Interpreting Ancient Social Organization: Conceptual Metaphors and Image Schemas

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Interpreting Ancient Social Organization: Conceptual Metaphors and Image Schemas

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This article outlines an approach that archaeologists can use to predict a widespread family of concepts about social organization in past societies. Such concepts are all ultimately conceptual metaphors: people map their experiences in other domains onto their society, to reason about social order. The Sumerians used the experience of sheepherding to understand their KINGS AS SHEPHERDS and PEOPLE AS FLOCKS; the Maya understood PEOPLE AS CORN and their RULERS AS RAIN GODS. These concepts share an image schema derived ultimately from the experience of applying force to physical objects. This image schema is universal. Archaeologists can use it to predict parallel concepts of social organization in other societies, using commonly-recovered material remains. The theory of conceptual metaphor also suggests there is a minimum size of communities in which such concepts might develop.

Keywords: conceptual metaphor; image schema; force dynamics; social organization; social concepts

Introduction

This article presents a new perspective on one of archaeology's long-standing goals: to understand the social organization of past societies. This problem has been approached in many ways, but most proposals fall into two broad groups. One sees social organization as one part of the human response to environmental factors, drawing on shared human needs and behaviors, producing

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universal patterns within human societies. The other stresses social organization as the product of historical development and individual agency, mediated by symbols and ideology open to multiple interpretations, and so producing cultures infinitely varied and idiosyncratic (see also Trigger 2003, 4–11). The approach taken here shares interests with both, but is distinct from them. My concern is with ancient people's ideas about how their societies were organized and the way those ideas resulted from the experiences and the neural networks that all humans have.

Ideas are important to the way societies are organized (Ringmar 2008). People not only need to be organized, but they need to *understand* how their society is organized in order to live their lives. But organizing thousands or millions of people is not hard-wired into human brains or DNA: it is something every person in every society has to learn. Groups of people have no inherent organization. Without some concept of how they are to interact and relate to others, people will quickly find themselves at cross purposes with others. If archaeologists can understand *how* people formulate ideas about social order, then they will have a much better chance of grasping the *nature* of the ideas at work in ancient societies. In this article, I discuss how people worldwide formulated one important family of concepts. (Please note that I will follow the usual convention in cognitive linguistics of marking concepts in SMALL CAPITALS, and instances of the concept in *italics*.)

Concepts of Society

There are many concepts about society, and many ways of framing them. A common one is that the SOCIETY IS A BODY. In

this vein, we find expressions like "the *body* politic", "*organs* of state", as well as associated concepts like "a *healthy* democracy", in which the wellbeing of society is likened to the wellbeing of the body. Body-based concepts from other cultures include the French *corps-état*, Meiji Japanese *kokutai,* "national body", and ancient Chinese *guoti*. Many peoples refer to leaders as "heads": Old Norse *hofðing* "head man"; Modern Greek *kephalē*, "head, chief"; Hebrew *reš* "head, chief"; Amharic *ras* "head, prince"; Turkish *başkan* "leader" from *baş* "head"; Mongolian *darga* "head, chief"; and Zulu *inhloko* "head, leader".

Another widespread, and possibly universal, concept is that of the FAMILY. Leaders are parents, usually fathers or elders, e.g., "Founding *Fathers*", "*senators*" (from Latin *senex* "elder"). The mass of the population are children, e.g., "*Sons* of Liberty", "*Children* of Israel". Within society, people of equal rank are brothers or sisters, e.g., "*brothers* in arms", "the Muslim *Brother*hood". The idea that SOCIETY IS A FAMILY still operates today, even in the largest and most complex nations. Lakoff (2002) and Cienki (2005, 2008) for example, demonstrate that variations on it are the central political metaphor in the United States.

An elaboration on the concept of FAMILY is SOCIETY AS A HOUSEHOLD. In it, the categories of FAMILY are expanded to encompass the more-varied social relations and hierarchies at work in a large household (e.g., dependents, hired staff, servants, slaves). The concept of SOCIETY AS HOUSE appears, for example, in Lincoln's "House Divided Speech":

> A *house* divided against itself cannot stand. I believe this government cannot endure, permanently, half slave and half

free. I do not expect the Union to be dissolved – I do not expect the *house* to fall – but I do expect it will cease to be divided. (Lincoln 1991, 25)

For all their ubiquity though, ideas of BODY, FAMILY and HOUSEHOLD lack sufficient detail to order a complex society. Larger societies require richer concepts. These three concepts do, though, illustrate how people develop ideas about social order. All three are metaphors. In each, people map their experiences of their bodies, family, and households onto larger social groups, to infer how society ought to be organized and people behave within it. For example, just as children traditionally owe parents the duty of obedience, so subjects owe their rulers obedience. The limitations of BODY, FAMILY, and HOUSE metaphors are that, first, they lack sufficient categories to manage complex societies with many different social roles and, second, they operate with only a narrow spectrum of interactions. Families, for example, run on personal interactions and shared personal history: experiences that are absent in the running of a nation or a state. There are, though, other domains that people can draw on, which are much richer and provide stable models for social order.

