Animating by Association: Index Objects and Relational Taxonomies

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Despite great variability in archaeological and ethnographic material culture across North America, a handful of objects are ubiquitous in assemblages of different ages and geographies. These index objects are clues to ontological principles, such as animacy, that guide the interactions between Native Americans and the material world. The impact of relational ontologies on the formation of heterogeneous archaeological assemblages may be evaluated through analyses of index objects and contextual associations. To this effect, this article presents the outline of an assemblage-based relational taxonomy, where spatial, temporal, and formal dimensions are combined with object biographies, interactive roles, and social relations.

Despite overwhelming ethnographic evidence documenting the social character of relations among people, objects and the natural and supernatural environments, Americanist archaeology has been slow to develop appropriate frameworks for incorporating principles of relational ontology, or the notion that humans and objects exist in a reciprocal world, into the interpretation of the archaeological record (Brown & Emery 2008, 327). Ethnographic analogy and cross-cultural comparison explicitly or implicitly permeate every step of archaeological observation, analysis and interpretation (e.g. Binford 2001; Kelly 1995), but a reluctance to consider the role of ethnographically documented relational ontologies on the extraction, manufacture, use, distribution and discard of objects is only now being countered by contemporary archaeologists, who are cognizant of the critical role that particular worldviews play in the making and ordering of material world (Brown & Emery 2008; Ingold 2006; Meskell 2004; Mills & Ferguson 2008; Walker 2008; Zedeño 2008a,b; Herva, this issue).

Of fundamental importance for the advancement of archaeology is the reexamination of its core tool for decoding and ordering past worlds through material culture — artefact classification. Taxonomic systems are universally used to bring order to the chaotic array of phenomena that surround us. Scientific taxonomies, such as archaeological classifications, are epistemological, ideational and explicitly arbitrary means of partitioning an empirical continuum (animals, plants, objects) into a finite number of comparable units that can in turn be used to define, measure and ultimately explain variation and change (Mayr 1995; O'Brien & Lyman 2002, 38). In contrast, folk taxonomies or classifications used in everyday life are ontological, that is, they are intended to help people understand their place in the world relative to objects and entities with which they interact. These taxonomies are phenomenological, resulting from observation *and* experience of similarities and differences in the qualities of people, objects, places and entities (Black 1977). Thus they inform the ways in which people engage their surroundings and introduce permanent and visible modifications that may be amenable to archaeological analysis and interpretation.

Whether applied to single artefact types (Ford 1954) or to constellations of artefacts and features (McKern 1939), historically archaeological classifications have been resoundingly successful at developing units that measure formal, temporal and spatial variation in material culture. But this is not the end of the classificatory enterprise. Alternative frameworks, ostensibly those that favour non-human agency and materiality (Gell 1998; Meskell 2005; Miller 2005; Mills & Walker 2008), are being proposed in response to conventional archaeological views of objects and

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assemblages that speak more of our own Western, scientific epistemologies than of the other systems of thought whose material expressions we seek to describe and explain. As Meskell (2004, 41) notes, if the intent of archaeology is to delve into the past to thoroughly understand the sources of cultural and social difference through material culture, then, it must reach beyond the epistemological core of conventional taxonomies to capture the nuances of cultural difference in a broader array of materials and phenomena than available classificatory systems will allow.

