Unlocking the Polysemy of Museum Objects: Documenting and Enriching Information Through Semantic Technologies

Jiayu Li[1,*], Antonis Bikakis[1] and Andreas Vlachidis[1]

[1]University College London, Gower Street, London, WC1E 6BT, UK

Abstract

Museum objects are information sources for research, exhibition and education. Their meanings and the information they convey can vary depending on the context of interpretation. Museum records usually provide the information basis and context for object interpretation. However, as museum records are shaped by the institutional interests in objects, information from these records can privilege specific interpretations of objects while concealing alternative ones. This study investigates how to facilitate multiple interpretations of museum objects through semantic technologies based on museum records of objects. To achieve this, this study proposes a methodology built upon established routes of semantics-based information modelling and enrichment. It encompasses a set of selection principles and structural requirements and operationalises these principles and requirements through a specific information model and a defined semantic enrichment strategy.

Keywords

museum objects, documentation, polysemy, interpretation, semantic technologies

1. Introduction

Museum objects are collected as documents of cultures and societies and constitute a source for research, display and education [1, 2]. The value of museum objects lies in the information they carry [3], which contributes to the knowledge and understanding of the objects themselves and of the cultures and societies to which they relate. Objects are polysemic in nature. That is, their meanings as well as the information they convey can vary depending on the context and the methods for interpreting the objects [4, 5].

Museums hold the primary responsibility for the curation of collections, including documenting and interpreting objects, with their accounts valued as the definitive authority. This authority has been challenged since the late 20th century. Hooper-Greenhill [6] argues that museums' defining and classifying objects are historically and culturally contingent, influenced by historically specific factors such as the existing divisions between objects, curatorial practices of specific institutions, and the personal interests and expertise of curators. The meaning of objects can shift across different classification systems, such as a silver teaspoon representing "Industrial Art" in Birmingham City Museum, yet "Silver" at the Victoria and Albert Museum [6]. In this sense, Cameron [7] indicates the arbitrariness of the single, authoritative interpretation of museum objects, considering the validity of other interpretive possibilities.

The polysemy of objects reveals the plurality of contexts in which they can be interpreted. It also highlights the information potential of objects, which van Mensch [2] describes as "limitless sources of information". In this sense, the single context and interpretation provided by museums cannot leverage the full information potential of museum objects and limits opportunities for knowledge discovery and alternative interpretations.

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*Corresponding author.

jiayu.li.21@ucl.ac.uk (J. Li); a.bikakis@ucl.ac.uk (A. Bikakis); a.vlachidis@ucl.ac.uk (A. Vlachidis)

0009-0002-5688-272X (J. Li); 0000-0003-4162-1818 (A. Bikakis); 0000-0003-0986-4430 (A. Vlachidis)



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This study focuses on revealing the polysemy of museum objects and facilitating their multiple interpretations. The objective is to place objects in contexts that can accommodate multiple interpretations while not imposing or implying any specific meaning. Towards this aim, it proposes a methodology for documenting and enriching the information of museum objects, which is built upon established methods of semantics-based information modelling and enrichment. Taking the descriptive metadata of museum objects as the information basis, the methodology organises the object information in a way that enables diverse interpretative pathways, and enriches object records with relevant information beyond traditional museum documentation to assist in forming pluralistic contexts for object interpretation. This paper presents the conceptual background and preliminary outcomes of this doctoral research in progress.

The paper uses a running example to elaborate the proposed methodology. The example object is the Akan drum from British Museum, and all relevant information discussed in this paper is from the British Museum catalogue [8]. The Akan drum was produced in the 18th century by Akan people, a major language group in West Africa. It was collected by Clerk in North America, then acquired by Hans Sloane, who bequeathed the drum to the British Museum in 1753. Due to its West African origin and materials and its transatlantic journey from Africa to North America, the British Museum recognises its association with the slave trade.

2. Relevant Concepts

2.1. Perspectives of Object Study in Material Culture Studies

This study examines museum objects from the perspective of material cultural studies, a scope also adopted by museums [9]. This interdisciplinary field has formed around the consensus that material objects serve as media for studying human cultures and societies, as human life cannot avoid interactions with the non-human world [9, 10]. The evolving views within the field have revealed the multiple interpretive pathways for objects.