There are four main claims I want to argue in this article. The first is that many major concepts of social organization are metaphoric. The second is that there is an important and widespread family of metaphors with a shared "image schema" – a conceptual structure I will explain later. My third claim is that the formation of this RULING schema, as I will call it, is predictable, and is built on the cognitive experience of applying physical force to objects. Finally, fourth, the conceptual metaphors structured by this image schema are likely to form if a number of

criteria are met: (1) communities are large for people to live with many strangers; (2) people can be conceptualized as a "mass" without internal divisions (such as classes or castes); and (3) large parts of the community need to be directly involved in or familiar with activities which involve the application of force to achieve some outcome. The conditions under which the schema and metaphors will form will usually be visible in the archaeological record. The result is that archaeologists will be able to make strong predictions about the conceptual organization of past societies with populations of a few thousand or more.

Conceptual Metaphors

Before exploring the organization of communities, I want to discuss the nature of metaphor. Metaphor has made occasional appearances in archaeological theory and interpretation over the last 30 years – most of it in a post-processualist vein. Examples include Parker-Pearson's (Parker-Pearson and Ramilisonina 1998) explanation of Stonehenge as wood for the living, stone for the dead; Hodder's (1982, 218–227) interpretation of the Neolithic tombs of Orkney as "houses" for the dead; Brück's (2004) interpretation of Bronze Age grave goods as metaphors for the self, and Richards' (2013, 82ff.) suggestion that stone circles are "wrappings". What these and most other archaeological uses of metaphor have in common is that they note that one "domain" of material culture has been deliberately given the attributes of another. Tilley (1999) provides many more examples of material culture shaped by metaphor. But what these observations do not explain is *why* people use metaphors to shape material

culture, nor the cognitive processes underlying *how* people create and interpret metaphor. In many of these accounts, "metaphor" is little more than a synonym for "analogy" or "symbol". Also implicit in most archaeological uses is that "metaphor" is a completely free, unconstrained act of imagination. This makes it very difficult to explain why people around the world routinely associate some concepts – warmth with friendship, tombs with houses, death with journeys, and size with importance.

There is, though, an alternative body of theory that answers the bulk of these problems, and makes it possible for archaeologists to develop strong hypotheses regarding the concepts that structured ancient societies: *conceptual metaphor theory* (CMT). Although it now occupies a central position in cognitive science and linguistics, this theory has been little used by archaeologists. The handful of exceptions include Ortman (2000, 2008, 2012), Potter (2002), Culley (2003, 2006a, 2006b), Hays-Gilpin (2006), Loubser (2010), and Wiseman (2014).

The model that currently dominates metaphor theory outside archaeology was first outlined in Lakoff and Johnson's (1980, 1999) *Metaphors We Live By*, and reached its mature form in their *Philosophy on the Flesh*. The central tenet of this theory is that metaphors are central to human cognition, and involve using experiences in one domain to structure and understand another. When people use metaphors, they are not just *describing* one thing in terms of another: they are using the metaphors to *think* about and *experience* one thing as another. The linguistic expressions traditionally referred to as "metaphors" are actually an expression of the underlying

concepts. Over the last 30 years, cognitive scientists have found that metaphors are pervasive in most fields of human experience. They are fundamental to concepts including TIME, CAUSATION, LIFE, DEATH, EMOTION, COMMUNICATION, IDEAS, SOCIETY, and SOCIAL RELATIONSHIPS (e.g., Reddy 1979; Lakoff and Johnson 1980, 1999; Lakoff 1987; Johnson 1987; Lakoff and Turner 1989; Kövecses 1986, 1990, 2000; Rigney 2001). Such metaphors are not just occasional linguistic flourishes, as metaphors are conventionally perceived. They are pervasive and systematic in the way people structure ideas and experience.