Chief among the principles to be considered in the study and classification of material remains is *animacy,* a term I am using to highlight the fact that relational ontology transcends the realm of religious beliefs but is squarely ensconced in cultural-linguistic learning, social practice and personal experience. Throughout this article I have studiously avoided using the term *animism* because of its overt Western interpretation of non-Western human–environment relations as primitive religious beliefs. Strictly speaking, animacy refers to grammatical forms that denote the possession of life-force or soul, which pervade native North American (and other) languages and worldviews (e.g. Carrol *et al.* 2004; Frishberg 1972; Hallowell 1976; Quinn 2001; Rogelson & Adams 1977; Zedeño 2008a). More broadly, but still closely related to its literal meaning, animacy refers to an object's capacity for becoming a person and behaving like one; this prospect is at the heart of relational ontology because it implies that objects, like people, can engage in social exchange. Relational ontology, as conceived and practiced by different cultures, can directly and visibly influence the arrangement of natural objects and artefacts and, therefore, should be given a rightful place in archaeological analysis. My interest in utilizing the concept of animacy in artefact classification is twofold; first, my archaeological and ethnographic work with Native Americans convinces me that the construction of principles for ordering the world around us is linguistically and culturally specific (Berlin 1992; Fabian 1975), and thus the study of taxonomy *per se* is a way to better apprehend difference from material remains. And second, in order to expand the study of material culture we as archaeologists need to re-deploy Western epistemology (particularly systematics) as traditionally practiced to be able to encompass relational ontologies within new classificatory schema.

Thus, following Dupré's (1993, 67) call for pluralism in taxonomy, this article explores the possibility of developing a classification of object sets that incorporates principles of relational ontology, with the goal of facilitating systematic analysis and interpretation of heterogeneous archaeological assemblages. The central tenet of this endeavour is that there are ethnographically documented categories of natural objects and artefacts that play key roles in ontological taxonomies because of their relational properties, in particular their potential for animating objects and places around them. These objects (*index objects*),which are ubiquitous in archaeological assemblages representing different times and places, can be identified and their position relative to other objects ascertained so that underlying relationships may become amenable to description and interpretation.

This article begins with a brief review of what I perceive as key differences between academic and Native American taxonomic systems and the underlying disconnect between the dynamics of past material practices and present analytical frameworks. Next, the concept of index object is developed and its potential role in incorporating principles of relational ontology in archaeological systematics is discussed. Last, examples from index objects commonly found in North American archaeological and ethnographic contexts are used to propose a framework for the relational classification of object sets.

The Great Divides: Cartesian and relational understandings of the material world

Germane to the development of a taxonomy that explicitly deals with the heterogeneous composition of object sets rather than with the morphology of single objects is the notion that objects are non-human agents — they can influence one another and the people with whom they interact. This much is understood and accepted by most contemporary students of material culture. However, the personification of objects and socialization of the material world, which is part and parcel of Native American ontology, generally falls squarely outside the realm of conventional archaeological analysis even though both relational-ontological processes can potentially affect the formation of artefact assemblages in a measurable and interpretable way (Bray, this issue; Mills & Ferguson 2008; Walker 2008; Zedeño 2008a,b). Partly to blame is the fact that archaeological systematics are a faithful reflection of the modern method of knowledge acquisition in academic, formal settings, where ideational (as opposed to phenomenological) frameworks are used to abstract order from empirical chaos by creating contrast and objectifying all that is not human. In non-academic settings, on the other hand, learning from experience produces 'folk' classifications where ontology and

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epistemology are part of the same continuum.

According to Latour (1993), the two Great Divides that characterized the Enlightenment and precipitated the advent of modernity are, precisely, the Western learning process in which the world is split into ideational units that facilitate the acquisition of empirical knowledge and, second, the separation of this learning process from those used by other cultures. Viveiros de Castro (2004) further notes that our academic penchant for imposing a homogeneous ontology across cultures has obliterated astonishing differences in the understanding of the material world — ours: natural and objective; theirs: social and subjective. Not surprisingly, relational ontologies first encountered by European explorers have been traditionally portrayed as primitive, 'childish' religious beliefs in animism that stand in stark contrast to the 'mature' systems of knowledge founded upon Cartesian principles (Bird-David 1999; Tylor 1958; Haber, this issue; Sillar, this issue). As Brown & Emery (2008, 328) and Hornborg (2006, 21) point out, anthropology has been instrumental in the production and reproduction of these Great Divides with few exceptions, notably, Bateson (1979).

