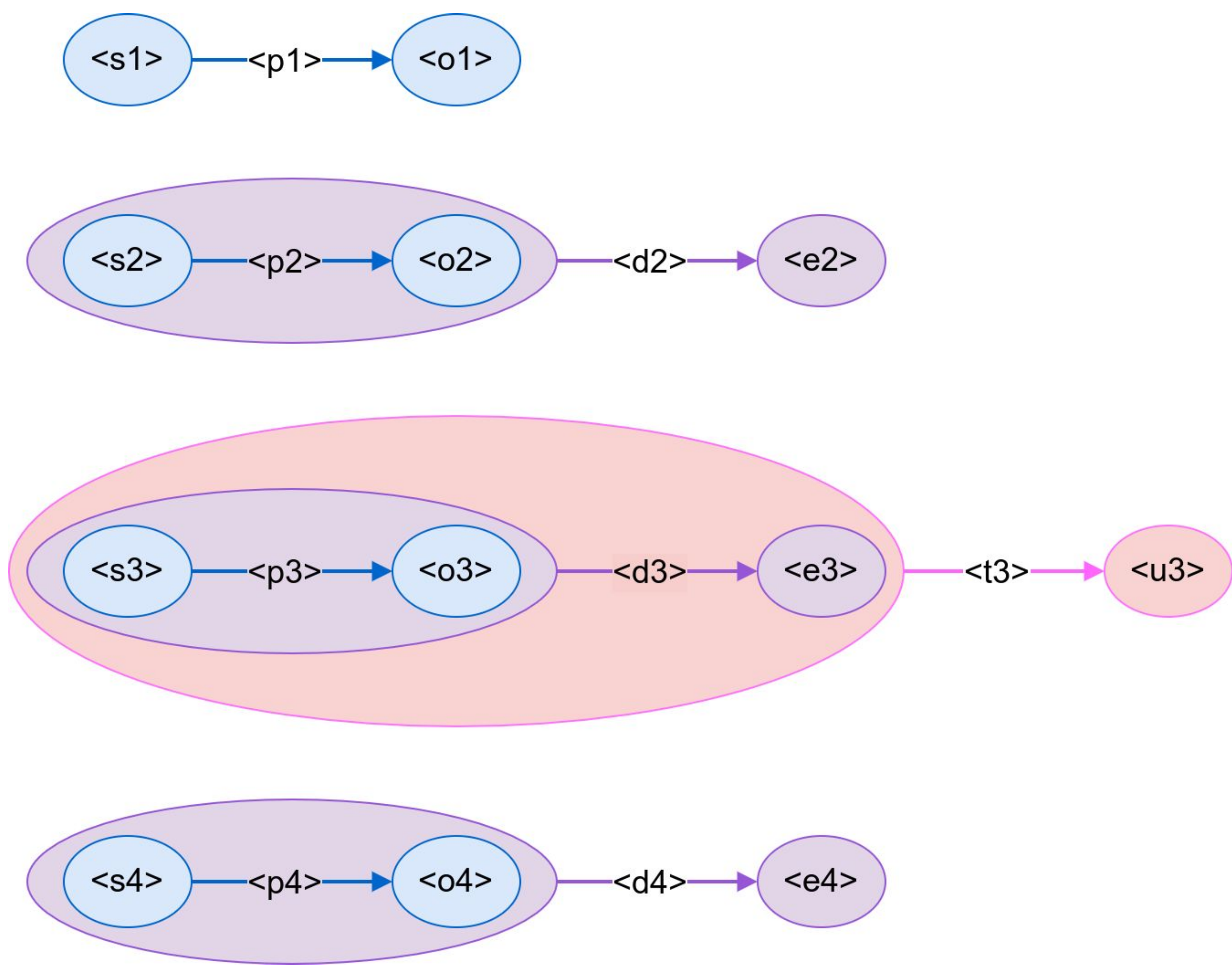
- RDFstarTools v.0.0.1 (by Hartig et al.)*
- Stardog v.7.1.2*
- Blazegraph v.2.1.5*
- AnzoGraph v.2
- GraphDB v.9.2
- RDF4J v.3.2
- Apache Jena v.3.15.0
* tested

** Let’s stargaze . . .

We observed multiple anomalies:

- Stardog uses its own syntax based on curly-brackets (angular-brackets often raise exceptions).
- Blazegraph cannot deal with spaces at some places and raises errors when “Select *” is used.
- RDFstarTools and Blazegraph do not return the subject column when there is an RDF* triple at the subject place in the clauses.
- Different internal representations: Stardog’s representation leads to errors, as it is “flattening” the nested statements.

Our test RDF* graph:



SPARQL* Query Results:

Select * Where ...	Stardog	Blazegraph	RDFstarTools
{?s ?p ?o}	s1 p1 o1 , s2 p2 o2 , s3 p3 o3 , s4 p4 o4 , {s2 p2 o2} d2 e2 , {s4 p4 o4} d4 e4 , {s3 d3 e3} t3 u3 , s3 d3 e3	s1 p1 o1 , s2 p2 o2 , s3 p3 o3 , s4 p4 o4 , {s2 p2 o2} d2 e2 , {s4 p4 o4} d4 e4 , {s3 p3 o3} d3 e3 , {{s3 p3 o3} d3 e3} t3 u3	s1 p1 o1 , s2 p2 o2 , s3 p3 o3 , s4 p4 o4 , {s2 p2 o2} d2 e2 , {s4 p4 o4} d4 e4 , {s3 p3 o3} d3 e3 , {{s3 p3 o3} d3 e3} t3 u3
{<<?s ?p ?o>> ?d ?e}	s2 p2 o2 d2 e2 , s4 p4 o4 d4 e4 , s3 d3 e3 t3 u3	s2 p2 o2 d2 e2 , s4 p4 o4 d4 e4 , s3 p3 o3 d3 e3 , {s3 p3 o3} d3 e3 t3 u3	s2 p2 o2 d2 e2 , s4 p4 o4 d4 e4 , s3 p3 o3 d3 e3 , {s3 p3 o3} d3 e3 t3 u3
{<< <<?s ?p ?o>> ?d ?e>> ?t ?u}	No results	s3 p3 o3 d3 e3 t3 u3	s3 p3 o3 d3 e3 t3 u3



Further Reading

- [1] Hartig, O.: Foundations of RDF* and SPARQL* (an alternative approach to statement-level metadata in RDF). 11th AMW Workshop (2017)
- [2] Hartig, O., Thompson, B.: Foundations of an alternative approach to reification in RDF. arXiv preprint arXiv:1406.3399 (2014)

Acknowledgements

This research was conducted with the support of the European Regional Development Fund and the Horizon 2020 research and innovation programme under the EDGE Marie Skłodowska-Curie grant agreement No. 713567 at the ADAPT SFI Research Centre at Trinity College Dublin which is funded by Science Foundation Ireland through the SFI Research Centres Programme and is co-funded under the European Regional Development Fund (ERDF) Grant #13/RC/2106.