Providing a brief overview of the evolving perspectives, objects were initially viewed as utilitarian tools which reflect a community's level of civilisation, social relations, and political-economic systems [9]. In 1970s-80s, scholarly attention shifted to their symbolic meanings that reflect human ideas, worldviews and social changes [11, 9]. For example, Munn [12] examines the iconography on the artefacts of Walbiri in central Australia to understand their meaning and function in Walbiri cosmology and society. Since the 1980s, objects have been recognised as playing an active role in social life, forming identities, institutions, and social practices through their production, consumption and exchange [11, 9]. Some scholars (e.g. Tim Ingold) particularly emphasise the changing materiality of objects and their constant influence on the human-object relationships [10].

A distinction can be drawn among these evolving views based on whether objects are seen as separate and passively involved in human life ("the study of material culture"), or integrated and actively involved ("the study of materiality" or "new materialism"), among which the latter have become more dominant recently [10]. For example, influenced by studies on the (social/cultural) biography of objects [13, 14], Hicks [10] proposes a holistic view of "things as events". This approach concentrates on how both the materiality and meaning of objects evolve over time and calls for attention to each stage of their lives, regardless of the significance attributed to them by any research perspective.

2.2. Information and Meaning of Museum Objects

The information and meaning of museum objects have been widely discussed in the literature (such as in [15, 2, 5, 16]). Based on these discussions, we define and distinguish the key concepts that are relevant to this study.

In general, museum objects can convey information of two types: 1) information about themselves, such as their origins, materials, functions, and object history, and 2) information about the cultures and societies they originate from. For example, the Akan drum can inform us about the musical aspects of

Akan culture. The first type of information forms the basis for generating more information of both types. We refer to this specific type as *information of museum objects* (or *object information*).

Museum objects initially only carry "cold hard facts" such as measurements and visual form [7, p. 83]. Most other object information, if not derived from relevant archives, is interpreted based on these facts and relevant knowledge [7]. For example, based on the scientific examination of the drum's material and the botanical knowledge of West Africa, we can infer its African origin. Building on this geographic and cultural attribution, integrating knowledge of Akan cultural traditions can inform us of its function as a drum.

The information of objects can shape their *meanings*. For example, given the information above, the Akan drum can be interpreted as a representation of Akan music, or a representation of Akan wooden artefacts. Each meaning of objects can lead to different directions of knowledge discovery and further interpretations of both the object and the cultures and societies they relate to.

Interpretation refers to "an explanation or opinion of what something means" [17]. It indicates an intentional view of the target object, one among multiple possible understandings of it. Tilley [5] argues that many factors can affect the interpretation of objects, such as the environment, the interpreter (their relevant foreknowledge, methods of reasoning, emotional reactions, etc.), and the purpose of interpretation. Besides, the research perspectives in material culture studies (in Sec. 2.1) reveal the various scopes and paradigms for object interpretation. All these factors can shape different interpretative frameworks, yielding new information and meaning of objects from diverse perspectives.

We refer to each such interpretative framework as an *interpretative context*. Consisted of meanings and rules of reasoning, an interpretative context is often constructed by selecting and organising information purposefully. The meaning that an object acquires within such a context is bound to the specific framework. For example, the Akan drum can represent the musical aspects of Akan culture in an interpretative context that compares instruments and music of different cultures, while this meaning is not applicable within an interpretative context focusing on the slave trade in the 18th century.

3. Interpretative Contexts in Museum Documentation

Traditional museum documentation does not inherently support the polysemy of objects. The documentation practices of museums are rooted in the nineteenth-century empiricism which assumed a single, definitive meaning fixed within the physical form of objects [7]. To manage diverse collections, museums organise objects into closed classification frameworks, assigning them fixed meanings based on categories like systematics or geography [18]. Consequently, once an object is placed into a specific classification, a single interpretation emerges and overrides other possible meanings [7].

Museums have their own scopes of interest for studying and documenting objects. For example, the British Museum typically approaches objects from an archaeological perspective, while the Victoria and Albert Museum focuses on art history, design, and craftsmanship [19]. Curators can also have personal interests in objects. These predilections shape the classification and documentation principles of museums and form specific interpretative contexts for museum objects. These contexts privilege certain intended meanings while concealing alternative ones, even if curators do not deliberately intend to impose such interpretative restrictions on objects.