It is important to point out key differences that, in formal education as well as scientific practice, affect the ways in which cultural variation is understood and its material products classified and explained. For example, in scientific taxonomies, animacy is an absolute and constant state — a foundation of Cartesian thinking. Therefore, it cannot be transferred from one class of natural object to another. Given the primacy assigned to life forms over inert ones, natural objects are arranged hierarchically in fixed classes according to the presence or absence of animacy and the quality of its manifestations, especially the capacity for independent mobility. The structure of the three-kingdom system — animal, plant and mineral — from which all scientific taxonomies ultimately derive, is the example in point (Meskell 2004, 40). In contrast, folk taxonomies (particularly Native American taxonomies) centre on the latent and transitory dispositions of animacy, which can move across object classes and transform objects into persons and *vice versa* (Zedeño 2008a,b). These dispositions are verbalized in grammatical forms that convey the constant flux of matter and energy across different object classes; in folk taxonomies, object hierarchies are situational and membership in a given class according to animate dispositions is ambivalent and unpredictable (e.g. Ojibwa taxa: Black 1977; Hallowell 1976; Zedeño 2008a). Thus, whereas an object's potential for animacy is a given in these classificatory systems, the phenomenology of personhood is an *abduction* in Gell's sense (1998, 13) — an inference constructed from the interaction with an object with specific properties, relational capabilities and capacity for independent, meaningful and purposeful action.

In relational ontologies, animate objects can and do establish social relations that parallel those of human social systems; in any object-human interaction, humans may be variously engaged as equals or even lesser persons. Viveiros de Castro (2004, 467–8) notes that this is certainly different from the anthropocentric separation of humans from objects in Western-Cartesian thought, where relationships between humans and objects are seen as natural rather than social, because objects cannot engage humans on the same plane of existence. While it may be argued that native American taxonomies carry elements of essentialism in that they consider that all objects can be potentially animate, Gell (1998, 20) rightly points out that social relations are not given by the objects' inherent potential for personhood, but by the particular configuration objects assume in given contexts. From these configurations one may infer agency and animacy.

The intellectual and practical consequences of the divide between scientific and folk taxonomies and the principles that underlie them are multiple, but those that most directly hinder the development of appropriate frameworks for the archaeological analysis of relational ontologies and their role in assemblage formation include, first, a strong bias toward the morphological study and functional interpretation of single object categories (e.g. ceramics, lithics, bone) and corresponding technologies; second, a mechanical understanding of reciprocal relationships among objects and variability in object set configurations; and third, a view of objects as natural accessories (rather than social partners) in human action. Traditional archaeological taxonomies first provide the background for constructing substantive explanations of variability in space, time and form and, second, attempt to support inferences of technological, social and ideological functions of single artefacts (e.g. Binford 1965; Schiffer 1992, 10). But they lack the analytical tools required to address the social and cultural logic underlying ontological relations among objects in heterogeneous assemblages (a limitation that materiality and agency theorists have pointed out but are only beginning to overcome themselves; e.g. Meskell 2005; Mills & Walker 2008; articles in this issue).

Alternative standpoints on archaeology and taxonomy call for a reconsideration of the place of

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humans in nature and the role of objects in social life, as well as for balance between scientific epistemology and folk (study subject) ontology (Gell 1998; Meskell 2004; Schiffer & Miller 1999; Zedeño 2008a,b). Meskell (2004, 41), for one, is convinced that archaeology is in a unique position to challenge the limitations of epistemological classifications so that culturally contextual explanations of phenomena may be elicited from the archaeological record. The question is, can a classification be devised that utilizes epistemological (and replicable) units to describe and explain ontological relationships among objects in an assemblage, as originally conceived and engaged throughout the objects' life histories? Archaeology has made huge strides into the integration of processes of archaeological assemblage formation in the archaeological inference of worldviews, not merely as distortions to be neutralized by our assumptions about order and reason but as legitimate systems of meaning and practice (e.g. Preucel 2006; Walker 1995; 2002, 161). My contention is that both the inherent personhood of certain objects and the relationships between object-persons and other objects are reflected in archaeological assemblages. Variation in the recovery context of animate objects may indicate variations in their life-history sequences (Walker 2002); however, there are certain object sets with singularized life histories (e.g. bundles, see below) that are not likely to be missed in archaeological contexts. In principle, it is possible to attempt a relational artefact classification within the limitations afforded by the very nature of archaeological deposits and objects of admittedly unique or unknown purpose.

