A Conceptual Model for Cultural Heritage Definition and Motivation

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Abstract:

The appropriate management of archaeological heritage in particular, and cultural heritage in general, requires that we have a deep and shared understanding of what it is and what it is composed of. Without clear answers to these questions, efforts to act on and preserve cultural heritage run the risk to be misguided. This need has been acknowledged by charters and directives; however, there is no clear shared understanding of the underlying concepts and very few analytic efforts have been made to clarify them. Older approaches used to emphasise the intrinsic properties of something to decide whether or not it was part of cultural heritage; nowadays, the trend is to look at how communities of people assign value to things. This paper presents a conceptual model of cultural, including archaeological, heritage that addresses two major concerns: what cultural heritage is (its definition) and why something becomes cultural heritage (its motivation).

Key Words: *Conceptual Model, Cultural Heritage, Ontology, Cultural Value*

Introduction

Questions such as "what is cultural heritage?" or "what is cultural heritage composed of?" seem very difficult or impossible to answer in a comprehensive and objective way. However, we need to reach a consensus on what the answer is to these questions if we intend to act on cultural heritage across borders and cultures, and preserve it over the decades and hopefully centuries.

Different charters and directives such as (UNESCO 1972; ICOMOS 1979; UNESCO 2004) that deal with archaeological and other kinds of cultural heritage apparently contain answers to these questions. Also, national, regional and local regulations on archaeological matters often include a definition or description of what archaeological heritage (or a related concept) is considered to be. Although most of these definitions and descriptions are based on previous ones, an in-depth analysis of their semantics reveals two major issues. First of all, there is no shared understanding of what archaeological or cultural heritage is, or what it is made of. Each text defines it yet again, introducing new nuances and necessarily contradicting others, rather than adopting existing definitions by making a reference to a well-known source. Secondly, there is a trend over the last few decades to remove the definition of cultural heritage from the things themselves by which more and more weight is placed on the *value* that communities give to the things rather than on the intrinsic value of those things, as analysed by Vecco (2010). This trend can be easily observed, for example, by comparing Article 1 of the UNESCO World Heritage Convention (UNESCO 1972), to the Yamato Declaration (UNESCO 2004). The former emphasises the "outstanding universal

value from the point of view of history, art or science" and the "outstanding universal value from the historical, aesthetic, ethnological or anthropological point of view", whereas the latter focuses on the tangible and tangible elements "that communities, groups and, in some cases, individuals recognize as part of their cultural heritage". The turn in focus from a disciplinary definition to a community-based one is remarkable.

The aim of this paper is not to create a theory of cultural heritage, or to discuss alternative positions to its definition. On the contrary, the aim of this paper is to illustrate how a conceptual model can be constructed for a specific theoretical explanation of cultural heritage i.e. how cultural heritage is defined and why things become cultural heritage. Evidently, we have chosen the best theoretical position about cultural heritage that we could find, but we are aware that other theories may exist.

ection 2 presents the theoretical position about cultural heritage that our conceptual model reflects. section 3 describes the conceptual model itself, taking an incremental approach and revealing the different components of the model step by step. section 4 introduces some discussion points and consequences of having the model in place, and presents some actual and potential application scenarios. Finally, section 5 concludes and describes some lines of future work.

The Theory to be Modelled

We can describe our theoretical positioning about cultural heritage as a series of principles, which we describe here.

Cultural heritage is composed of discrete entities. This means that cultural heritage is made of individual things that we can more or less discern from each other, rather than being a continuous mass. It does not mean that we always know what these things are, nor does it

mean that we are interested in disconnecting these things from each other; quite to the contrary, the tight connections that often exist amongst different things are a crucial aspect of their nature. By "thing" we should not understand physical things only, and we are definitely not referring exclusively to what is often named "tangible heritage"; we are using "thing" here in an ampler sense to include anything relevant that we can potentially describe, comprising intangible as well as tangible entities.

