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‘Pensar Ontologicamente’: Desenvolvimento de Ontologia como Base para a Análise Sistemática de um Corpus de Textos Mágicos Aramaicos da Antiguidade Tardia

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Abstract

This article describes the process of developing an ontology of the domain of Jewish Babylonian Aramaic magic bowls and offers some reflections on its significance in the analysis of these materials. Examples are highlighted to illustrate where the work builds on existing conceptualisations of the domain in secondary literature and where magical and religious materials from the Ancient Near East might stimulate some specialised extension of the CIDOC Conceptual Reference Model (ICOM/CIDOC Documentation Standards Group, 2020). The analogy of ‘bridge building’ is offered as a way for humanities researchers to conceive of the work to produce ontologies of specific domains. This reflection is intended to capture the experience of ‘thinking ontologically’ about sources for the first time and of overcoming misconceptions about the nature and significance of this work.

Keywords

Ontology; Jewish Babylonian Aramaic magic bowls; CIDOC Conceptual Reference Model; CRM; Typologies; Domain

Resumo

Este artigo descreve o processo de desenvolvimento de uma ontologia do domínio das tigelas mágicas aramaicas babilónico-judaicas e oferece algumas reflexões sobre a sua importância para a análise destes objetos. São fornecidos exemplos

para ilustrar casos em que o trabalho se apoia em conceptualizações já existentes deste domínio bem como casos em que os objetos mágicos e religiosos do Antigo Próximo Oriente possam levar a um desenvolvimento especializado do Modelo de Referência Conceptual do CIDOC (ICOM/CIDOC Documentation Standards Group, 2020). A analogia da "construção de pontes" é sugerida como uma forma de os investigadores na área das humanidades conceberem o trabalho de produção de ontologias de domínios específicos. Esta reflexão pretende captar a experiência de 'pensar ontologicamente' sobre as fontes pela primeira vez, superando concepções erradas sobre a natureza e a relevância deste trabalho.

Palavras-chave

Ontologia; Tigelas mágicas aramaicas judaico-babilónicas; Modelo de Referência Conceitual CIDOC (CRM); Tipologias; Domínio

1. Introduction

Aramaic magic bowls are ceramic bowls, inscribed with spells composed for named clients in 6th-7th century Mesopotamia (Shaked et al., 2013, p. 1). Recent advances in the availability of published editions offer an opportunity to move beyond the focused analyses that characterise current research (Bhayro et al., 2018; Ford & Morgernstern, 2020; Shaked et al., 2013). This increased availability also presents new challenges for research aiming to explore patterns in the features of spells across the corpus. My ongoing research aims to meet these challenges through the creation of an ontology in *Protégé* to support the identification of such patterns, which may, in turn, reveal aspects of the professional knowledge that underpinned their composition.

These methods, however, present challenges and opportunities of their own. Ontology development challenges researchers to produce a conceptualisation of their domain, to structure the collection and organisation of information. This process offers an opportunity to re-conceptualise sources, as descriptions are produced at the intersection of specialist knowledge domains with established vocabularies and the ideals enshrined in good Digital Humanities practice. It fosters a systematic and transparent approach to the description of a domain and constitutes a valuable stage of the analytic process.

This article describes the process of developing an ontology of the domain of magic bowls and offers examples to illustrate where this work builds on existing conceptualisations of the domain, and where it may stimulate some specialised extension of established vocabularies. The analogy of 'bridge building' is offered as a way for humanities researchers to conceive of the work to produce ontologies of specific domains. This reflection is intended to capture the experience of 'thinking ontologically' about sources and of overcoming misconceptions about the nature and significance of this work. The analogy highlights the opportunities for impact in both traditional Humanities disciplines and Digital Humanities methods, which are inherent to 'thinking ontologically' about a domain.

2. Method

The starting point for identifying patterns in the features of magic bowls is to formalise an ontology modelling the entities that exist in the domain and the relationships that exist between them (Chandrasekaran et al., 1999, p. 20). This understanding of ontologies as ‘content theories’ captures the way the term is used here (Chandrasekaran et al., 1999, p. 21). Developing my ontology was an iterative process of trialling successive drafts based on conceptualisations established in secondary literature. Ahead of the main data collection phase (involving *c.* 300 texts), three smaller trials were conducted. First five, then ten, then thirty-two texts were included, and a revised ontology produced at each stage. The process of applying these conceptualisations to primary source material involved attempting to systematically organise all their information according to each draft and critically assessing where the conceptualisation failed to comprehensively represent the data. While core components of my ontology were established in these early trials, areas modelling finer details, particularly typologies of many features, will continue to be refined throughout the data collection process as new features and distinctions emerge.