While most research and the bulk of evidence for conceptual metaphor theory remains linguistic, there is a solid body of work demonstrating that metaphor also structures domains as varied as visual images (Kennedy 1982; Forceville 1996), music (Johnson and Larson 2003; Zbikowski 2002), gesture (Núñez and Sweetser 2006; Cienki and Müller 2008), and mathematics (Lakoff and Núñez 2000). There is also evidence for metaphor operating in several modes (Forceville and Urios-Aparisi 2009).

Since the theory first developed, psychologists and cognitive scientists have sought empirical evidence to test and refine the theory. There is now a large body of experimental evidence for the formation of metaphors and the way people use them (e.g., Gibbs 1994, 2011). More recently, neuroscientists have become involved, and have begun to illuminate how metaphors develop in the brain's neural networks (Lakoff 2008, 2014; Feldman 2006). I will be drawing on this recent research in this article to explain how one family of concepts about societies can develop in the brains of human beings around the world.

A Metaphor for Modern Organizations

To illustrate how metaphors structure societies, let me start with a parallel problem: how people in our own society understand organizations. In Western societies, virtually everyone has to interact with organizations. Governments, manufacturers, banks, retail chains, fast-food providers, transport operators, water and power utilities, and telecommunications providers are almost universally organizations. So understanding organizations is essential for living in the modern world.

In a seminal volume, Morgan (1984) analyzed the major concepts about organizations used in management theory during the late twentieth century. What he observed was that every one was a metaphor: MACHINES, ORGANISMS, BRAINS, CULTURES, POLITICAL SYSTEMS, PSYCHIC PRISONS, FLUX and TRANSFORMATION, and INSTRUMENTS OF DOMINATION. Far the most powerful and pervasive of these at the time was the first: ORGANIZATIONS ARE MACHINES.

The idea that ORGANIZATIONS ARE MACHINES has a long genesis. Early on, it drew intellectual inspiration from the mechanistic philosophies and sciences of the Enlightenment, clockwork toys and automata, and the military reforms of the eighteenth century. But the concept became dominant during the nineteenth century, when the Industrial Revolution led to more and larger machines being established in workplaces. Human beings became displaced from the center of many organizations, especially after the development of assembly line manufacturing. People had to fit around the requirements of machines, and increasingly had to behave as though they were *part* of the machines they worked

with. As manufacturing, in particular, started producing steadily more-complex products – such as cars, consumer goods, and electronics – the tasks involved in assembling them were divided up into smaller and smaller parts. Where an artisan might once have made a whole object – a chair or a jacket – an assembly-line worker might do only one of a hundred highly-repetitive tasks. However emotionally unsatisfying such work was for those doing it, "division of labor" and rendering tasks routine resulted in machine-like efficiency and predictability.

Prototypical machines – like clocks and engines – consist of a large number of inter-dependent parts, arranged so they interact in a specific sequence, work regularly, and produce outputs reliably. In prototypical "machine-organizations", such as factories, banks, and fast-food providers, people work as though they are "*cogs* in a machine". They need to complete a routine series of actions, in a predetermined order, synchronized with the actions of many other workers. Above the level of individual worker, different functional units in an organization – manufacturing, sales, marketing, finance, etc. – also have to be meshed together and synchronized.

As well as the "cogs", an essential part of prototypical machines is the "framework". It holds together the cogs, levers, and gears so they interact in the required way. It provides the structure that ensures each part meshes correctly with the others, at the right time. In "machine-organizations", the framework is provided by management. Managers in such organizations establish what tasks need to be done, ensure that staff have the skills to achieve those tasks, and make sure they are done in time to "mesh" with activities in other parts of

the organization. In large organizations, managers of different divisions themselves need to be coordinated, so they need to have their own managers. One result of conceptualizing organizations as machines is a management hierarchy.

While the concept of AN ORGANIZATION AS A MACHINE developed in highly-mechanized industries, during the twentieth century the same principles – division of labor; rendering tasks routine; coordination and sequencing of separate tasks – were applied to many other types of organization as well. The sociologist, Max Weber (1978, 973), noted that bureaucratic organizations run on the same mechanical principles: "the fully developed bureaucratic apparatus compares with other organizations exactly as does the machine with the non-mechanical modes of production." While Weber was no admirer of bureaucracies, he regarded them as technically superior to all other forms of organization. "Precision, speed, unambiguity … continuity, discretion, unity, strict subordination, reduction of friction and of material and personal costs – these are raised to the optimum in the strictly bureaucratic administration…" (Weber 1978, 973). The language he uses here could be applied almost unchanged to the running of a well-oiled machine.