Cultural value is assigned by people to things. We understand cultural value as the relevance that people assign to something because of its importance from a historical, artistic or scientific point of view; because of a sentiment of identity or continuity regarding that thing; or a combination of both. This is compatible with (UNESCO 2004). Cultural value is assigned through interpretive processes that achieve a relatively stable consensus within a given community or discipline; that is, not every interpretation that is performed assigns cultural value. For example, an interpretation that one particular individual carries out on a thing, without the participation of others and without the necessary consensus, does not assign cultural value.

Cultural value is distinct to the valued thing. Things become enriched by cultural value assigned to them. That is to say, when people assign cultural value to something, this thing becomes augmented or enhanced by such added value in the eyes of the people who assign it. However, other people may be oblivious to such enrichment, and will not necessarily perceive it; this is especially so when the involved communities are culturally distant. We aim to manage archaeological and cultural heritage globally, and in a manner that is as culturally-neutral as possible, so we need to be able to offer both views of any particular thing (with and without its added cultural value) in order to cater for different perspectives on

the same entity. Inevitably, we must conclude that the cultural value added to something and the thing that is valued by it are, in fact, two different entities, which can be presented as an aggregate of closely-related parts for some purposes, but as separate things for others.

In addition, different peoples may assign different (and even contradictory) cultural values to the same thing, so that the option to keep the two aspects separate, and only link them together when necessary, seems a good approach to the problem of coping with multivocal perspectives on the same thing.

Cultural value is what makes a thing become cultural heritage. Most things are potential cultural heritage elements, but very few are actual cultural heritage elements. What makes something part of cultural heritage is, precisely, the added cultural value that people assign to it. There are two major kinds of cultural value: expert and non-expert. Expert cultural value is often explicitly assigned and conveyed by the very same people who assigns it; for example, a researcher in archaeology performing an assessment on an Iron Age torc, or a Heritage Officer establishing the curtilage boundaries for the protection area of a hillfort, are assigning expert cultural value. Non-expert cultural value, on the other hand, is often implicitly assigned and is conveyed, if at all, by parties different to those who create it. For example, the sense of belonging and identification that the neighbours of a village maintain about their local church, or the admiration and sense of wonder that European tourists experience when visiting the Forbidden City in Beijing, constitute expressions of non-expert cultural value. The torc, the hillfort, the local church or the Forbidden City are not heritage elements per se, but because people are attaching cultural value to them.

Things and cultural value are often represented for convenience. Things are often represented for convenience through text, images, sound and other media. This includes intangible things as well, of course. Cultural value is also represented; since cultural value is abstract and volatile in nature, we need a way to persist it so that we can communicate it and use it in the future. For this purpose, we use similar kinds of media: text, images and sound.

A Conceptual Model of Cultural Heritage

Taking the principles described in the previous section as a starting point, a conceptual model was developed. The following sections describe the details of this model.

Conceptual modelling in context

A model is "a statement about a given subject under study, expressed in a given language" (Gonzalez-Perez and Henderson-Sellers 2005). A conceptual model, specifically, is a model composed of concepts rather than parts of other kinds. Since concepts are abstract and cannot be seen, conceptual models are often depicted in the form of diagrams plus accompanying text. Sometimes, conceptual models are compared to ontologies, and the latter term may be more familiar to some readers; however, ontologies have been shown to be a special case of models (Atkinson et al. 2006), so anything that we say about models can be equally applied to ontologies as well. Conceptual models and ontologies may also be familiar in the field of archaeology thanks to the CIDOC-CRM (ISO 2006), a conceptual reference model for cultural heritage that has been used and adapted to the archaeological field by works such as CRM-EH (University of Glamorgan 2011).

