

Categorisations of object types in SIMBAD



in progress ...

5 ways to describe and show categorisations of objects (in SIMBAD)

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Astronomical objects may be classified into types in many ways. The SIMBAD database contains such information on astronomical objects that have been studied in the published literature. A given astronomical object in SIMBAD may have multiple object types. The SIMBAD object type list currently contains some 200 types, that are organised into a hierarchy based on astrophysical concepts.

The hierarchical structure also includes relations between object types, and this facilitates searches of SIMBAD to obtain lists of all of the astronomical objects in a given category independently of the publisher or the year of publication.

Basic data :

M 1 -- SuperNova Remnant

Other object types: Rad (2C,3C,...), X (3A,2E,...), SNR (Ref,AJG,...), HII (LBN,SH), Psr (Ref), IR (IRAS), gam (ARGO)

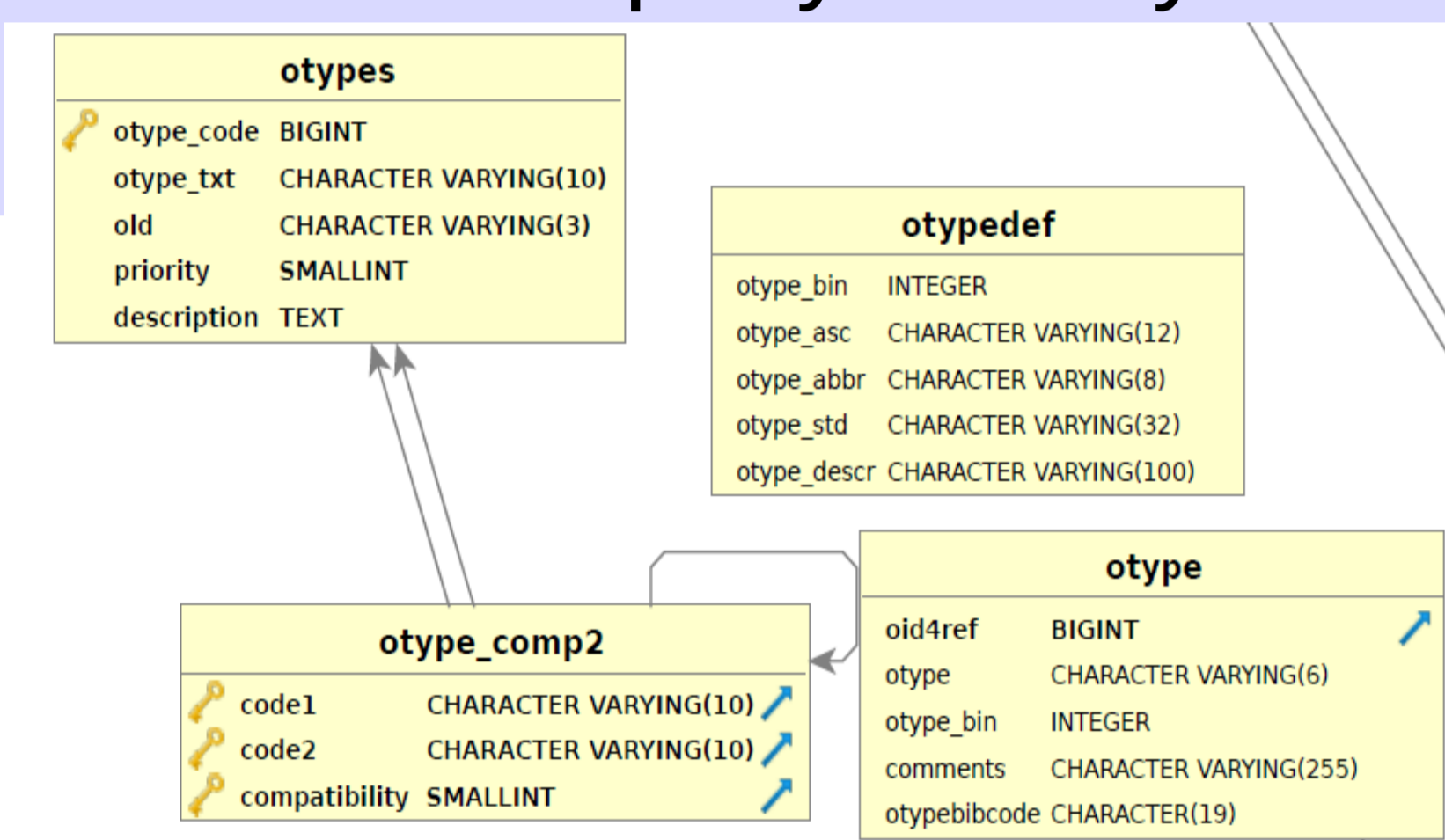
ICRS coord. (ep=J2000) : 05 34 31.94 +22 00 52.2 (Rad10) [J C 2011A&A...533A...10L]