Using the Metaphor to Structure Organizations

The metaphor AN ORGANIZATION IS A MACHINE can be analyzed formally as a mapping from a "source domain" (MACHINE) onto a "target domain" (ORGANIZATION). Specific mappings within this metaphor include:

COGS, LEVERS	>	WORKERS
FRAMEWORK	>	MANAGERS
SPECIALIZED PARTS	>	SPECIALIZED WORKERS

This mapping is apparent in the language used to describe roles within this type of organization. In a machine, the cogs and gears provide motive force. Under the mapping, workers become the work*force* or man*power*; they are the *hands* that keep the *wheels of industry* turning.

But using this metaphor does more than just describe organizations. People draw on their experience of machines to *reason* about how workers in organizations are to behave and be treated. Linguists term such deductions from the source domain "entailments". For example, if employees are understood as mere motive force, they are not expected to contribute other human abilities, such as intellect, imagination, learning, or passion. Inasmuch as such qualities have any role in machines, they are the prerogative of management – the framework – which determines which parts of the machine interact. As Frederick Taylor, one of the early evangelists of machine-organizations, used to say to workers, "You are not supposed to think. There are other people paid for thinking around here" (Morgan 1984, 24). This hardline separation of thinking from labor is not an inevitable part of large organizations: it is an entailment of thinking about ORGANIZATIONS AS MACHINES. Another entailment is the development of the management hierarchy, which I noted earlier.

There are three other characteristics of metaphoric mappings I want to draw attention to here, as they will be important later in this article. First, metaphors map not only individual elements of the source domain onto the target, but also preserve their structure and relationships. For example, a mechanical clock has many cogs but only one framework to

hold them together. Mapped onto an organization that "runs like clockwork", there is a single boss for many workers. The structure being preserved under a metaphoric mapping is termed an "image schema", and such structures I will discuss later.

Second, all metaphoric mappings are only partial. That is, there are aspects of both source and target domains which are not involved in the mapping. As already noted, workers are human beings, not just motive force. They think, feel, eat, have social connections, and so on – none of which are mapped by the MACHINE metaphor. A real organization that neglected these aspects of human nature, and treated workers as though they really were *cogs in the machine*, would quickly go out of business. This is why, as Morgan (1984) found, there are many other metaphors for organization in our society, including ORGANISMS, BRAINS, CULTURES, and POLITICAL SYSTEMS. People create a variety of metaphors to reason about different aspects of organizations and human nature.

Third, while there are a few expressions people use to speak about machine organizations, most of the metaphor is actually in the way that people reason about organizations. People use their experience of machines to draw conclusions about how to act in organizations. Even when there are no explicit expressions of a metaphor, its presence can be detected in its entailments (e.g., Cienki 2005, 2008)

Metaphors for Ancient Society

The metaphor ORGANIZATIONS ARE MACHINES belongs to a family of conceptual metaphors all based on one "image schema" (to be described later). In this section, I will sketch out two more short case studies to show other metaphors in this family, and provide some concrete examples that I will use later. I have selected these case studies from societies that are rather more relevant to archaeologists than modern factory-organizations: ancient Sumer and the Classic Maya.

As Morgan found with modern organizations, each of these two societies is structured by many conceptual metaphors (just as they are generated through many different activities, such as warfare, marriage, trade, public spectacles, conspicuous consumption of luxury goods, and construction of monumental architecture). In the case studies below, I have drawn out one important metaphor from the tangle of concepts used in each society. In each, I have highlighted key mappings under each metaphor along with some of the entailments. Many more will occur to experts of each society, but I have avoided burdening the analysis with excessive references to specialist literature.

There are many sources of evidence for the metaphors that people were using to conceptualize their societies: explicit linguistic usages; terminology people habitually use; etymology; iconography and artistic representations; skeuomorphism; and entailments. There are now standard methods for the analysis of metaphors expressed in language (Pragglejaz Group 2007). There is a growing body of research of musical and visual metaphors, and methods for their identification and interpretation are well-developed (e.g., Zbikowski 2002, 2008; Forceville 2002, 2008). Material culture has been largely overlooked, although Ortman (2000, 2012) provides an important approach to its interpretation.

Sumer: PEOPLE ARE FLOCKS

"The Lord is my Shepherd" (Psalm 23:1). For modern Westerners, the expression is firmly connected with Christianity, but the concept is much older and more widespread. The idea of society as a FLOCK watched over by SHEPHERDS is commonplace in the ancient Middle East, and is fully formed in even the earliest written records of the Sumerians.