Relational taxonomy

The classification envisioned here is founded on the system of ontological relationships that underlie the formation of certain artefact assemblages — *a relational taxonomy.* This taxonomy initially responds to the notion that people seek, make and use sets of objects with complementary properties and relational capabilities as means to an end; when two or more objects are combined, they create an altogether new complex object that becomes more than the sum of its parts (Zedeño 2008b) (Fig. 1). In many non-Western societies, specifically Native American groups, toolmakers, ritual performers and even ordinary object users manage the capacity for personhood that emanates from objects to fulfill their needs (e.g. Carroll *et al.* 2004; Gell 1998; Viveiros de Castro 2004). By focusing on both attributes of single objects and relationships among them, it may be possible to systematize the analysis of agency and animacy in archaeological contexts.

Given the breadth of theoretical discourse and applications of agency and animacy (or animism) in anthropology, I follow Brown and Walker (2008, 298), to reiterate the distinction between *object agency,* as the power of objects and places to influence and transform human behaviour and social relations, from *object animacy,* as the phenomenological manifestation of an object's potential for personhood. This distinction has philosophical consequences because it acknowledges that, while obviously all animate objects have agency, any object can affect activity and communication without being animate (Schiffer & Miller 1999). A third and intermediate concept, *animate-ness*, simply refers to the criteria needed to infer personhood from any object, place, or entity. This intellectual exercise does not require that the analyst actually partake of a relational ontology but, rather, that he or she concede that the relational ontologies of others do shape objects and assemblages. By the same token, a workable relational taxonomy must not assume that relational ontologies are the only suitable frameworks for the analysis of material culture, but simply that a range of ontological principles governing people-object and object-object relationships are manifested materially in particular configurations. Redesigning archaeological analysis and classification specifically to capture the nuances of difference from object life histories and depositional contexts, outside as well as within the boundaries of ancestral Western culture and society can potentially yield new and surprising information about trajectories of practice and thought.

Grasping at the complexity of relational ontologies through classification can be a daunting task for archaeologists, if not for those folks who, through oral history, observation and experience have devised classifications governed by their own ontological principles. While each of these 'folk' taxonomies is particular to linguistic families, ethnicities, histories and geographies, they nonetheless convey a handful of criteria that guide cultural practitioners in identifying, successfully interacting with and drawing inferences about objects, places and entities (Zedeño 2008a,b). Such classifications, as well as the activities and relationships they connote, can furnish guides for constructing appropriate units for a replicable relational taxonomy, that is, one that takes into consideration object properties relative to particular configurations in object sets and in depositional contexts or places where objects are found to refine the understanding of past worldviews through material remains.

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Figure 1. *More than the sum of parts: objects in this medicine bundle include a swan bone, a sage bundle, and a bison hair bundle with a braided sinew string. (Photograph, B. Pavao-Zuckerman.)*

Index objects

Ordering criteria for a relational taxonomy of archaeological materials emerged from substantive lessons learned during the process of implementation of the Native American Graves Protection and Repatriation Act (NAGPRA) and other pieces of legislation aimed at protecting ancestral tribal sites and resources in the United States. When facilitating interactions among different parties, I carefully observed how Native American consultants struggled to fit legal definitions and archaeological classes within traditional worldviews and practices as well as contemporary understandings of ancestral material culture, history and ethnic identity. Elsewhere I have described consultation on cultural preservation and repatriation as an intellectual process, where Native American consultants followed conceptual pathways of their own design that led them to construct inferences and analogical arguments about cultural resources (Zedeño 2008a, 260). The NAGPRA process, for example, encompassed not only the handful of objects readily classifiable under the legally defined categories of 'funerary', 'sacred' or 'cultural patrimony', but also those at the opposite end of the iconic spectrum, such as grinding stones, chipped stone, beads, unmodified bone and plant remains. In one case (Stoffle *et al.* 2001, 193), Numic-speaking consultants from different tribes and ethnic groups drew a short list of items that would help them partition the large array of objects under evaluation into finite sets that combined native categories and legal definitions of objects subject to NAGPRA; and they did so by studying relationships between the items on the list and other objects. In other cases (Zedeño 2007; 2008a,b), the evaluation of archaeological sites and natural resources was accomplished by tribal consultants who adhere to Algonquian taxonomies; the objects they used to evaluate cultural significance are thought of as persons with creation stories associated with them.

