

Modeling Intangible Cultural Heritage as Placial Activity and Events

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Abstract. In this short paper I discuss my recent research developing conceptual and logical models for representing knowledge about historical places in databases, centered on activity and events. The motivating premise for this work is that what distinguishes a place is not only what *is there*, but what *happens there*, what *has happened* there, and what *can happen* there. It is often difficult to find or reshape data to describe places in those terms, but the rewards for doing so will be many, both for scholarship and educational projects at all levels. This is particularly so for those urban sites designated as important locales for both material and intangible cultural heritage.

There is a growing impetus worldwide to record present and past knowledge about cultural heritage¹. Much of this activity involves the annotation of material objects by museum curators and archaeologists. Many seek now to extend basic descriptive metadata to include significantly more contextual information for those objects, with sufficient standardization to permit interactions between systems. We should expect cross-collection searches and comparative analyses to become increasingly commonplace, with increasing breadth.

One important indicator of this trend is the growing number of applications of the CIDOC Conceptual Reference Model (CIDOC-CRM), a computational ontology developed by and for the museum community, and an ISO standard since 2005. The most distinctive feature of CIDOC-CRM is its event-centeredness. It is in one sense unsurprising for a historical data model to be essentially temporal, but historical events as ordinarily conceived are not normally seen as key attributes of museum artifacts. However, events are arguably the most central and comprehensive class of information container available. At minimum, artifacts are “involved” in events of creation, discovery, acquisition, and ownership transfer. Individuals and organizations are involved actors in each of these, in any number of roles, and course events occur at meaningful places and times. The indexing of events on dimensions of who, where, when, and why (purpose), make possible powerful faceted exploration capability in digital collections of tangible heritage, now in cases evolving to become comprehensive knowledge-bases.

¹ One nice example is *CultureSampo: Finnish Culture on the Semantic Web* (<http://www.kulttuurisampo.fi/?lang=en>)

Thus far I have discussed systems for annotating *tangible* cultural heritage, but the question before us concerns *intangible* cultural expressions in urban historical landscapes; how are they related in this framework? First, such landscapes are in a sense curated artifacts themselves—particularly those designated for recognition and protection. These exceptional places are products of distinctive cultural practices, are preserved and protected by public policy and, much like museum artifacts, described, studied and interpreted by scientists and humanists alike. They are also in a sense exhibited, as touristic attractions and as destinations for educational field trips. As larger and more complex products of distinctive cultural practices, these places should be amenable to formal description in databases and computing systems, much the way smaller historical artifacts are. Secondly, such places are settings for many forms of intangible cultural heritage we wish to represent. This can be accomplished; this extension of purpose can be aided by extending event models such as CIDOC-CRM to account for activity.

Over the past several years I worked at creating conceptual and logical models for representing knowledge about historical phenomena—things and happenings—and expressing those models in novel database schemas to support scholarly and education applications. That work is ongoing and in progress, but substantive results have been reported in my Ph.D. dissertation (Grossner 2010a) and several conference papers (e.g. Grossner 2010b). Some discussion of how that work bears on representing intangible heritage follows.

A Conceptual Foundation

Data models for historical applications should be based upon a simple formal understanding of the entities and relations involved. There is obviously no one correct data model appropriate for all historical representation, however it may be that a small set of *ontology design patterns*² (Gangemi 2005) can be widely agreed upon and found broadly useful. This idea stems originally from architect Christopher Alexander's *pattern language* (Alexander, et al 1977), a conceptual framework which has had considerable uptake in design generally, from buildings to urban systems to software. There are situations we wish to model or design for in information systems which are so commonplace as to be archetypical. I have identified six for geo-historical information systems: *events and participation, place, membership, historical process, periods, and attribution*. I will discuss one very briefly here—events and participation (which I take to

² Ontologies in this sense are computer engineering artifacts—expressions of logical relations between classes of entities. The approach of developing manageably-sized patterns specific to various domains of inquiry has been advanced by Aldo Gangemi among others (cf. <http://www.ontologydesignpatterns.org>)

include activity)—but it bears mentioning that attribution is an absolutely essential requirement for permitting multiple, possibly conflicting assertions about the same phenomena. This capability, while not usual in business systems for good cause, is a first principle for historical scholarship.