Despite the restrictions, the museum records of objects, specifically the descriptive metadata, still provide a reliable information foundation for the interpretation of objects. However, this raises the challenge of how to leverage limited, perspective-restricted metadata to support multiple interpretations of museum objects. Drawing on critical studies such as [20] and [21], our preliminary analysis reveals five aspects through which the interpretative contexts in museum documentation are formed across two information processes, implicitly shaping the meanings of museum objects:

In the process of information selection:

- **Information absence**: Object information that is out of the interpretative scope may be excluded, concealing alternative object interpretations. For instance, museum records from a science history perspective may not document the aesthetic characteristics of objects.

- **Information with interpretative implications**: Information of broad historical or socio-cultural information can be included, actively constructing specific interpretative contexts. For example, in the record of the Akan drum, the British Museum record mentions the slave trade, a broad social context of the events that the Akan drum may have undergone (e.g., a journey from Africa to North America). This information can direct the interpretation of the Akan drum toward particular perspectives, such as viewing the Akan drum as evidence of the colonial history.

In the process of information presentation:

- **Linguistic presentation**: Object information can be described with terms that align with the discourses of interpretative contexts. The selection of certain terms excludes other relevant semantic aspects of the information, as well as the related object interpretations. For example, the British Museum describes the object type of the Akan drum simply as a "drum". By contrast, for other instruments in its collection, the Museum employs specialised terms, such as "damaru", a term reserved for a specific type of drum characterized by its hourglass shape and religious significance [22].
- **Level of structuredness**: Object information can be documented in structured, semi-structured, or unstructured formats. This structural disparity determines how easily information is digitally retrieved and cognitively processed, thereby steering the interpreter's attention and shaping their interpretations of an object. For example, the British Museum records the materials of the Akan drum in structured format, but its visual designs and patterns in plain text.
- **Granularity of information**: Object information can be documented at varying levels of detail, which guide the interpreter's attention and frame their interpretations. For example, the British Museum records the inscription on the Akan drum with five dimensions: type, content, language, position, and note, while for the inscription on a Chinese teapot only three dimensions: type, position and language [23].

4. A Methodology Based on Semantics-based Information Modelling and Enrichment

As discussed in Section 2.2, the information of museum objects (i.e. information *about* objects) forms the basis for their interpretation and related knowledge discovery. A rich and non-prescriptive source for this information is fundamental for object interpretation. This study proposes a methodology for capturing, organising, representing and enriching object information from museum records through semantic technologies, thereby facilitating their multiple interpretations. This section introduces the research gap which the proposed methodology aims to address and reviews the related work. It then presents the principles and requirements proposed by our methodology and a conceptual design for the information model, accompanied by two examples of data modelling work to demonstrate the methodology.

4.1. Research Gap and Related Work

The challenge of presenting and exploiting the polysemy of museum objects has been discussed for several decades. While museums attempt to provide multiple interpretative pathways for objects through the experiential and performative aspects of exhibitions, they still tend to document objects within fixed contexts aligned with specific cataloguing systems and perspectives [24]. Nevertheless, potentials reside in connecting objects to relevant information beyond their own museum records. Cameron [25] points out that a graph-based information structure that connects objects with relevant cultural concepts weakens the hierarchy principles of museum classification, leveraging a network configuration to support multiple interpretative pathways for objects. Publishing object records on the Internet further links objects to wider information networks, inspiring object interpretations that are beyond the museums' perspectives [24].

On the other hand, semantic technologies have found wide application in the cultural heritage domain by virtue of their capacity to link resources meaningfully, thereby facilitating integration, reuse, and reinterpretation [26]. For example, the CrossCult project facilitated a new interpretation of European cultural heritage by linking objects from different memory institutions based on the shared locations, people, and reflective narratives of the objects [27]. The Sloane Lab project, on the other hand, fosters new understandings of the Sloane Collection by integrating the information of its objects from various sources, including the historical and modern records of the objects and relevant information from online knowledge bases [28, 29].

These projects demonstrate that linking museum objects to wide information networks can facilitate novel interpretations of them, and semantic technologies are ideal tools for building such links. However, as existing projects usually aim for new interpretations of objects under specific themes, such as cross-border European history and the Sloane Collection, they do not directly address the challenge of the polysemy of object. This study proposes a methodology for addressing this challenge using semantic technologies and explores the possible implementation routes, bridging the gap between the theoretical discussions and the existing practices. The methodology aims for a complete and consistent representation of object information as Linked Data, providing a rich and non-prescriptive information basis for the multiple interpretations of objects.