For this paper, and for the sake of conceptual modelling, the subject under study is cultural heritage, and the language that we use to represent cultural heritage is ConML version 1.1 (Incipit 2011b), a conceptual modelling language especially designed for usability and
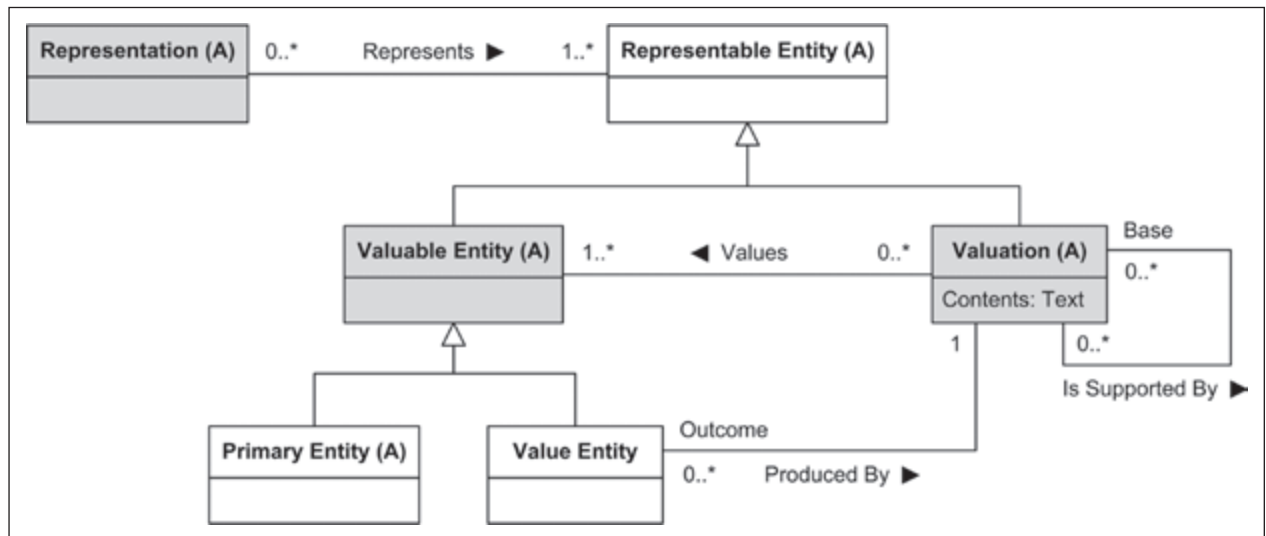
Figure 1. High-level classes in the cultural heritage model. Rectangles depict classes and lines depict relationship of different kinds between classes. Numbers on line ends represent association cardinalities, i.e. how many instances of a class may be linked to the opposite class at any given time through that association. White arrow heads represent generalisation relationships, i.e. semantic subsumption. Shaded classes (valuable entity, valuation and representation) correspond to the three major concerns to be captured.

expressiveness. Using ConML, the concepts that compose a model are represented as classes, where each class is "a formalisation of a category that is relevant to the model" (Incipit 2011a, 5). A model of the archaeological record, for example, may contain classes named Artefact, Feature and Site, representing the corresponding relevant categories of things. In the following sections, we depict the conceptual model of cultural heritage using the ConML version 1.1 graphical notation. A full description of ConML's features and notation is out of the scope of this paper; please see (Incipit 2011b, 2011a) for more information.

High-level abstractions

An analysis of the principles described in section 2 reveals that there are three major concerns that need to be captured in the cultural heritage model, namely:

• *Valuable entities*. A valuable entity is anything to which cultural value can be

assigned. In other words, a valuable entity is each of the individual things to which people can add cultural value. Valuable entities comprise all the "raw matter" that may become cultural heritage, including tangible and intangible things.

• *Valuations*. A valuation is the discourse that adds cultural value to a valuable entity. In other words, a valuation is the social and cultural vehicle that people use in order to produce cultural value. This includes expert and non-expert approaches as described in section 2.

• *Representations*. A representation is a persistent expression of one or multiple valuable entities or valuations.