Sumerian kings are regularly called "shepherds", and their people are flocks of "sheep". For example: "The trust-worthy *shepherd*, king, the sword of Sumer, Ur-Namma, the king of the Land …" (2.4.1.1 line 31f.) (Unless noted, all following quotes are from the *Electronic Corpus of Sumerian Texts*, Black et al. 1998–2006).

> … In his city, let them [the people] go before him [the king] like *sheep*. Let him, like their *shepherd*, follow behind them … (1.8.2.3, line 477f., see also 2.4.1.3, lines 76f.)

If PEOPLE ARE SHEEP and KINGS ARE SHEPHERDS then, by extension, the city, where the "sheep" are protected, is a sheepfold. "Although you are a queen who loves her city, you abandoned your *sheepfold*" (2.2.2, lines 375f.).

To modern eyes, describing people as *sheep* appears peculiar and somewhat demeaning. However, Sumerian myths such as *The Debate between Grain and Sheep* (5.3.2) and *How Grain came to Sumer* (1.7.6) are explicit that "sheepness" was the original state of human beings.

> Men used to eat grass with their mouths like sheep. In those times, they did not know grain, barley or flax. (1.7.6, lines 1–2)

> The people of those days did not know about eating bread. They did not know about wearing clothes; they went about with naked limbs in the Land. Like sheep they ate grass with their mouths and drank water from the ditches. (5.3.2, lines 21f.)

Thinking of people as sheep does not appear to be just a political and literary conceit. It also appears in Sumerian accounting. Englund (2011, 46–49) notes that in Archaic cuneiform texts, common people and state-owned herd animals appear to be categorized in the same way. Proto-Elamite scripts, which borrowed heavily from Archaic cuneiform, used a decimal counting system solely for recording animals and what appear to be low-status humans. Englund (2011, 74–75) notes that low-status people are marked in Sumerian cuneiform texts with the ideographs ERIN$_2$ ("yoke, shackle") and SAG+MAR (a head with a noose), which might indicate they were slaves or bonded labor. The number of Sumerians in labor is not clear, but it is not disputed that dependent labor was used widely and systematically in Sumer (Algaze 2008, 128f., Englund 1993, 70f.).

> Southern [Mesopotamian] elites came to view and use fully encumbered laborer in the same exploitative way that human societies, over the immediately preceding millennia, had viewed and used the labor of domesticated animals … Scribal summaries [in Archaic cuneiform] detailing the composition of groups of foreign and nativeborn captives used as laborers describe them with age and sex categories identical to those used to describe state-owned herded animals, including various types of cattle and pigs … Because these parallels are repeated in numerous texts, they cannot be explained away as either accidents or scribal idiosyncrasies. Rather, it would

appear that the two classes of labour (captive "others" and domestic animals) were considered equivalent in the minds of Uruk scribes and in the eyes of the institutions that employed them. Early Near Eastern villagers domesticated plants and animals. Uruk urban institutions, in turn, domesticated humans. (Algaze 2008, 128–129)

Conceptualizing people as sheep – or more generally, as herd animals – also explains some of the specific descriptions of human behavior found in Sumerian literature. For example, the core task of kings is not to "rule" or "govern", but "to lead" their people, just as a bellwether leads the flock. Kings may also "follow" their people, as in one of the examples above, just as a shepherd follows their flock. And if groups of people are a FLOCK, then they should behave like SHEEP when they are attacked. When enemies are defeated, soldiers are routinely said to be "scattered" far more often than they are "killed" or "maimed".

The rebel lines … They are *scattered* by force, like *sheep* that have no *shepherd*. (2.4.2.03, Seg. B; see also 1.6.2, line 74)

There is an important entailment of the metaphor, which Sumerian and later Mesopotamian kings regularly drew out. A shepherd does not own the flock. Rather, the shepherd cares for it on behalf of the flock's owner. For the Sumerians, the "owner" of humans appears to have been the gods; certainly, the Sumerians believed that the gods made humans (1.7.4, lines 10–14). It is in this capacity that the gods selected the kings to lead their "flocks". For example, the king Ur–Namma (ca. 2047–2030 BC) claims, "[The supreme god] Enlil has given me the task of keeping the Land secure … I am the good shepherd whose

sheep multiply greatly …" (2.4.1.3, lines 70ff.). The king Gudea describes himself as "the shepherd called by [the god] Ninĝirsu" (2.1.7, line 550).