4.2. Core Principles and Requirements

The five aspects of forming the interpretative contexts of museum objects discussed in Section 3 indicate that the interpretation restrictions imposed by object contexts can be reduced in the process of information selection and presentation. To address these aspects, our methodology proposes principles for both processes aiming to build a rich and non-prescriptive source of object information, thereby guiding information modelling and enrichment.

Information selection:

- The source aims to include object information that can facilitate the pluralistic interpretations of museum objects; the pluralistic interpretations refer to but are not limited to those from the perspectives of material cultural studies.
- To address the information absence in museum records, the source aggregates object information from multiple sources to ensure diversity and richness, but also to avoid dominant interpretative frameworks from a singular source. It also identifies information absence to indicate and facilitate alternative interpretations that cannot be fully supported by the available information.
- To address the information with interpretative implications, the source excludes information which can imply interpretative contexts for objects, such as the historical or social-cultural background that assigns specific significance to objects.

Information presentation:

- The source requires a consistent presentation across all different types of information, including the same level of structuredness and granularity, with structured formats being preferred to facilitate semantic data modelling.
- In terms of the linguistic presentation, to accommodate the divergent semantic nuances and related object interpretations, the source adopts the multivocal approach (explained in Sec. 4.3) to include diverse linguistic representations for the same underlying subject (e.g. the same object property).

The realisation of the proposed principles involves two stages of work. With museum records of objects as the information basis, the first stage is to model the selected object information with a semantics-based information model, aiming for an ontology. The model defines the scope and representation of the object information, tackling issues of both information selection and presentation. The second stage focuses on gathering object information from multiple external sources to enrich existing

museum records. This stage is particularly concerned with identifying and filling in information gaps. According to the principles stated above, the methodology proposes requirements for the information model and the strategy of information enrichment:

Requirements for the information model:

- To capture the information of museum objects
- To accommodate pluralistic perspectives for object interpretation
- To include information from different sources
- To identify the absent or implicitly presented object information based on the available information
- To present information at the same level of structuredness, preferably structured format, and the same level of granularity

Requirements for the strategy of information enrichment:

- To gather the information of museum object from different sources
- To explicate the implicitly presented object information
- To add the absent object information where available

4.3. Conceptual Design of Information Model

This section presents a conceptual design of an information model that meets the requirements listed above. The model captures the information of museum objects in the form of object lives consisting of a series of events, such as their conceptual design, physical creation, modifications, and destruction or current existence. Theoretically inspired by the concepts of "things as events" [10] and "the biography of objects" [13, 14], the object life model integrates both synchronic and diachronic views, covering the information needed for most perspectives of object interpretation, especially in the schools of both material culture and materiality studies.

To capture the information of museum objects, the model employs the framework of museum object analysis proposed by van Mensch [2], which offers both synchronic and diachronic views. Synchronically, objects have three types of properties: 1) structural properties, referring to the physical characteristics of objects, such as materials, constructions and designs, 2) functional properties, referring to the (potential or realised) uses of objects, and 3) contextual properties, referring to the relationship between objects and their contexts. From a diachronic perspective, an object can have conceptual (conceptual design), factual (physical realisation) and actual (in the course of any use) states of being. This framework provides inclusive coverage of object information and is consistent with the object life model.

The context of museum objects in object analysis is defined as their physical environments and surrounding objects [30, 2]. Caple [31] extends this scope to each element of their context: time, place, related people, related objects, and actions or events involved. The model adopts Caple's definition as it captures the social and cultural relationships of museum objects. The formulation of Caple's object context aligns closely with event modelling, echoing the classic '5W1H' framework (What, When, Where, Who, Why, How) [32]. Event-based modelling is effective in creating networks of related information about the history of things and has been used to provide historical contexts for cultural heritage resources [33, 34]. Therefore, this model represents object contexts in the form of events.

The model only captures events in which the target objects were physically involved. This is to specify the physical context of objects, but also to exclude the broad historical or socio-cultural background that can imply certain interpretative contexts for objects, such as the slave trade as the background of the move event of the Akan drum. The structural and functional properties are related to objects through events to represent their diachronic aspects. For instance, an inscription is connected to the object through a creation event of the inscription (or of the object); or the commodity function of an object was realised in the event of a trade.