Each of these three concerns is captured in the model as a class (Fig. 1), and its definition slightly refined. Additional classes are necessary to establish connections between them, and also to provide the necessary level of detail so that the model can be used for practical purposes.

Valuable entities

To start with, Valuable Entity is defined as *an entity that has been, is, or may be culturally valued*. Valuable entities, as required by the adopted theoretical position, include anything that might potentially become cultural heritage; no judgment about their value is made at this point. In practice, this means that almost anything can be considered a valuable entity, since it can be argued that some community, somewhere, may assign some cultural value to it at some point.

There are two types (i.e. subclasses) of valuable entities: primary entities and value entities. Primary Entity is defined as *a valuable entity which, when perceived, is understood in the absence of explicit interpretive processes*. In other words, primary entities are those that people understand in a straightforward manner, such as a building, a pot or a trade fair. When we say that people understand primary entities in a straightforward manner we do not mean that everybody will understand the same primary entity in exactly the same way; this is not necessarily so. What we mean is that the entity is recognised as *an* entity and can be described as such, even though each individual may contribute a different, subjective perspective to it. In contrast, Value Entity is defined as *a valuable entity that can only be understood as the outcome of a valuation*. This means that a value entity, while being a valuable has been majorly constructed through an interpretive process, and thus can only be grasped if that process is known and understood. For example, an archaeological study may conclude that a number of megalithic necropolises across a ridge, together with some rock carvings, the associated natural features such as rocky outcrops, plus the ancient paths that link everything together compose a complex archaeological landscape. Such an archaeological landscape is an entity in the eyes of the archaeologist, and probably in the eyes of many of his/her colleagues, but none of the local inhabitants of the area would ever understand that entity as such, since they lack the information and the background to establish the necessary connections. To the contrary, they would understand most of the elements separately. The archaeological landscape is hence a value entity.

Valuations

The second major concern relates to valuations. Valuation is defined as *an entity that adds cultural value to one or multiple valuable entities through interpretive processes that attain consensus within a group or discipline*. This captures the fact that cultural value is assigned by people to things (i.e. valuable entities), and that the valuation and the valuable entity are separate (albeit closely related) entities.

Multiple valuations can exist on a single valuable entity; this is shown by the 0..* cardinality on the right-hand side of the Values association in figure 1. What is more, the contents of these valuations (i.e. the semantics of their discourse) do not need to be necessarily compatible with each other. It is to be expected that different communities and disciplines have dissimilar perspectives on the same thing and therefore produce divergent narratives. By providing for this, the model supports the multivocal valuations that are ever so common. Having said this, it is also necessary that the model expresses the fact that some valuations support further ones; often, a valuation is made on an entity taken into account previous valuations and building on them. The Is Supported By self-association of the Valuation class in figure 1 supports this, by allowing that a valuation, optionally, uses others as base.

Representations

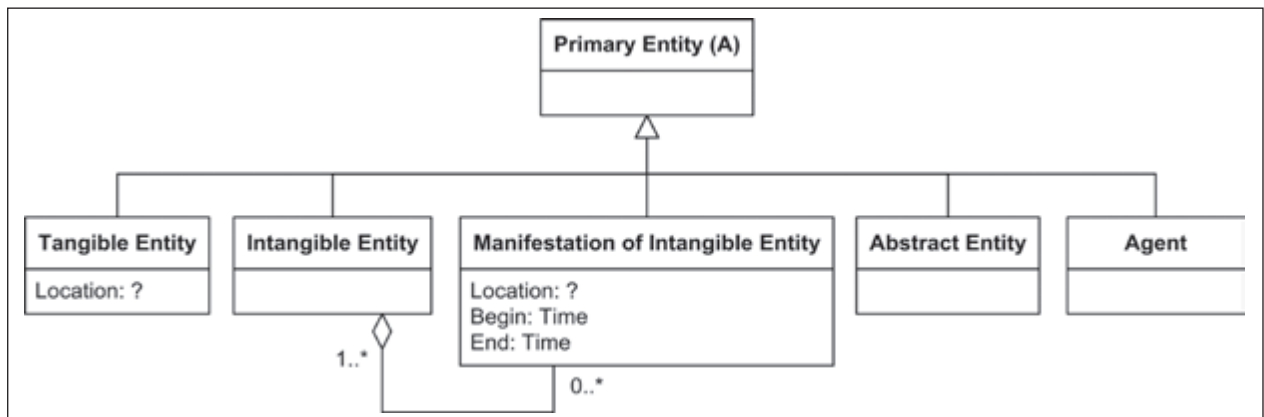According to the adopted theoretical position

