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Brian Dobreski, University of Tennessee, Knoxville
Barbara H. Kwaśnik, Syracuse University

Unique Features of the Person Class in Cultural Heritage Models

Background & Aims

Knowledge organizations systems (KOSs) model important entities of interest within a domain. In the cultural heritage domain, KOSs are often designed around cultural information resources, though many other kinds of entities must be modeled and described in the process. Of these, the "person" entity may appear straightforward, but is surprisingly challenging with complex implications. Within cultural heritage, personhood is closely associated with certain kinds of creative responsibilities and rights, though modern technological advances are challenging these traditional notions. In an era marked by AI creators (Fernández & Vico, 2013), digital recreations of the dead (Dobreski & Thompson, 2020), and deepfakes (Floridi, 2018), it is worth asking, in cultural heritage, what is and is not a person?

How has the person concept been modeled within the cultural heritage domain, and how is it distinguished from other kinds of entities? Here, KOSs serve as useful evidence. Building on previous work examining formal definitions of "person" in a variety of cultural heritage systems (Dobreski & Kwaśnik, 2021), the present study focuses on three specific conceptual models, analyzing the unique features of the Person class in order to determine the line of demarcation between persons and similar entities, as well as which traits are most indicative of personhood in cultural heritage.

Methods

We limited the scope of our exploration to domain models created directly by cultural heritage communities that contained "person" as a class. Other models whose scope includes but goes beyond cultural heritage (such as Schema.org) were not considered here. As such, our analysis focused on three KOSs prominent within cultural heritage metadata practice:

- CIDOC Conceptual Reference Model (CIDOC-CRM)
- Library Reference Model (LRM)
- Records in Contexts Conceptual Model (RiC-CM)

For each of the three models, researchers consulted official documentation and recorded information about the Person class, including its place in the hierarchy of entities and its

inherited and unique properties and relationships. Researchers then conducted a content analysis in the form of preliminary observations, focusing particularly on the properties and relationships unique to the Person class. What features accrue to persons that are not included in the other entities? Working across all three models, researchers arranged these properties and relationships into broader, thematic categories reflecting characteristics distinct to persons in cultural heritage data.

Findings & Implications

All three conceptual models define a person as a real, living or once-living human being. LRM and RiC-CM place the Person class hierarchically under Agent, while CIDOC-CRM uses a more complex, polyhierarchical structure, whereby Person is under both Biological Object and Actor.

In all three models, the Person class bears both inherited and unique properties and relationships. For example, within LRM the Person class inherited the property "Contact information" from the superordinate Agent class. The property "Profession/Occupation", however, is unique to the Person class in this model; an entity with a profession must therefore be a person in LRM, and only persons may have professions.

Focusing on these purely unique features, we found varying amounts among the three models: 6 in CIDOC-CRM, 1 in LRM, and 24 in RiC-CM. Reviewing these 31 properties and relationships, researchers were able to arrange them into four major thematic areas. These themes and examples from the three models are presented in Table 1.

Theme	CIDOC-CRM	LRM	RiC-CM
Biological/familial relationships	was father for, gave birth, died in		has ancestor, has child, has sibling
Organizational/work roles		Profession/Occupation	Occupation Type, is leader of
Social relationships			has teacher, knows
Rights			is owner of, has intellectual property rights on

Table 1. Major thematic areas and example properties and relationships.

As cultural heritage institutions turn toward semantically richer KOSs, they must define and model fundamental concepts, including personhood. Previous work has shown that, within cultural heritage conceptual models, personhood is often premised on agency, individuality, and human biology (Dobreski & Kwaśnik, 2021). While the three systems examined in the present study limit persons to real, biological humans, unique features within these systems reveal further assumptions. The most distinguishing characteristics of personhood revolve around work

activities and a set of limited biological/familial relationships. These features reinforce the importance of life, biology, and certain kinds of agency in personhood in cultural heritage.

At the same time, some types of entities are excluded from personhood, and thus from certain rights and roles. Can a virtual avatar bear intellectual property rights? Can an animal social media star have an occupation? While avatars and animals as entities may not be persons in the traditional sense, they exhibit some characteristics and activities limited to personhood in these conceptual models, such as "Profession/Occupation," or "having an ancestor". Systems such as CIDOC-CRM endeavor to cover all of cultural heritage, though in modeling persons so concretely, other kinds of creators, creations, and contributions to the cultural record may be obscured or left out of the model entirely.

Our analysis suggests other pertinent questions regarding the current modeling of the person concept as well. For instance, while "gave birth" and "having a father" are included, there is no mention of gender or gender identity as a feature. And while we assume "having a mother" is taken for granted in the concept of having been born, it is interesting that no other form of parenting is mentioned, such as surrogacy. Why are some aspects of personhood incompletely or inconsistently modeled? Are these blanks a legacy of older bibliographic data models, or are such details not considered important?

As cultural heritage KOSs become more concrete and restrictive about the person concept, these and other questions arise from the details both provided and obscured within the domain model. Additionally, we must consider the need for additional classes of non-human agents capable of recognizable creative work, as well as the correspondent creative roles and relationships to works these would require.

This work supports the scope and themes of the 2021 NKOS workshop by exploring domain modeling of important, real-world concepts, as well as the ethical implications of personhood in KOSs. Results presented here offer a better understanding of what defining traits distinguish persons from any similar entities in cultural heritage, and further highlight the assumptions and limitations of personhood in this domain. Opportunities for future work include analyzing real-life, complex creation scenarios using these three models to better understand how the person concept both supports and obscures the modeling of certain types of creative activity.

References

Dobreski, B., & Thompson, C. (2020). Recreated actors and attribution: An analysis of film crediting practices. *In Proceedings of the Association for Information Science and Technology*, 57(1), e230.

Dobreski, B., & Kwaśnik, B. H. (2021). Dimensions of personhood in cultural heritage: Who (or what) gets to be called a person? In *Proceedings of Libraries in the Digital Age (LIDA) 2021*. Dubrovnik: Inter-University Centre.

Fernández, J. D., & Vico, F. (2013). AI methods in algorithmic composition: A comprehensive survey. *Journal of Artificial Intelligence Research*, *48*, 513-582.

Floridi, L. (2018). Artificial intelligence, deepfakes and a future of ectypes. *Philosophy & Technology*, *31*(3), 317-321.

International Committee for Documentation. (n.d.). *CIDOC CRM: Conceptual reference model*. Retrieved from http://www.cidoc-crm.org/

International Council on Archives, Experts Group on Archival Description. (2019). *Records in contexts: A conceptual model for archival description*. Paris: International Council on Archives. https://www.ica.org/sites/default/files/ric-cm-0.2_preview.pdf

Riva, P, Le Boeuf, P., & Žumer, M. (2017). *IFLA library reference model: A conceptual model for bibliographic information*. The Hague, Netherlands: IFLA. Retrieved from https://www.ifla.org/files/assets/cataloguing/frbr-lrm/ifla-lrm-august-2017_rev201712.pdf