In both Algonquian and Numic cases, the objects selected as relational indicators or as indicators of animacy occupy central positions in the tribes' relational ontologies because they can transform the properties and interactive capabilities of any other object in their proximity, they can change the character of ordinary places and they can enhance human power. Also in both cases, prominent landforms were selected because they can confer personhood to the most utilitarian of objects. While there were many culturally specific elements at play in these evaluations, including origin traditions, songs, words, ancestral practices, personal experiences and local geography and ecol-

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ogy, what stood out was a clear and broadly uniform view of what is certain and what types of relationships are relevant to this inferential process. Simply put, the selected objects are animate or, in the consultants' words, containers and conduits of power (a word that in Algonquian, Siouan and Numic languages means spirit, soul or life-force: Zedeño 2008a, 263). In terms of the necessary and sufficient conditions for animate-ness, properties such as raw material, colour, workmanship and condition, as well as shape in human and animal likeness, were redundantly listed as good guides for identifying animate objects. Not all animate objects are equal; in fact, consultants pointed out at least three major categories according to their potential for personhood:

1. Objects that are inherently animate (or animate by origin), such as red paint, crystals, fossils and copper;
2. Objects that embody the soul of living beings, such as effigies and parts of animals, most commonly bear, bison, wolf, elk, deer, moose, bighorn sheep, otter, beaver, muskrat, all raptors, water fowl, turtles and snakes.
3. Objects that enhance communication, such as smoking pipes, smoking plants, roots of hallucinogenic plants and leaves of smudging or incense plants. Plants are a counterintuitive category, because they are not always considered animate as the whole of an animal would be, but rather only certain parts are, if at all (e.g. Quinn 2001).

In addition, at least three relational criteria were identified:

1. Spatial association between animate objects and any other object: practically any object may be animated by association. Inherently animate objects are usually indispensable in interactions with entities and forces that inhabit the universe because they facilitate the 'awakening' of inert matter through the process of consecration (Carroll *et al.* 2004; Mills & Ferguson 2008; Zedeño 2008b).
2. Spatial association between any kind of object and certain landforms, such as springs, caves, lakes, prominent rock formations and rock crevices, mountaintops and erratic boulders. Ancient trees also belong in this category (Stoffle & Zedeño 2001; Zedeño 2000).
3. Use in activities or contexts aimed at managing and transferring power.

Following this lead, my own field research and a broad review of North American ethnographies, the *index object* insinuated itself as a plausible ordering criterion for building a relational taxonomy. An index object is a distinctive kind of natural or modified object that can modify or altogether alter the properties and meanings of any object or place that becomes associated with it. In addition to fulfilling necessary and sufficient conditions for animate-ness, such as those numbered above, index objects must be temporally and spatially redundant so that they can be used in replicable classifications. The creation of parsimonious classifications also requires that the repertoire of index objects be pared down to a small but consistent set of objects of demonstrated cross-cultural use. Once the range of variability in index objects has been established and maintained more or less constant through several classificatory exercises, then, patterns of variation in relationships between index objects and other materials may be discerned, spatially, temporally and formally. This concept parallels other classificatory units conventionally used in natural sciences to determine relative age of rock formations (*index fossils)* (Shimer & Schrock 1944) and in archaeology to determine cultural affiliation of artefacts (*index wares)* (Colton 1946). The usefulness of the index object as ordering criterion for relational taxonomy derives from the actual connections among objects and between objects and people it signifies (as opposed to mere resemblances or rules characteristic of symbols and icons, e.g. Keane 2005, 415). Furthermore, it has great potential for providing insights into the construction, maintenance and transmission of meaning in the past (e.g. Murray 2009, 19).