Figure 2. Subclasses of Primary Entity. The diamond shape at the end of the line means a whole/part relationship.

described in section 2, both valuable entities and valuations are often represented in different media. From this perspective, they need to be treated equally, i.e. both need to be objects of representations. The abstract class Representable Entity is introduced into the model for this purpose; a Representable Entity is either a valuable entity or a valuation. Having this structure in place, a Representation is defined as *an entity that reflects the forms, contents, characteristics and/or properties of one or multiple representable entities.*

Primary entities

The majority of the things that compose cultural heritage are instances of Primary Entity in figure 1. The number and diversity of entities in this class is potentially immense, so some detail was added to the model in the form of subclasses (Fig. 2).

Let us remember that primary entities are those which, when perceived, are understood straightforwardly in the absence of explicit interpretive processes. Within these, perhaps the most intuitive kind corresponds to tangible entities. Tangible Entity is defined as *a primary entity that is predominantly perceived through its materiality.* The concept is self-explanatory; some examples include a hut or a pot fragment. Intangible entities,

which are usually presented as the counterpart of tangible entities, are captured in the model as two rather than one classes. To start with, Intangible Entity is defined as *a primary entity that is predominantly perceived in an indirect manner through its manifestations.* To complement his, Manifestation of Intangible Entity is defined as *a primary entity that corresponds to the expression of one or more intangible entities at a particular time and place, and which is predominantly perceived in a direct manner through non-material aspects.* As shown in figure 2, the two classes are connected by a whole/part relationship; this is a very strong kind of link that indicates that manifestations of intangible entities can be seen as the "visible" parts of intangible entities. In other words, the model regards intangible entities as abstract constructs that can only be observed via their manifestations, which occur in actual space and time. For example, the Burning Man festival in Nevada is an intangible entity. Every time that it actually takes place, the *happening* constitutes a manifestation of intangible entity. It is the manifestations which have a location and a time; the intangible entity per se may have a description and some additional details derived from the associated set of manifestations.

A fourth kind of primary entities is given by abstract entities. Abstract Entity is defined as *a primary entity that comprises abstractions*

or ideas only, with no concrete manifestation whatsoever. Abstract entities are similar to intangible entities, but they lack manifestations; we perceive them as mere abstractions that get conveyed from person to person through natural language or equivalent means. Some examples may include beliefs or imaginary places, such as Pachamama or Heaven.

One could argue that abstract entities such as these examples do have manifestations too; for example, a painting of Heaven occurs at a particular time and place, and is manifesting the abstract idea of Heaving. In fact, the line that distinguishes abstract entities from intangible entities is a blurry one. The criterion that we suggest to differentiate them is the following. Intangible entities are strongly defined by their manifestations, and the corresponding abstraction (i.e. the intangible entity itself) is usually constructed interpretively from them. For example, the very concept that we share of the Burning Man festival has been created out of the observation, documentation and study of the series of particular manifestations of Burning Man festivals over the years. In other words, intangible entities are manifestation-driven. On the contrary, abstract entities are abstraction-driven, because the abstract notion predominantly shapes whatever representations there might be of it, rather than the other way around. Incidentally, this is why intangible entities are much more malleable and ever changing than beliefs and imaginary places. We are aware that this is not a black-and-white distinction, and that there will be multiple cases where both classes (i.e. Intangible Entity and Abstract Entity) are suitable to model something. As we explain in section 4, the model is weakly prescriptive regarding classification, so this should not be a problem.