The model aims to identify the absent or implicit information through inference based on the available information and relevant ontological relationships. While the available information is gathered from

diverse information sources, the relevant ontological relationships can be acquired through information enrichment, relevant ontology patterns, or from common sense. For example, given that the Akan drum was produced in West Africa and collected by Clerk in North America, the geographical move implies the occurrence of at least one move event involving the drum. While this example is illustrated in Section 4.4 simply by adding an inferred event and relevant inferred relationships, we expect to model such inferences with a specialised ontology, such as CRMinf [35]. The model also supports mechanisms to handle temporal uncertainty and approximations, which will be explored at a later stage of this study.

The model adopts two additional approaches to address the interpretative implications of information. It captures the provenance of all the information mapped into the model, specifically, the metadata provenance discussed by [36], to trace potential interpretative implications associated with different information providers. It also adopts the multivocal approach to record conflicting statements or diverse linguistic representations for the same underlying subject. Multivocality means to break the monopoly of dominant institutional narratives by introducing alternative voices and perspectives [37]. The multivocal approach has been applied to archaeological documentation [38] and critical datasets in digital cultural heritage [28].

To present different information consistently, we will propose standard levels of information structuredness and granularity considering both conceptual soundness and technical viability at a later stage of this study. This study will also propose strategies to mitigate the loss of semantic nuance caused by standardisation.

4.4. Demonstration

This section presents two examples of data modelling with the proposed conceptual model based on part of the metadata of Akan drum from the British Museum. As it is not possible to cover all aspects of the conceptual model, the examples specifically demonstrate the modelling of object information in the framework of object life and information enrichment through inference and the multivocal approach. The information of the Akan drum is appropriate for these aims because: 1) its British Museum catalogue documents several events in its life history, implying the occurrence of unrecorded events, and 2) the same record also includes its original entry from the Sloane Collection, which provides a statement of its origin that conflicts with the record from the British Museum. CIDOC CRM is used in the examples due to its event-centric approach and its wide use in the cultural heritage domain [39], while other information models will also be explored as this study proceeds.

Figure 1 illustrates part of the life history of the Akan drum consisting of three events (contexts): its production in Ghana, its move from Ghana to Virginia, and its field collection in Virginia by Clerk. The British Museum only provides information about its production (relevant metadata fields: production ethnic group; production date; production place) and its field collection (relevant metadata field: excavator/field collector; acquisition notes), while the location change implies the occurrence of at least one move event between the two events. The instance of class “E9 move” (green node) represents the inferred move event, with inferred relationships linking the drum and the start and end places of the move. The British Museum recorded the production of the drum in the 18th century, and its acquisition from Clerk to Hans Sloane in the early 18th century, with no record for the time of the acquisition by Clerk. Therefore, the chronological sequence of the three events is inferred and represented by the property “P183 ends before the start of”.

Figure 2 presents the drum associated with the events of production, field collection and acquisition by Hans Sloane. Hans Sloane produced a catalogue called “Miscellanea catalogue” for his collection, in which entry 1368 records that Hans Sloane considered the object to be an Indian drum. This record contradicts the British Museum’s information about the African (Ghanaian) origin of the drum. Without further investigation into which of the two records is accurate, the conflicting information from different sources already undermines the dominant authority of either record, revealing the possibility of multiple interpretations. We model the conflicting information with the CRM class “E13 Attribute assignment”, indicating that the two proposed origins of the drum (represented by the assumed locations of production and actor groups) are argued by specific sources respectively, rather than representing historical facts.