Red paint as an example of an index object

Found in the form of iron ore (hematite or red ochre) and mercury sulphide (vermilion or cinnabar), red paint best illustrates the concept of 'index object' in North America and elsewhere. Among North American tribes of all backgrounds, red paint is considered one of the most powerful animating substances in the universe, with divine origins and properties ranging from protective to transformative and from interactive to integrative. The earliest indication of its use appears in Palaeoindian sites dating as early as the terminal Pleistocene (*c.* 13,000 years ago) and is considered an indicator of connections between Clovis and eastern European and north Asian hunters (Haynes 1987). Roper's (1991) review of occurrences of red paint in Palaeoindian sites and objects across the continent shows that red pigments and painted objects have been recovered from burials, caches, kill sites, campsites and work stations. Red paint generally is found as a deliberate coating on skeletal remains, grave goods, animal bone and teeth and assorted ground and chipped stone tools in Clovis and other Palaeoindian complexes. Examples of associations

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between red paint and other objects include the staining of finely crafted tools in the Clovis Fenn cache (Frison 1991, 41), the zigzag design on the Folsom Cooper Site bison skull (Bement 1999) and as raw material associated with owl bones, turtle shell, bison fetal bone and bison dew claws at the late Paleoindian O.V. Clary Site (Hill & Rapson 2008). Red pigment quarries dating to this period have also been identified (Stafford *et al.* 2002).

The archaic manifestation traditionally known as the 'Red Ochre Culture' (Rizenthaler & Quimby 1962) of the Northeast, Midwest and eastern Plains precisely refers to the pervasive use of red paint in various contexts but especially in shallow graves also associated with finely crafted turkey-tail points and copper objects. Beginning in the late Archaic and continuing throughout the prehistoric period, the repertoire of index objects became established into what eventually became the foundation of iconography and socio-ritual paraphernalia of historic and contemporary Native American tribes. In addition to parts of edible and non-edible animals and birds (Pauketat *et al.* 2002), prehistoric sites have yielded ammonite fossils (Peck 2002), smoking pipes and tobacco pollen (Winter 2000), certain woods, particularly cedar and cypress, hallucinogenic roots (Watson 1974), shell, copper objects and ore and quartz crystals (Brown 1996). Many of these objects are often associated with red pigments as raw material, coatings or in designs. Red pigments continue to be quarried and used by contemporary Native Americans, either as body paint applied during ceremonies or as protective coating for other objects (DeBoer 2005). My landscape research with the Blackfeet Tribe of Montana, for example, documents the continuing significance of red paint in the daily lives of tribal members. Red paint users speak of its origins, properties and relational capabilities: red paint was given to the people by the Creator to protect them from harm and restore health, to help spirits recognize the Blackfeet by their body paint designs and communicate with them, to consecrate objects or facilitate the transfer of power among objects and people and to bind things and people together (Zedeño *et al.* 2006).

The prevalence of red paint in time and space makes it an ideal case for illustrating how index objects and other archaeological materials may be used for identifying that range of interactions between animate objects and people, places and common objects of the past. Below I point out relationships among red pigment, painted objects and unpainted objects from three classificatory perspectives: hierarchical, paradigmatic and intersective.