Great An … Father Enlil … Both of you, bestow permanently the role of shepherd of living beings, of the numerous people, upon Ur-Ninurta, the youth who knows how to carry out your orders … He knows how to direct all countries: let him give great commands. May his shepherd's crook make the rebel lands bow low; may he let them have stable governance … May he search out food for them to eat as if for sheep, and may he get them … water to drink. (2.5.6.1, lines 17–26)

As these passages indicate, the metaphors of SHEEP and SHEPHERD also shaped the regalia of kings, which regularly included the *šibir*, "shepherd's crook" (from *šiba* "to lead"). "Where are the noble sceptre, the staff and *crook*, the noble dress, *shepherd*ship, kingship?" (1.3.1, Seg. F, line 19). There is also some evidence that kings of the Ur III and Isin dynasties participated in a ceremonial marriage to the goddess, Inana, in which they took the role of her husband, Dumuzi, the shepherd god (Cooper 1993, 82).

We can summarize the main metaphoric mappings and entailments as follows:

SHEPHERD	>	KING
FLOCK	>	PEOPLE
LEADING THE FLOCK	>	RULING
FLOCK'S OWNER	>	GODS
SHEPHERD'S CROOK	>	KING'S INSIGNIA

The metaphor THE KING IS A SHEPHERD defines the primary roles for kings in Sumerian society. Shepherds have two main functions: to secure pasture and to protect their flocks. Mapped onto

Mesopotamian society, these translate into: (1) providing fodder by constructing of irrigation works; and (2) protecting the people by building defenses and organizing armed troops. These are nicely illustrated in a post-Sumerian inscription by the Babylonian king Ammiditana (1683–1647 BC):

> I guided the land of Sumer and Akkad aright. I [settled] the widespread people in a dwelling of peace. I [gladdened] the heart of the land. In those days, with the wisdom that Ea had given me, in order to proudly shepherd the widespread people of my land in pasturage and watering place […] (and) let them rest in the river meadows, I created [the fortress] Dūr-Ammiditana above the Sharbit River on (its) east and west side. (Koppen 2006, 106)

Sheep are certainly not the only animals the Sumerians used in metaphors for their society: cattle are also prominent. However, it was sheep that became the dominant source domain in the later Mesopotamian civilizations that succeeded the Sumerians. The metaphor is apparent amongst the Babylonians, Assyrians, and across the Levant – and even amongst the Hittites in Anatolia. The Code of Hammurabi, written in Babylon in Akkadian around 1772 BC, announces, "I am Hammurabi, Enlil's chosen shepherd" (Prologue 4, see also 18, Richardson 2000, 30, 39, 269). Amongst the regalia of the Babylonian and later Assyrian kings was the *gamlu* or crook; its equivalent amongst the Hittites was the *kalmuš* (Ambos and Krausdorf 2010).

The metaphors KINGS ARE SHEPHERDS and PEOPLE ARE SHEEP were enormously long-lived. They pervade the much-later Jewish and Christian scripture, compiled over 2000 years after Sumer declined.

Most of the Patriarchs are shepherds (e.g., Abraham, Isaac, Jacob); David's status as king of Israel is foreshadowed in his prowess as a shepherd (e.g., 1 Samuel 17: 34ff.). And Jesus, despite being a carpenter, describes himself as the Good Shepherd (John 10:11). The Christian tradition of calling priests "shepherds" or "pastors" continues in this vein: "leading" and "watching over" their "flocks", on behalf of God. The SHEEP and SHEPHERD metaphors are the most common image for social organization in the Old and New Testaments, appearing over five hundred times.

Much of the Sumerian material we have for the metaphors of SHEEP and SHEEP-HERDING come from elite sources. It is undeniable that some of this is explicit propaganda. However, even if Sumerian elites had self-interested reasons for using SHEEP-based metaphors, there are good reasons for suspecting that these metaphors were widely used in society, outside of elite circles. Certainly, the New Testament gospels cannot be considered the product of elites, so the appearance of passages based on PEOPLE ARE SHEEP (e.g., Matthew 18:12–15; Luke 15: 4–7; John 10: 1–18; 1 Peter 2:5, 5: 2–4) suggest that the metaphor was an acceptable (if largely-conventional) way ordinary people understood themselves. As the political analyst Jonathon Charteris-Black (2007, 97, my italics) has stressed, "Successful and charismatic leaders create metaphors *onto which followers project their own meanings* and in doing so find a degree of socio-psychological and emotional gratification". The longevity of the SHEEP-HERDING metaphors points to "socio-psychological and emotional gratification" of the highest order, suggesting that the

metaphors were widespread and widely accepted by the mass of people throughout this two-thousand-year period.