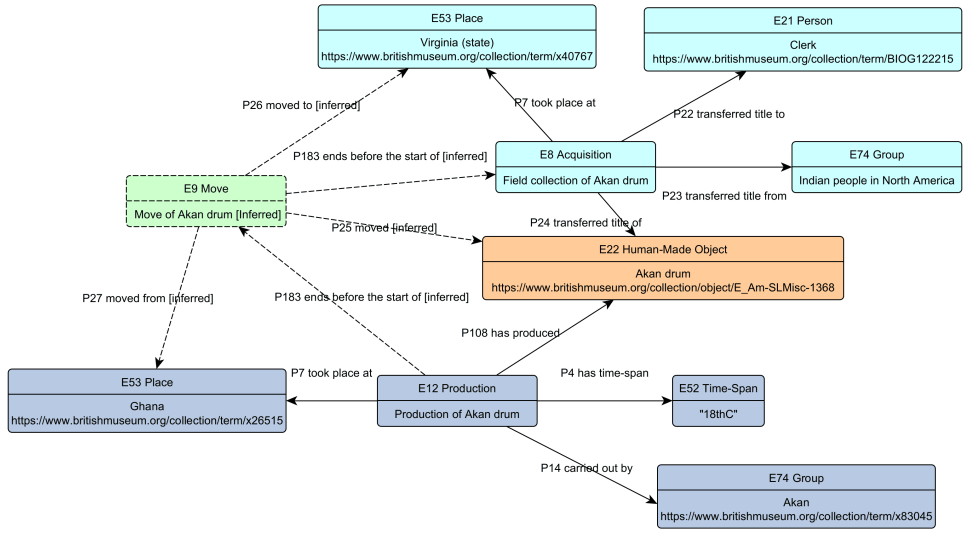


Figure 1: Events of production, move and field collection of the Akan drum. The node and relationships in dashed lines represent the inferred information. We use colours to denote different types of information: Orange represents the Akan drum; Deep blue denotes information related to the drum's production; Light blue denotes information related to the drum's field collection; Green denotes the move event.

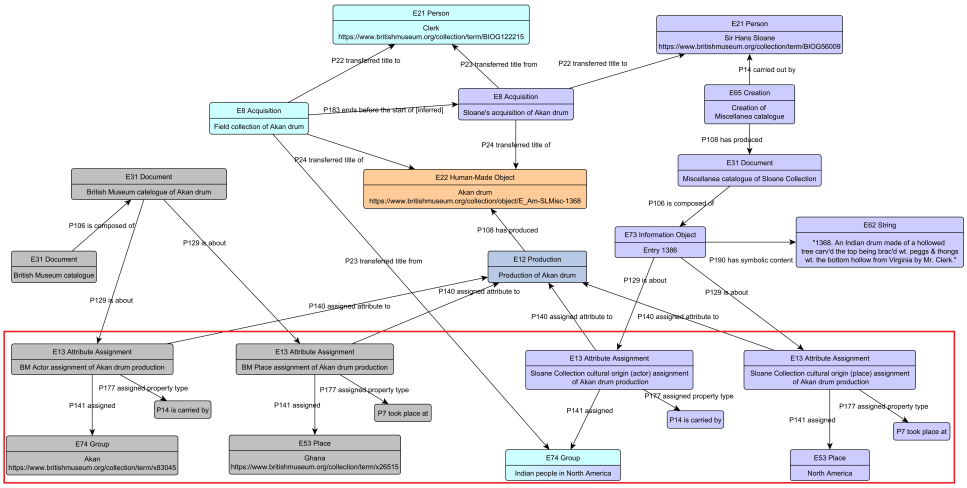


Figure 2: Conflicting information about the origin of the Akan drum from the British Museum catalogue (Ghana) and Sloane's "Miscellanea catalogue" (Indian origin from North America) highlighted in the red box. We use colours to denote different types of information: Orange represents the Akan drum; Deep blue represents the drum's production; Grey denotes information related to the drum's origin stated in the British Museum catalogue; Light blue denotes information related to the drum's field collection; Purple denotes information related to the events of Sloane's acquisition of the drum, his creation of the "Miscellanea catalogue", and the information of the drum's origin stated in this catalogue.

More broadly, this study aims to represent object information in a way that preserves its provenance, accommodating relevant and potentially conflicting claims. The use of E13 Attribute Assignment demonstrates one of the possible implementation approaches.

5. Conclusion

This study investigates how to facilitate multiple interpretations of museum objects through semantic technologies based on museum records of objects. This paper presents the proposed principles and requirements for information modelling and enrichment, and a conceptual design for the information model. As doctoral research in progress, this study will develop an ontology based on this conceptual

design and a pipeline of information enrichment. The development of the ontology will begin by employing CIDOC CRM and its official extension models, such as CRMinf for inference making and CRMsci for material changes in objects, while a range of information models and representation approaches will be explored as the study proceeds. The developed information model and information enrichment strategy will be demonstrated and evaluated by applying them to museum objects of different types. At a later stage, this study will conduct case studies on processing small batches of object information through automated processes. Ultimately, this study works towards a methodology that can be applied to museum objects of various types with varying levels of customisation.