Constructing a relational taxonomy

Hierarchical and non-hierarchical or paradigmatic classifications are the most common systems used in archaeology to construct time- and space-sensitive artefact typologies (O'Brien & Lyman 2002). Intersective classifications, based on set theory and expressed in Venn diagrams (King 1972), focus on a broader system of relationships among classes than the former two systems. Intersective classifications have been used in physical anthropology (Burr & Gerson 1965) and are useful to ethnobiologists who wish to convey visually the ambiguity of folk classifications (Kenny 2004). Any of these systems may be used to isolate relationships among objects and between objects and places, as long as principles and dimensions are explicitly defined and consistently applied to object sets. In my first effort at devising a relational taxonomy using a paradigmatic matrix to explain relations among objects in a ceremonial bundle, I identified two dimensions: origin and position of an object in a given set (Zedeño 2008b, 374). *Origin* discriminates between animating properties that are intrinsic to an object (index) from those acquired during the life of the object or after discard (biographical). *Position* refers to an object's fixed place (essential) versus flexible place (accessory) in a set of interacting objects. Both dimensions are the basis for paradigmatic as well as hierarchical and intersective relational taxonomies.

To illustrate, a projectile point and arrow, and a bow, are fixed objects in a hunter's tool kit. The point may be dipped in red paint or not, but if it is, then red paint would be classified as intrinsic/flexible. The manufacture of bows and arrows is a far more invested process than the manufacture of a point and thus hunters in certain regions (e.g. the northern Plains), treasured bows and reused arrows (Brink 2008). The wood used to make a bow may be an index object, in which case the bow would be classified as intrinsic/fixed. Bows, in particular, had unique life histories that paralleled the hunter's. These objects would be classified as biographic/fixed. Designs, beaded bands and other accessories were added to the bows and arrows during the course of their use lives and for a variety of purposes — communicative, protective, magical and commemorative. Such objects would belong in the biographic/flexible class. The relational classes resulting from the intersection of origin and position are shown in Figure 2.

Origin and position can also be used to reconstruct hierarchical relationships in object sets, particularly in archaeological contexts where the logic of a heterogeneous assemblage may not be as readily

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	Origin	
Position	Intrinsic Fixed: *point*	Biographic Fixed: *bow* *arrow*
	Intrinsic Flexible: *paint* *feathers*	Biographic Flexible: *accessories*

Figure 2. *Paradigmatic classification of hunting objects.*

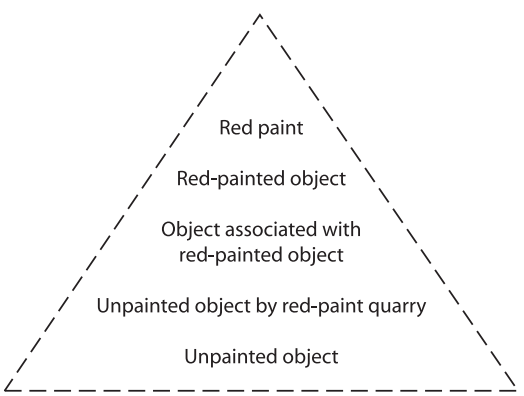


Figure 3. *Hierarchy of objects associated with red paint.*

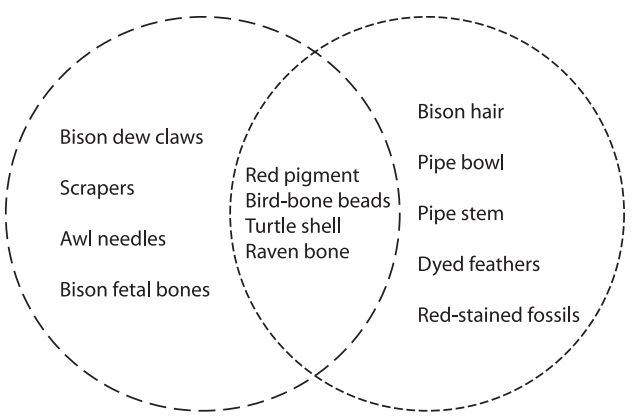


Figure 4. *Intersecting index objects in two sets: Hide-working toolkit (left) and medicine bundle (right).*

apprehended as in a ceremonial bundle or a hunting kit. In ethnographic taxonomies (e.g. Frishberg 1972), hierarchies of association are based on the relative potential for personhood that objects naturally possess, with index objects being at the top and inanimate objects at the base of the hierarchy (Fig. 3). For example, one may identify one salient index object, like red pigment, to place at the top of the hierarchy, with dendritic associations between red pigment and all other objects below it. A red-painted tool and a red-painted bone would place between red pigment and unpainted like specimens. This hierarchy gives a measure of distance between ordinary objects and the index object of choice. Hierarchical classification can also be applied to object sets with more than one index object, where the origin of each index object determines the position of the set in hierarchical order. Variability in observed associations should increase at the bottom of the hierarchy. Association with index places (e.g. caves pictographs, pigment quarries) can also be added to refine and expand a hierarchical classification.