The fifth and last kind of primary entities are agents. Agent is defined as *a primary entity that corresponds to a person or group of persons*. Including people as entities allows us to consider people as valuable entities too, and therefore add cultural value to them. Maybe this does not make much sense with regard to single individuals (or maybe it does), but it is definitely useful in order to express the valuations associated to particular communities.
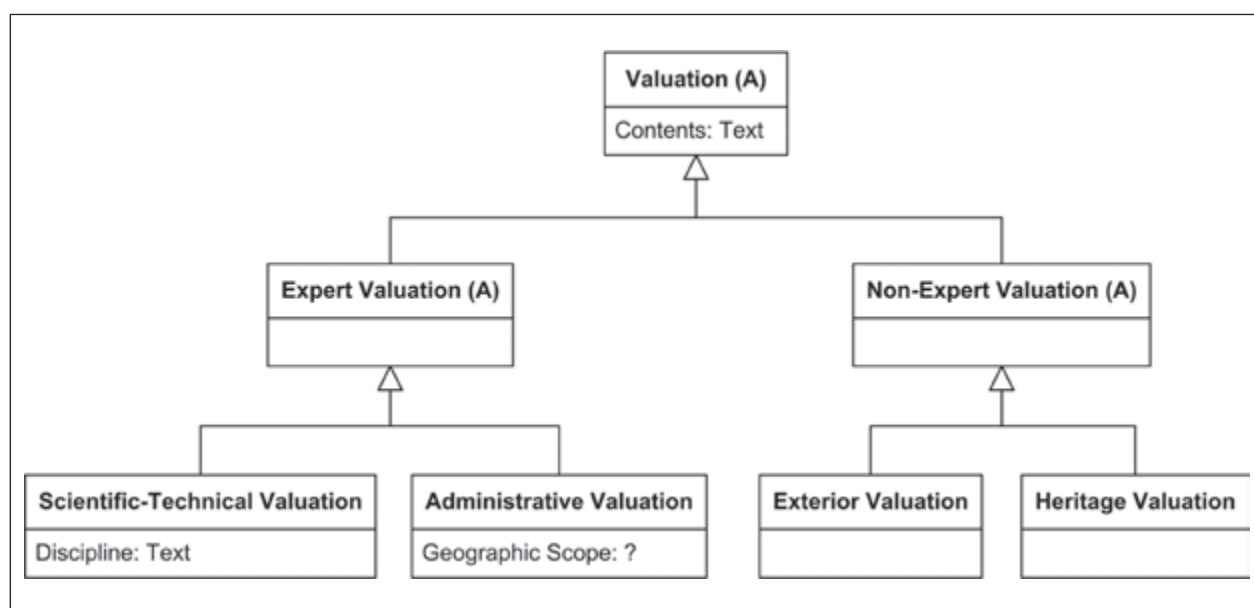

Figure 3. Subclasses of Valuation.

Valuations

Valuations add cultural value to a thing, i.e. a valuable entity, of whatever kind. Depending on who issues a valuation and what the viewpoint is, different kinds of valuations can be considered (Fig. 3).

In section 2 we described two major types of cultural value: that expressed from expert and non-expert points of view. Reflecting this, valuations are specialised into two subclasses. The first one, Expert Valuation, is defined as *a valuation that attains consensus within an expert group and is constructed in a formal manner*. Expert valuations are usually explicitly issued, that is, there is an intention to value whatever is being valued and an established methodology or standard process is followed. In addition, and in connection with said explicitness, expert valuations are usually disseminated by the same agents who create them. There are two subclasses of expert valuation. Scientific-Technical Valuation is defined as *an expert valuation created by researchers and/or technicians from the perspective of a particular discipline*. For example, a geomorphological assessment of an area in order to contrast an archaeological hypothesis constitutes a scientific-technical valuation within the discipline of geomorphology. As for any expert valuation, it is intentionally issued and an established methodology is followed. The second subclass of expert valuation is Administrative Valuation, which is defined as *an expert valuation created by a competent authority from the perspective of heritage management*. For example, the interpretation and protection conditions determined by a Heritage Office on a construction site constitute an administrative valuation; like in the previous case, and also being an expert valuation, it is intentionally issued and an established process is followed.