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Declaration on Generative AI

During the preparation of this work, the authors used Gemini 3.5 Flash and Gemini 3.1 Pro in order to: Grammar and spelling check, Paraphrase and reword. After using these services, the authors reviewed and edited the content as needed and take full responsibility for the publication's content.

References

[1] A. Desvallées, F. Mairesse (Eds.), Key Concepts of Museology, Armand Colin, Paris, 2010.
[2] P. van Mensch, Towards a Methodology of Museology, Ph.D. thesis, University of Zagreb, 1992.
[3] S. Keene, Digital Collections: Museums and the Information Age, Routledge, London, 1998. doi:10.4324/9780080504353.
[4] T. Navarrete, J. Mackenzie Owen, The Museum as Information Space: Metadata and Documentation, in: K. J. Borowiecki, N. Forbes, A. Fresa (Eds.), Cultural Heritage in a Changing World, Springer International Publishing, Cham, 2016, pp. 111–123. doi:10.1007/978-3-319-29544-2_7.
[5] C. Tilley, Interpreting Material Culture, in: S. M. Pearce (Ed.), Interpreting Objects and Collections, Routledge, London, New York, 1994, pp. 67–75.
[6] E. Hooper-Greenhill, Museums and the Shaping of Knowledge, Routledge, 1992. doi:10.4324/9780203415825.
[7] F. Cameron, Museum Collections, Documentation, and Shifting Knowledge Paradigms, in: R. Parry (Ed.), Museums in a Digital Age, Leicester Readers in Museum Studies, Routledge, London ; New York, 2010, pp. 80–95.
[8] Drum | British Museum, https://www.britishmuseum.org/collection/object/E_Am-SLMisc-1368, 2026.
[9] C. Tilley, Introduction, in: C. Y. Tilley (Ed.), Handbook of Material Culture, 1. paperback ed ed., Sage, London, 2006, pp. 1–6.
[10] D. Hicks, The Material-Cultural Turn: Event and Effect, in: D. Hicks, M. C. Beaudry (Eds.), The Oxford Handbook of Material Culture Studies, Oxford Handbooks Online, Oxford University Press, Oxford, 2010, pp. 24–98. doi:10.1093/oxfordhb/9780199218714.001.0001.
[11] S. Lunn-Rockliffe, S. Derbyshire, D. Hicks, Material Culture, Analysis of, in: P. Atkinson, S. Delamont, A. Cernat, J. W. Sakshaug, R. A. Williams (Eds.), SAGE Research Methods Foundations, SAGE Publications Ltd, 1 Oliver's Yard, 55 City Road, London EC1Y 1SP United Kingdom, 2019. doi:10.4135/9781526421036843497.
[12] N. D. Munn, Walbiri Iconography: Graphic Representation and Cultural Symbolism in a Central Australian Society, Cornell University Press, 1973.
[13] A. Appadurai, Introduction: Commodities and the Politics of Value, 7th. ed ed., Cambridge university press, Cambridge, 1986.

