Linked-Potter: an example of linked data for the study of the evolution of literature and literary communities

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In the case of libraries and other book archives, linked data are mostly used for metadata describing the materiality of books or paratextual information. I present here an example of how linked data can be used for the distant reading of literary texts, to study literary history, the cultural evolution of fiction, or as a selection mechanism to identify themes of interest. I created a knowledge base using the tags of the fanfiction website Archive of Our Own (AO3) (Organization for Transformative Works, 2009), which has implemented an excellent system of tags management and archiving (Dalton, 2012; McCulloch, 2019).

When publishing on AO3, authors can specify tags for characters, relationships, and additional freeform tags for any use they may think of. Autocompleting typing suggest canonical forms for the tags, so that uniformity is guaranteed across the all archive. Moreover, specialized volunteers, called "wranglers," aggregate synonym tags: e.g. "harrypotter" and "Harry Potter" (AO3 Admin, 2012). The goal of AO3 is to help readers find exactly the kind of stories they are looking for, but researcher can exploit the well-maintained and accurate tags database to draw insights about the history and evolution of a specific genre of literature (fanfiction) and readership. In particular, freeform tags offer authors the possibility to make explicit in the metadata any relevant aspect of the story, like a psychological trait of a character (e.g. "Morally grey Harry Potter"), a narrative strategy (e.g. "point of view of Draco"), a setting (e.g. "Diagon Alley"), a timeframe (e.g. "post first war with Voldemort"), etc. A distant reading of fanfiction through the lens of tags has benefits that go beyond the understanding of a widespread – and growing – cultural phenomenon. Data driven insights from research on AO3 can be used to formulate better hypotheses regarding the evolution of other cultural systems – like literary classics or genre fiction – and to more strategically plan labour-intensive and time-consuming tasks like manual annotation of textual corpora.

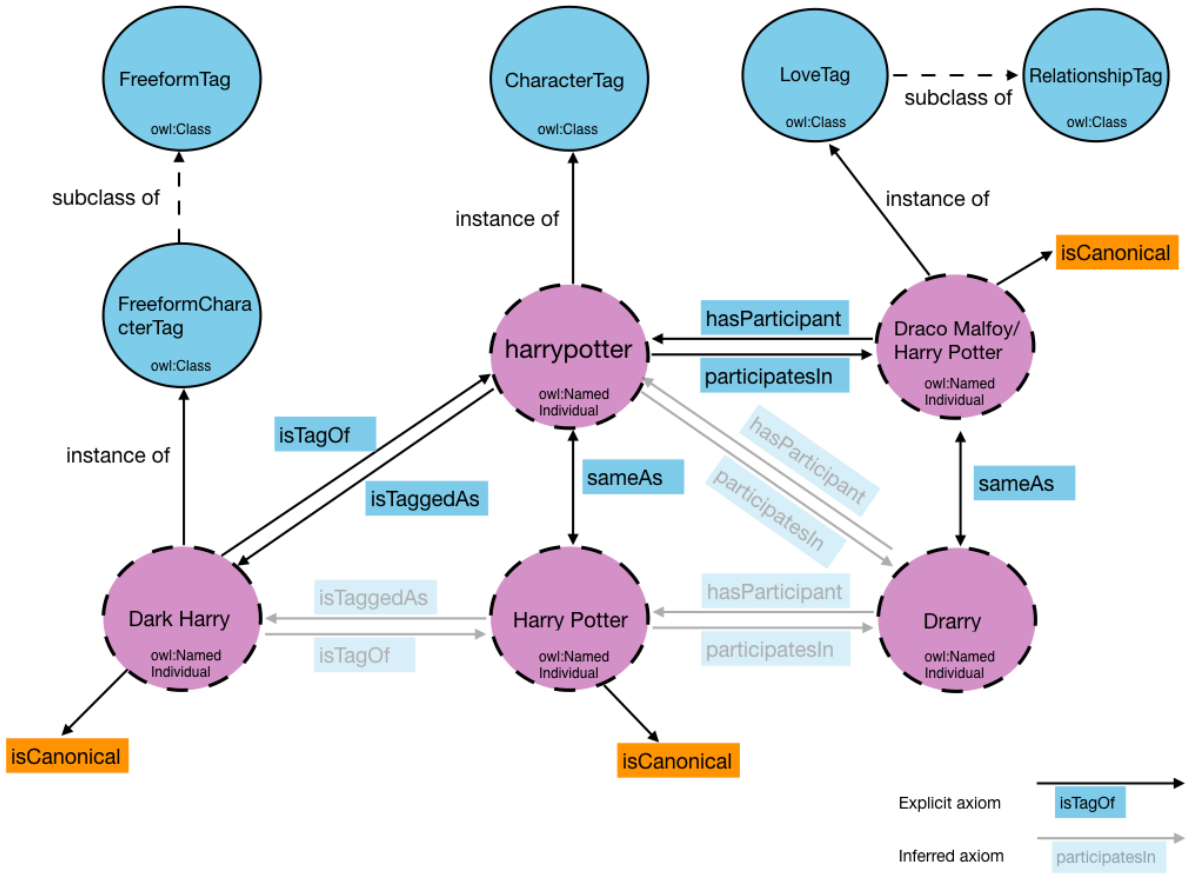
The steps followed to create the OWL knowledge base of the Harry Potter fandom with the software Protégé (Musen, 2015) are the following:

1. create classes for the four main categories (FandomTag, CharacterTag, RelationshipTag, and FreeformTag) and relevant subclasses: LoveTag, FriendshipTag, FreeformCharacterTag, FreeformRelationshipTag, FreeformPlotTag, FreeformPlaceTag, FreeformTimeTag;
2. copy all the tags from the main page of the fandom tag "Harry Potter - J. K. Rowling" (Anon, n.d.), create objects of the type owl:NamedIndividual for each of them, and assign them to the respective classes;
3. define which tags are considered canonical in the AO3 database;
4. copy the synonyms of every canonical tag from the tag's page, e.g. for "Hermione Granger" (Anon, n.d.), create objects of the type owl:NamedIndividual for each of them, link them to the respective canonical tag through the property owl:SameAs;
5. link CharacterTags to the RelationshipTags through the property "participatesIn" and define "hasParticipant" as the inverse property;

6. link FreeformTags to the CharacterTags and RelationshipTags through the property “isTagOf” and define “isTaggedAs” as the inverse property;
7. to complete the whole knowledge base, run the reasoner (Sirin et al., 2007) to resolve coreferences and infer axioms.

An example of how data are linked is shown below (Fig. 1).

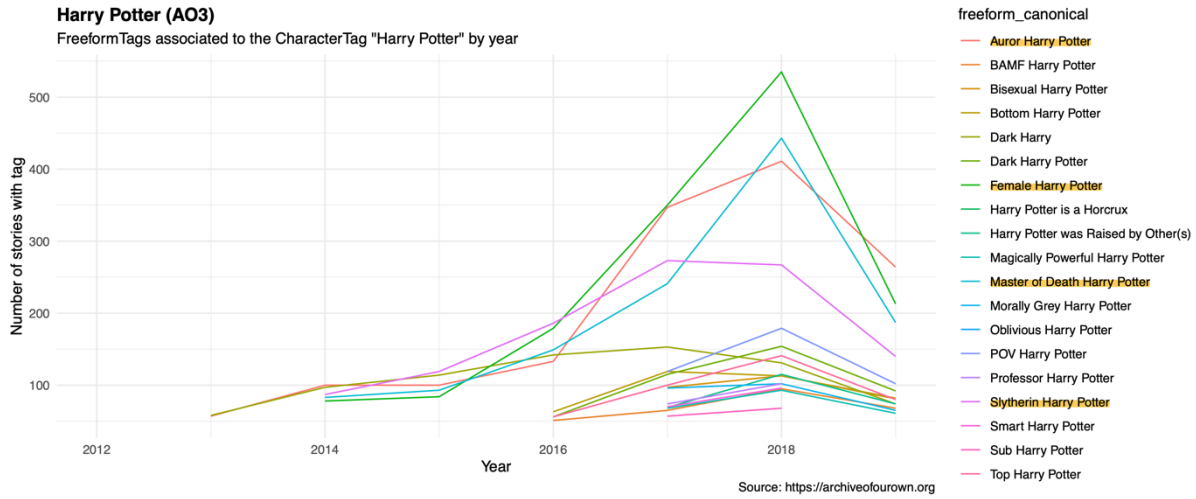
Fig. 1



Example of linked data of the Harry Potter fandom on AO3.

The resulting knowledge base has around 33,000 individuals (tags) linked between them. Specific information regarding various topics can be extracted and used to analyze the metadata of the stories published on AO3 or to find subset of stories with specific features. For instance, after having aggregated all synonyms of the FreeformTags associated to the CharacterTag “Harry Potter”, we can count the number of stories written every year about a certain version of the young wizard. The themes that attracts the most interest are a female version of Harry, his profession after graduating (Auror), the last stage of mastery of wizardry reached in the official novels (Master of Death), and a “dark” version which drastically changes the plot of the official novels (Slytherin Harry Potter) (Fig. 2).

Fig. 2



Freeform tags associated to the character "Harry Potter". The top four tags are highlighted in yellow.

References

AO3 Admin. (2012). *The Past, Present, and Hopeful Future for Tags and Tag Wrangling on the AO3*. *Archive of Our Own*. https://archiveofourown.org/admin_posts/267 (accessed 25 February 2020).

Dalton, K. L. (2012). *Searching the Archive of Our Own: The Usefulness of the Tagging Structure*. University of Wisconsin-Milwaukee. http://dc.uwm.edu/etd/26/ (accessed 24 June 2013).

Harry Potter - J. K. Rowling. *Archive of Our Own*. https://archiveofourown.org/tags/Harry%20Potter%20-%20J*d*%20K*d*%20Rowling (accessed 5 May 2020a).

Hermione Granger. *Archive of Our Own*. https://archiveofourown.org/tags/Hermione%20Granger (accessed 5 May 2020b).

McCulloch, G. (2019). *Fans Are Better Than Tech at Organizing Information Online | WIRED*. *Wired*. https://www.wired.com/story/archive-of-our-own-fans-better-than-tech-organizing-information/ (accessed 25 February 2020).

Musen, M. A. (2015). The Protégé Project: A Look Back and a Look Forward. *AI Matters*, **1**(4), pp. 4–12. 10.1145/2757001.2757003.

Organization for Transformative Works. (2009). *Archive of Our Own*. https://archiveofourown.org/ (accessed 5 May 2020).

Sirin, E. et al. (2007). Pellet: A Practical OWL-DL Reasoner. *Journal of Web Semantics*, **5**(2), pp. 51–3. 10.1016/j.websem.2007.03.004.