Classic Maya: PEOPLE ARE CORN

The metaphor, PEOPLE ARE FLOCKS, depends on the widespread experience of handling domesticated animals. Plainly, such a metaphor could not develop in most of the ancient Americas because they lacked economically-significant domesticated animals (Andean llamas being the main exception). The concept of humans that dominates Mesoamerica is based not on animals but on CORN. Maize is the cornerstone of the Central American diet, and maize-based metaphors are reported amongst Maya speakers (Carlsen 1997, 54ff.), Mixtec (Monaghan 1995), and in various Uto-Aztecan languages (Sandstrom 1991; Huichol, Shelton 1996). Under this metaphor, the stages of maize growth are mapped onto human life. Black (1984) provides a clear example of its use in a Wuwutsim (Hopi) initiation ceremony:

> When the [initiation] ceremony is finally over, frequently the father speaks to his son, and tells him the following:
> [FATHER] "You really have become corn." …
> [SON] "If you have that as flesh, why do I have that as flesh?" …
> [FATHER] "It is not that you really have become corn … You have been nursing (sucking) on our mother (earth) for everything here grows up from below. … By means of its moisture you survive here … Whenever one plants seeds, they sprout. … After a while it appears above ground … Then when it rains on it, with its juice (moisture) it grows. … When it has eyes (kernels) it becomes ripe … One makes his flesh with that. … When one goes back home (to earth, by dying) this (body) is a stalk

> … Only it became worn out, spent …" (Black 1984, 280)

On this view, procreation is seeding; infants are sprouts; the appearance of kernels is maturity; and old age is the stalk after harvesting.

To analyze how this metaphor shaped the organization of Mesoamerican societies, I am going to focus on the Maya, as they have the oldest system of writing in the Americas, as well as a large body of iconography.

Stross (2006, 581) notes that, amongst modern Maya, "interchange of human body part terms with maize part nomenclature is particularly notable …". The metaphor PEOPLE ARE CORN also appears in historic Mayan literature. For example, the *Popol Vuh* (a Post Classical collection of K'iche' myths recorded in the early 1700s) includes a description of how human beings were fashioned from maize (Christenson 2007, lines 4822ff.). Fragments of the metaphoric system appear in Classic Maya inscriptions: for example, the word for 'child' or 'youth', *ch'ok*, means literally 'sprout', while *k'a'ay* 'wither' is a euphemism for 'die' (Foster 2002, 284). Mayan iconography also makes clear that the Classic Maya were familiar with the concept PEOPLE ARE CORN. Perhaps the most explicit examples are the Tablet of the Foliated Cross at Palenque (Foster 2002, 176, Figure 6.5), and the murals at Tlaxcala (Evans 2008, 53), in which maize plants sprout cob-shaped human heads.

The growth of maize and other crops was controlled by several factors, but for the Yucatan Maya one of the chief ones was water. Despite high rainfall (c. 1200 mm annually), the region experienced an annual five-month drought

from January to May. Furthermore, most rainfall was lost underground, through the innumerable limestone caves of the region. There were few major rivers and lakes, and reduced water flow in the dry season could lead to major reductions in water quality. Obtaining and managing water was crucial to the Maya settlement of the region (Scarborough 1993, 1998; Lucero 2006). Obtaining water was also pivotal to the Mayan – and Mesoamerican – concept of human flourishing: as the Hopi example above illustrates, because PEOPLE ARE CORN, a person needs to draw moisture from the earth in order to grow and mature.

The need for water was where Maya elites inserted themselves into a controlling position within the metaphor, PEOPLE ARE CORN. The elites created water storages, embodied the gods of rain, and had privileged relations with the water-giving ancestors.

For the Maya, securing water involved solving two problems. The first was the engineering problem. There was no single "Mayan" water strategy: different sites used different resources to secure their water resources (Matheny and Gurr 1983; Scarborough 1993, 1998; Lucero 2002). A few highland cities, such as Copan and Palenque, could rely on large rivers. Smaller settlements could use water from limestone caves or *cenotes*. The city of Chichen Itza, for example, appears to have been organized around its two main caves: the Xtolok Cenote and the Sacred Cenote (Coe 2011, 229). However, the very largest of the lowlands cities, such as Tikal, Caracol, and Calakmul, lacked natural water sources and, instead, depended on artificial reservoirs (Folan et al. 1996; Scarborough and Gallopin 1991; Scarborough 1993, 1994). Engineering

on the summit of Tikal, for example, created a catchment of 62 hectares, capable of collecting 900,000 cubic meters of water, which was further supplemented by four more reservoirs around the base of the site (Scarborough 1998). Various scholars have suggested that the first settlers in the lowlands monopolized good farmland, and began to build reservoirs on hillsides, exploiting local topography to capture water. By granting later arrivals access to soil and water, as well as managing the reservoirs to maintain their quality, these first settlers secured a level of control over later immigrants, becoming the first Mayan elites (Scarborough 1998).