[14] I. Kopytoff, The Cultural Biography of Things: Commoditization as Process, 7th. ed ed., Cambridge university press, Cambridge, 2009, pp. 64–91.
[15] S. M. Pearce, Objects as Meaning; or Narrating the Past, in: S. M. Pearce (Ed.), Interpreting Objects and Collections, Routledge, London, New York, 1994, pp. 19–29.
[16] I. Hodder, The Contextual Analysis of Symbolic Meanings, Cambridge University Press., 2009, pp. 1–10.
[17] Interpretation, https://dictionary.cambridge.org/dictionary/english/interpretation, 2026.
[18] R. Parry, N. Poole, J. Pratty, Semantic Dissonance: Do we need (and do we understand) the semantic web?, in: R. Parry (Ed.), Museums in a Digital Age, Leicester Readers in Museum Studies, Routledge, London ; New York, 2010, pp. 96–106.
[19] R. Chenhall, D. Vance, The World of (Almost) Unique Objects, in: R. Parry (Ed.), Museums in a Digital Age, Leicester Readers in Museum Studies, Routledge, London ; New York, 2010, pp. 39–47.
[20] M.-R. Trouillot, Silencing the past : Power and the production of history, 9780807095355 (2015). arXiv:2027/heb04595.
[21] D. Hicks, The Brutish Museums : The Benin Bronzes, Colonial Violence and Cultural Restitution, Pluto Press, 2020. arXiv:j.ctv18msmcr.
[22] Damaru | British Museum, https://www.britishmuseum.org/collection/term/x6340, 2026.
[23] Teapot; holder | British Museum, https://www.britishmuseum.org/collection/object/A_1984-0202-86, 2026.
[24] F. Cameron, Object-oriented democracies: Conceptualising museum collections in networks, Museum Management and Curatorship 23 (2008) 229–243. doi:10.1080/09647770802233807.
[25] F. Cameron, Digital Futures I: Museum Collections, Digital Technologies, and the Cultural Construction of Knowledge, Curator: The Museum Journal 46 (2003) 325–340. doi:10.1111/j.2151-6952.2003.tb00098.x.
[26] S. Desul, R. K. Mahapatra, R. K. Patra, M. Sethy, N. Pandey, Semantic Technology for Cultural Heritage: A Bibliometric-Based Review, Global Knowledge, Memory and Communication (2023). doi:10.1108/GKMC-04-2023-0125.
[27] A. Vlachidis, A. Bikakis, D. Kyriaki-Manessi, I. Triantafyllou, J. Padfield, K. Kontiza, Semantic Representation and Enrichment of Cultural Heritage Information for Fostering Reinterpretation and Reflection on the European History, in: M. Ioannides (Ed.), Digital Cultural Heritage, volume 10605, Springer International Publishing, Cham, 2018, pp. 91–103. doi:10.1007/978-3-319-75826-8_8.
[28] D. Metilli, A. Vlachidis, N. Pearlman, J. Sadek, F. Valeonti, J. Nyhan, Exploring Cultural Heritage Collections: The Sloane Lab Knowledge Base, 2024. URL: https://discovery.ucl.ac.uk/id/eprint/10193442.
[29] Sloane Lab Knowledge Base, https://knowledgebase.sloanelab.org/resource/Start, 2025.
[30] S. M. Pearce, Thinking About Things, in: S. M. Pearce (Ed.), Interpreting Objects and Collections, Routledge, London, New York, 1994, pp. 67–75.
[31] C. Caple, Objects: Reluctant Witnesses to the Past, Routledge, London, 2006. doi:10.4324/9780203409060.
[32] R. Piryani, N. Aussenac-Gilles, N. J. Hernandez, Comprehensive Survey on Ontologies about Event, in: Joint Proceedings of the ESWC 2023 Workshops and Tutorials Co-Located with 20th European Semantic Web Conference (ESWC 2023), volume 3443, ceur-ws.org, Hersonissos, Greece, 2023, pp. 1–15.
[33] M. Doerr, A. Kritsotaki, Documenting Events in Metadata, 2006.
[34] van den Akker, S. Legêne, M. Van Erp, L. Aroyo, R. Segers, L. van der Meij, van Ossenbruggen, G. Schreiber, B. Wielinga, J. Oomen, Jacobs, Digital hermeneutics: Agora and the Online Understanding of Cultural Heritage, in: Proceedings of the 3rd International Web Science Conference (WebSci '11), 2011. doi:10.1145/2527031.2527039.
[35] CRMinf Home | CIDOC CRM, https://cidoc-crm.org/crminf, 2026.
[36] K. Eckert, Metadata Provenance in Europeana and the Semantic Web, Master's thesis, Humboldt-Universität zu Berlin, null, 2012. doi:http://dx.doi.org/10.18452/2075.

[37] N. A. Silberman, Virtual Viewpoints: Multivocality in the Marketed Past?, in: J. Habu, C. Fawcett, J. M. Matsunaga (Eds.), Evaluating Multiple Narratives, Springer New York, New York, NY, 2008, pp. 138–143. doi:10.1007/978-0-387-71825-5_9.

[38] D. Lukas, C. Engel, C. Mazzucato, Towards a Living Archive: Making Multi Layered Research Data and Knowledge Generation Transparent, Journal of Field Archaeology 43 (2018) S19–S30. doi:10.1080/00934690.2018.1516110.

[39] M. Doerr, The CIDOC Conceptual Reference Module: An Ontological Approach to Semantic Interoperability of Metadata, AI Magazine 24 (2003) 75–92. doi:10.1609/aimag.v24i3.1720.