The machine-readability of my ontology and the sustainability of the database produced depend on standardisation and documentation being embedded, as standards of good practice (Pitti, 2004, p. 487), and connected with the idiosyncrasies of the domain. The solution is to rely on established vocabularies designed to support these aims alongside the needs of specialised communities, in this case, the *CIDOC Conceptual Reference Model (CRM)*, a formal ontology of cultural heritage information (ICOM/CIDOC Documentation Standards Group, 2020).

I started my magic bowls ontology with the misconception that the task was one of translation; a simple exercise in mapping the vocabulary of the *CRM* onto the existing conceptualisations of magic bowls I had identified. I have since come to think of it in terms of building a bridge connecting the context of magic bowl research and its related domains to the world of Digital Humanities methods and approaches. Initially, tentative structures are extended out over the void at either end, reaching towards each other. The components are prefabricated building blocks, the relevant concepts from bowl scholarship and their most straightforward *CRM* equivalents. As the first draft is completed, a rickety structure meets in the middle and it is possible to cross, but things fall through the gaps. It becomes apparent that some components must be re-formed or made bespoke, and the work is in deciding which is needed where, establishing how they can be connected, and recording justified decisions with transparency and precision, by keeping the ‘blueprints’, the ontology’s scope notes and associated documentation, updated. With each draft the structure becomes more stable until nothing relevant to the research is lost in crossing over.

The theoretical work in each body of literature supports the conceptualisations taking shape throughout the process, but where those concepts reach the limits

of their usefulness, in the face of the scale or nature of the project, it is necessary to return to one side, or the other, and do more groundwork to support the bridge's construction. The following examples illustrate areas where this has been necessary in the creation of a magic bowls ontology, at both ends of the bridge.

3. Typologies

The development of typologies begins the process of descriptive analysis by producing original findings about the types and sub-types of features that are represented across the corpus. One way the *CRM* allows for specialisation is through the creation of instances of *E55 Type* to categorise other entities (ICOM/CIDOC Documentation Standards Group, 2020, p. xxxvii). My magic bowls ontology, trialled on thirty-two bowls at this point, already includes over two hundred defined instances of *E55 Type*, across sixteen 'type lists' for individual features.

While many of these instances are drawn from existing conceptualisations, others emerged from the data throughout the development process. My typology of 'purposes', for example, builds on Dan Levene's (2002) discussion of 'protective', 'medico-magical' and 'aggressive' bowl purposes and models his distinction between general and specific (pp. 28-32). My ontology initially represented these by assigning types and sub-types accordingly. A spell requesting 'protection' could be assigned the general-purpose type *protective*. That spell could then be assigned no further types if its purpose is apparently general protection, or it could be assigned an additional sub-type, e.g., *protection from magic*, *protection from malevolent entities* etc.

Upon developing my ontology, however, I identified shortcomings in these established concepts, and this led to the development of more nuanced conceptualisations. Trialling the above approach revealed that bowls apparently expressing only a general purpose, do so in two ways. Some, like Levene's example (2002, p. 29), express general purposes by presenting their aims in explicitly broad terms. Others leave the intended scope of their purpose unspecified, leaving it unclear whether the purpose was intended to be broad, or whether a specific purpose went unsaid. This emerging distinction between 'broad' as opposed to 'specific', and 'unspecified' as opposed to 'specific' necessitated some development of the conceptualisation of purpose in the ontology. The idea that any bowl reflects only a general purpose was abandoned in favour of modelling *overall protection*, *unspecified protection*, *overall healing*, *unspecified healing* etc., as specific purpose sub-types, sitting alongside types like *protection from magic*, or *healing of migraines*.

Similar shortcomings continue to be encountered in the systematic creation of typologies throughout the development of my ontology and the data collection phase, resulting in significant development of the scholarly conceptualisations

with which they began.