Angular size (arcmin): 7.0 5.0 ~ (Rad) D 2014BASI...42...47G

1. Web

2. SIMBAD Database (SQL)

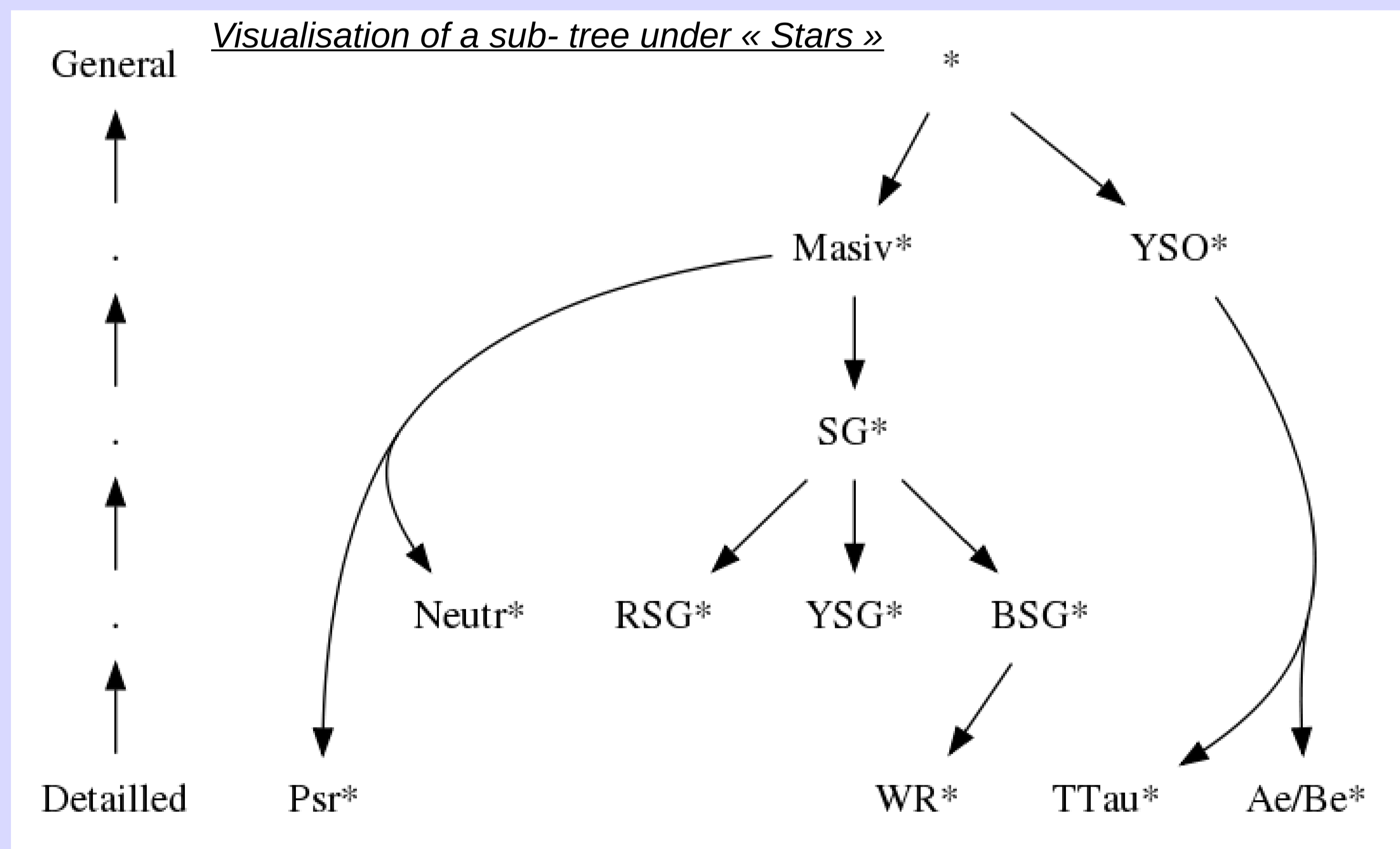
The relations between object types can be structured in tables of the SIMBAD database. In order to do that, SQL is generated to create all the hierarchy. New SQL functions will be available to query directly SIMBAD and filter objects on a category.



```
SELECT * FROM basic WHERE otype in otype_childs('YSO')
```

3. Graphical documentation

A documentation can be automatically generated from the stored information of this hierarchical organisation, and can be displayed as a nice graph (here, thanks to the graphviz open source tool)



4. Cross-matching object types

Before the insertion of astronomical objects in SIMBAD, we could compare object types and compute a **score of compatibility** :

```
... Search around ICRS 20:16:31.91+37:39:09.1
... 2 object(s) found from coo
--- 1/1: PoC/*iC ( -10) 60.0"D ( -2.9)
+++ 2/2: **/*iC ( 1) 8.8"B ( 0.0)
```

5. SIMBAD object types, in a map (MOC)

Once the information is well organised in the database, astronomers can use it to query directly SIMBAD and visualise the coverage of objects on one or more categories.

Visualisation of localisation of IR (orange) and Syfert (blue) objects in SIMBAD