Finally, intersective classification may be used to arrange two or more object sets according to the number of shared index objects in each set and involves Venn diagram rules to determine degree of similarity among sets, including four basic intersections: mutually exclusive, overlapping, subordinated (nested) and identical (Burr & Gerson 1965; King 1972). Intersective classifications may be tackled in two ways: inductively, by simply enumerating the number of shared index objects and making inferences about set relationships; or deductively, by stipulating necessary and sufficient conditions of membership in the object sets to be classified and contrasting these against actual object associations. When used in conjunction with dimensions of origin and position, intersections are particularly useful for differentiating sets along a continuum. For example, a living surface at the late Palaeoindian O.V. Clary Site in Nebraska yielded an assemblage rarely found in open sites of that time period. Among the thousands of lithic and bone remains, excavators found red pigment, bird bone beads, bones from raven and great horn owl, bison dew claws and fetal bones, pieces of box turtle carapace, scrapers and bone tools in spatial association (Hill *et al.* 2008). Hill & Rapson (2008) used use-wear analysis and ethnographic analogy to infer that at least the pigment, tools and dew claws may have once been part of a hide-processing toolkit. While the tools, dew claws and red pigment certainly support their interpretation, the additional objects, mostly index objects, also replicate objects found in medicine

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bundles (Grinnell *et al.* 2006). A Venn diagram may be used to illustrate how each set shares intrinsic/fixed objects but may or may not overlap in other object categories (Fig. 4).

The relevance of this intersection is to show how an individual's working tool kit and a medicine bundle share index objects, which in turn suggest common relational characteristics (and perhaps a continuum of meaning) between them. Often, differences in complex object sets that are nested or appear almost identical may be ascertained by adding discriminating criteria such as index places or specificities of recovery contexts that provide biographical information. In sum, an intersective classification can capture the dynamics and nuances of difference in object roles and interactions across heterogeneous assemblages that conventional classifications are not equipped to do.

Concluding thoughts

Despite the enduring success of archaeological systematics in the study of culture change, the goals of contemporary archaeology and the specific questions asked from material culture beg for a taxonomic system that moves beyond conventional time-space-form frameworks for the analysis of single artefact types or classes and into the realm of relational taxonomy. If archaeology is to address themes such as meaning, agency, identity and social exchange between humans and objects in the past, then it is necessary to begin unpacking these relationships by explicitly incorporating available knowledge of non-Western worldviews and practices that likely shaped the archaeological record into archaeology's primary analytical tool — classification. In this article I argued for the need to systematize observations and interpretations of animacy in archaeology through the development of analytical tools that are based on widespread principles of relational taxonomy and offered a few examples as to how it may be accomplished. A critical element of artefact classification as envisioned here is the focus on sets of objects rather than on single artefact classes or types. This strategy can potentially inform the temporal and spatial variation in relational principles that governed the manufacture of objects and the formation of heterogeneous archaeological assemblages.

That organizing concepts and principles are ultimately tied to particular societal worldviews, such as those of Native Americans, is a given. But despite profound epistemological differences between us as analysts in the present and them as objects and persons of the past, it is possible to find a taxonomic middle ground, where spatial, temporal and formal dimensions may be combined with origin and position of objects in a set. Such taxonomy would, in turn, help to explain that material culture is an indispensable component in a dynamic system of human-environment interactions. While the origin stories, songs and words that explain and justify these relationships are beyond the reach of archaeology, index objects and their archaeological associations offer avenues for better grasping the logic of social relations in the material world.

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