The second subclass of valuation is Non-Expert Valuation, which is defined as *a valuation produced by a community from a non-expert and non-scientific perspective, and constructed in an informal manner*. Non-expert valuations are usually produced implicitly, that is, without a definite and clear intention to value what is being valued, and no particular methodology is followed. In addition, and since there is no explicit intention to issue a valuation, the outcome of the valuation is not disseminated or, if it is, it is done by parties different than those who issued the valuation in the first place. Like in the previous case, there are two subclasses of non-expert valuation. Exterior Valuation is defined as *a non-expert valuation expressed in terms of strangeness and distant appreciation*. For example, the response in terms of wonder and amazement that many European tourists experiment when visiting archaeological monuments in Central America or South East Asia corresponds to an exterior valuation. As for any non-expert valuation, there is no explicit intention to value the monuments, and we do not feel the need to communicate the results of our valuation to others beyond the mere anecdote; if anything, tourism agencies of the respective countries will gather our impressions (or their interpretations of them) and use them to publicise their cultural resources. The second subclass of non-expert valuation is Heritage Valuation, which is defined as *a non-expert valuation expressed in terms of identity, continuity and/or closeness*. For example, the sense of belonging and community-building that many people feel about their local landmarks, environment or social practices corresponds to a heritage valuation. Like in the previous case, and also being a non-expert valuation, there is no intention to issue a valuation, and there is no particular methodology being followed.

It is evident that exterior valuations capture the outsiders' point of view whereas heritage valuations capture that of the insiders. Why haven't then we named the latter "inside valuation" or something along these lines? The reason lies in a theoretical position that we took while developing the conceptual model. In

section 2 we said that most things are *potential* cultural heritage elements, but very few are *actual* cultural heritage elements. We also said that cultural value is what makes a thing become an actual cultural heritage element; now that we have established what kinds of valuations there are, we can be more specific and say that *heritage valuations are what makes a thing become an actual cultural heritage.* In other words, we believe that a valuable entity does not cease being a potential and start being an actual element of cultural heritage because of any kind of valuation; to the contrary, only valuations of the Heritage Valuation kind have this capacity. Valuations expressed in terms of identity, continuity and/or closeness are the ones that make things become part of cultural heritage; this is supported by the current trend in charters and declarations that we described in section 1 to take these aspects into account as the major cultural value generators rather than the intrinsic properties of things. As a consequence, we can offer the following definition based on our conceptual model: cultural heritage is *the set of valuable entities that have at least one associated heritage assessment.*

Discussion and Applications

The conceptual model introduced in the previous section is discussed now and some application scenarios are described.

The modelling process

At this stage we can admit that the theoretical position that we describe in section 2 was not an *a priori* foundation from which the conceptual model was constructed, but something that emerged dialectically during the conceptual modelling process. Although some rough ideas and guidelines were clear and have not changed since the very beginning, most of the model contents have been discovered as part of the modelling process itself. This process was undertaken by a team of about five people, including three archaeologists with some previous exposure to modelling and one software engineer. Conceptual modelling showed to be an immensely productive exercise to reason about archaeological theory and ontological and epistemic positions regarding what cultural heritage is and how we want to handle it.

This connects nicely with the very notion of *model.* A model is usually constructed in order to discard details (i.e. to abstract) from the subject under study and retain only what is essential for some stated purpose; the model, being simpler than its subject, can be used as a surrogate (Henderson-Sellers and Gonzalez-Perez 2010, 220) for the subject while presenting less complexity, allowing for more fluid reasoning that can be applied back to the subject under study. By using a conceptual model, we found that our ability to reason about archaeological heritage was much enhanced.