4. ‘People’ in the Magic Bowls

At the other end of the bridge, the *CRM* entity *E21 Person* highlights an area where magical and religious materials from the Ancient Near East might stimulate some specialised extension of the vocabulary. The understanding of what counts as a ‘person’ in my magic bowls ontology is broad. It encompasses all individuals referred to in the corpus, which reflects natural and supernatural realms populated with deities, angels, demons, and historical and mythological figures. This, however, must be reconciled with the scope note for the *CRM* entity *E21 Person*, which begins “This class comprises real persons who live or are assumed to have lived”, and specifies that “legendary figures that may have existed, such as Ulysses and King Arthur, fall into this class if the documentation refers to them as historical figures” (ICOM/CIDOC Documentation Standards Group, 2020, p. 18).

There is no issue here with the clients or the scribes, whom we can safely assume did actually exist. Nor is there a problem when it comes to figures like Rabbi Hanina ben Dosa, or the prophet Moses, who are clearly referred to as historical figures by the bowl spells and other Jewish literature. In other cases, though, it is harder to judge whether an individual meets either qualification for personhood according to the *CRM*.

Applying the criteria ‘real persons who live or are assumed to have lived’ prompts an anachronistic distinction that would not be recognised by the producers of these texts and is problematic in other ways. Even setting aside if and how the term ‘lived’ can be applied to immortal beings and thinking in terms of ‘existence’ instead, making judgements about which beings are ‘real’ on a case-by-case basis is an impractical solution when they include angels and deities revered around the world today.

Determining whether some individuals were understood by scribes as ‘historical figures’ is also complicated by their existence beyond the limits of the natural world. Although, if it is a figure’s assumed reality that is important in the first part of the scope note, it seems this is intended to be part of what it means for a document to refer to a figure as ‘historical’. The supernatural entities named in the bowls are certainly understood by the producers to have had real influence on the lives of humans (Levene, 2002, p. 15), and so *E21 Person* is perhaps an adequate, if imperfect, representation of these beings. Considering these beings instances of *E21 Person* for now, my ontology differentiates them using instances of *E55 Types*, as above. Nevertheless, the terms ‘real’ and ‘historical’ jar with our understanding of many of them.

The *FOAF Vocabulary Specification* offers a potential solution; making no distinction between ‘real’ and ‘imaginary’ figures, it specifies only that ‘something is a *person*, if it is a person’ (Brickley & Miller, 2014). Its definition, however,

still implicitly equates ‘human’ with ‘person’ by relying solely on a standard definition of the latter.

In this way, the attempt to describe the variety of beings referred to by magic bowls in the terms of established vocabularies has revealed an area in which scholars of Ancient Near Eastern materials might usefully collaborate to produce an extension of these vocabularies into the supernatural realm that better conceptualises ‘personhood’ in this context.

5. Conclusion

To return to my ‘bridge building’ analogy, when my ontology is finalised at the end of the current project, the bridge, or its ‘blueprints’, can be used by others wanting to make a similar journey. Casual observers at this stage might be unaware of the work undertaken; a good bridge, after all, sits unobtrusively in the landscape. Viewed in isolation, the new conceptualisation of the domain may seem uncontentious and perpetuate the misconception that ‘thinking ontologically’ is a straightforward ‘pre-interpretative’ mapping exercise (Ramsay, 2004, p. 178). In fact, though, the landscapes have changed. Both sides have supplied components that have been reconceived and connected in new ways, and new components have been formed to fill gaps identified in the process. The new ontology offers researchers in neighbouring areas a previously unavailable route to accessing Digital Humanities methods and approaches for themselves.

The bridge, however, is never finished; maintenance and repair work will be ongoing and carried out by others. The ‘blueprints’, therefore, are crucial in keeping the ontology transparent and subject to challenge (Sperberg-McQueen, 2004, p. 162). They document where a systematic and iterative approach has taken the conceptualisation of the domain beyond established understandings and produced significant contributions to the analysis of the materials, particularly in terms of the nature and range of features described by individual typologies. They also highlight points of tension, like the conceptualisation of ‘people’, where cracks might be appearing, and communities of scholars could collaborate to shore up this, and similar constructions, in the future.

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