We are concerned with representing activity, a term with multiple senses. One can think of kinds of activity as classes of phenomena—a sort of “temporal substance” that events are composed of: praying, chanting, weaving, assembling, authoring, and so on. A particular kind of ceremony event might be composed of some praying, some chanting, some marching (a procession), etc. They may have certain classes of participant, either necessarily or possibly, e.g. always a shaman, possibly assistants, always supplicants. Specific instances of that sub-class of Ceremony event occur at some location, at some time, and have particular participants (residents of a region for example) who may be performing those constituent activities or simply present.

But we also use the term activity to aggregate events. In some cases this activity might be enumerated (the political protest activity in England in 1830; the anthropological research activity in 20th century Indonesia), but more commonly, such activity is non-specific. It may in fact comprise innumerable events, but these will never be specified. Maize farming in pre-Columbian Mesoamerica is one example; very many others are found in the cultural practices of UNESCO’s Intangible Heritage Lists³ (ICH).

Modeling Cultural Practices

How might this modeling approach accommodate the *Elements* inscribed in 2011 on the List of Intangible Cultural Heritage in Need of Urgent Safeguarding? First, the eleven listings are wholly tied to places, and incidentally, to ethnic groups as opposed to nation-states. Many places are rural, suggesting the differentiation of cultural practices in urban places may be arbitrary and problematic. I would argue the core representational challenges are the same in both cases. Those particular eleven listings include these kinds of activity: weaving, singing, prayer, performance (of dance, music, poetry drama and storytelling), boat building, sailing, courtship, food preparation and ritual ceremony. Several refer to specific recurring events, such as yearly festivals, composed of some of those activity types. A cursory upper-level classification of practices (activity) in *Elements* on the list is:

- Creating things, e.g. crafts, tools, buildings, written and oral literature
- Artistic performing
- Ritual performing
- Holiday observance

³ <http://www.unesco.org/culture/ich/>

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- Social activity, e.g. courtship, marriage
- Food preparation and meals
- Agricultural activity
- Resource extracting
- Hunting and gathering

A design pattern for this domain might include the following entities and relations among many others, written below for two instances. The simplified subject-predicate-object syntax is similar to notation for the RDF modeling language used the Linked Data increasingly seen in interoperable knowledge base systems.

“Yaokwa, the Enawene Nawe people’s ritual for the maintenance of social and cosmic order”

:RitualEvent	is-a	:CulturalPractice
Yaokwa	is-a	:RitualEvent
	has-purpose	`ensuring cosmic and social order’
	performed-by	`Enawene Nawe People’
	during-period	`yearly drought’
	has-location	`Junuena River basin, Brazil’
	consists-of	:Fishing
	consists-of	:FoodOffering
	consists-of	:Singing
	consists-of	:Dancing
:Fishing	is-a	:Activity
:FoodOffering	is-a	:Activity
:Singing	is-a	:Activity
:Dancing	is-a	:Activity

“Xoan singing of Phú Thọ Province, Viet Nam”

:PerformanceGenre	is-a	:CulturalPractice
XoanSinging	is-a	:PerformanceGenre
	performed-by	:XoanMusicGuild
	has-location	`Phú Thọ Province, Viet Nam’
	has-purpose	`praising kings’
	has-purpose	`appeasing spirits’
	has-purpose	`good luck and health’
	composed-of	:Singing
	composed-of	:Dancing
	composed-of	:Drumming
	during-period	`first two months of lunar year’

Representing all of the Elements on UNESCO’s ICH lists will be a major undertaking, but would have significant impact, in seeding a global distributed effort to preserve intangible cultural heritage.

References

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Biographical sketch

Karl Grossner holds a Ph.D. in Geography (U.C. Santa Barbara, 2010) and is currently working for Stanford University Libraries as a Digital Humanities Research Developer. In that role, he consults and collaborates with faculty researchers in selected projects, helping to design research, identify and apply relevant digital methods, and to build interactive scholarly publications of results. One recent example is *ORBIS: The Stanford Geospatial Network Model of the Roman Empire* (<http://orbis.stanford.edu>). A current project, *CityNature*, seeks to explain the enormous variation in the extent of urban nature in large U.S. cities using spatial and semantic analyses. Discussions have begun concerning the development in 2013 of novel data models and systems supporting reflexive archaeological practice at Çatalhöyük.

Karl's research interests include aspects of geographical information science bearing on computational models of historical places. In 2003 he founded a 501(c)(3) non-profit, World Heritage Web, Inc., and though that corporation has been largely dormant, heritage representation remains a principal research motivation. Karl is also actively involved in research on trans-disciplinary approaches to spatial literacy and education.