Avoiding prescriptiveness

A key idea that we maintain is that the model should avoid being prescriptive as much as possible. This means that the model does not establish a fixed classification of archaeological entities into given classes, except at a very abstract level. For example, the model specifies two kinds of valuable entities: primary entities and value entities (Fig. 1), and gives definitions for them. When confronted with an actual archaeological entity, we can apply these definitions and decide what category suits it better, and ultimately make a decision on whether that entity should be treated as a primary entity or a value entity. But that is a decision that we make; the model has no predefined solution to the classification problem. Let us consider the case of a frontier river bank along which the remains of a number of medieval fortifications have been found, and relationships between them have

been established. Ontologically, the model does not impose any particular view on this, i.e. this is neither a primary entity nor a value entity. From an epistemic perspective, and depending on our purpose, goals and semantic environment, we may choose to classify this entity as one or the other, as long as we can defend it from a definitional point of view. If we believe that the system of fortifications along the river bank, when perceived, is understood as a whole in the absence of explicit interpretive processes (*cfr.* the definition of primary entity), we should feel free to classify this as such; if, on the other hand, we believe that the system of fortifications can only be understood as the outcome of a valuation (*cfr.* the definition of value entity), then we should classify it as a value entity.

Refining the model

It is easy to observe that the classes in the model represent very abstract concepts. Even the least abstract, such as Tangible Entity or Administrative Valuation, are extremely vague for any real-world application. We have described some examples that illustrate specific entities that are likely to be covered by each of these classes, but surely a finer degree of classification would be useful for practical purposes. In other words, further layers of classes should be added, specialising from the ones described in section 3, in order to characterise and define more concrete types of archaeological things; some examples could be Building (a subclass of Tangible Entity), Vessel (another subclass of Tangible Entity), Ritual (a subclass of Intangible Entity) and Protection Area Valuation (a subclass of Administrative Valuation). Classes like this, however, have been intentionally left out of the model, because they introduce an amount of category bias (Gonzalez-Perez in press) that is too large. By "category bias" we mean that the introduction of classes like these would mean adopting a particular viewpoint on archaeological reality

which may be applicable to some contexts but not to others. This is always a risk, but the more abstract the classes are, the smaller the risk. For example, few people would disagree that concepts such as Valuable Entity or Valuation are applicable to archaeology, in whatever application context they may work. However, concepts such as Building or Ritual assume a very specific conception of the archaeological record and therefore entail a much larger category bias. For this reason, the model consists only of classes that are believed to be of relatively universal applicability.

This means that, in order to use the model for the classification of actual entities, one may want to refine it, or add extra classes to it as specialisations from the existing ones. This can be done as part of the model usage as long as definitions are kept compatible. For example, a project team or an organisation may decide to add a Building class as a subtype of Tangible Entity and define it in such a way that does not contradict the definition that is provided for Tangible Entity.

Conclusions

This paper presents a conceptual model of cultural heritage, based on a theoretical position that separates the cultural value that people assign to things from the things being valued. Things that can be valued are called *valuable entities*, and the discourses that add cultural value to them are called *valuations*. One particular type of valuation is named *heritage valuation*; they are issued by a community in an informal manner and expressed in terms of identity, continuity and/or closeness. This type of valuation is what makes a valuable entity to become part of cultural heritage.

The benefits of having this model are of two kinds. First of all, its construction, ongoing refinement and usage make up an excellent intellectual environment to reason about archaeological heritage, its nature and the

ways we interact with it. Secondly, adopting the model across different projects, research efforts and infrastructural initiatives is starting to show promising results, given that the model is barely prescriptive, letting each particular endeavour decide on the specifics while sharing an abstract common ground.

Acknowledgements

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