The second problem the Mayans had in controlling water was securing the rain necessary to fill their reservoirs. Water came from either the gods (principally the rain god, Chaak) or else from the ancestors, who occupied a watery underworld (doubtless modeled on the limestone *cenotes*). So obtaining water demanded interceding with them (Scarborough 1998; Lucero 1999, 40ff.). The relationship between Classic Mayan temples and water facilities makes the connection between the two clear. At major Classic Mayan sites, including Tikal, Calakmul, Coba, Caracol, Río Azul, and La Milpa, "reservoirs rest immediately below the most grand palaces and temples" (Scarborough 1998, 153). Monumental architecture is frequently inscribed with symbols of water: water lilies, fish, crocodiles, as well as the Water Lily Monster and Water Lily Serpent (Fash 2005). In order to call the rain, all Mesoamerican peoples, including the Maya, performed rituals. This involved dressing as rain gods, and dancing as they did, performing their actions. This, argue Houston and Stuart (1996), is

not simple impersonation: an image of a god is not just a representation, but an *expression* of divinity (Houston and Stuart 1996, 304, see also Looper 2009, 224–226ff.). Wearing masks, effigies, and costumes allowed people to "assume the image" (*u-baachi ahn*) of a god (Sharer and Traxler 2006, 149). A person, dressed as the rain-god Chaak, becomes an expression of Chaak, and is thereby able to do what Chaak does – create rain.

The Classic Maya elites appear to have claimed special connections with the gods, particularly those responsible for rain, like Chaak. Kings and gods are shown together in the Pre-Classical murals of San Bartolo (Saturno, Sturt, and Taube 2004). Classic Mayan rulers are very frequently portrayed in art dressed as gods: particularly those like Chaak crucial to the growth of maize (Stone and Zender 2011, 41). On their accession, rulers also frequently took divine names. Of the 164 Mayan kings listed by Martin and Grube (2008, 22–23), 68 incorporate the names of celestial gods, including Chaak (rain), Yopaat (storm), K'awiil (lightning), Itzamnaaj (sky), and K'inich (sun). The claims of great Mayan rulers to divinity are most explicit in their title: *k'ul ahaw*, means "holy/divine lord", and sets them apart from the rulers of minor centers, *ahaw*. Icons of water are the exclusive preserve of great Maya rulers. While water imagery such as water-lilies, fish and frogs appears on monumental temples and reservoirs constructed by divine rulers (Fash 2005; Lucero 2006, 41), these are notably absent at minor sites, which also lacked both large-scale water systems and controlling elites (Lucero 2002, 820).

Altogether, this suggests that, in Classic Mayan cities where people did
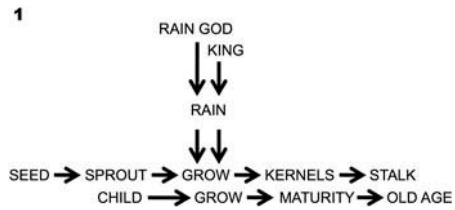

Figure 1.

not have access to water, elites controlled the making and distribution of water – and through it, controlled the people conceptualized as corn. Figure 1 summarizes how the Classic Mayan rulers inserted themselves into both the growth of maize but also, via the metaphor, PEOPLE ARE CORN, presenting themselves as the controllers of forces necessary to the flourishing of the Mayan people as well.

The Schema Structuring the Metaphors

All three systems of metaphors – MACHINES, SHEEP-HERDING, CORN-GROWING – arose independently and are based on unrelated source domains. But there are also striking similarities between them. Consider the main components of each:

ENGINEER	drives	machine
SHEPHERD	herds/protects	flock
RAIN GOD	WATERS	CROPS

Each has a single agent who controls or directs affairs. This agent's actions are their prototypical activities (driving, herding, making rain). What the agent controls is made up of many individual objects (cogs, sheep, corn-plants). The agent deals with these objects as a MASS: that is, the objects are handled collectively, not individually. This MASS is also a gestalt (MACHINE, FLOCK, CROP): it has

structure and organization distinct from the parts that comprise it. (A clock, for example, has a unity and purpose distinct from its component cogs.) All the objects controlled have one of two fundamental attributes of life: either they grow or they are animated: even prototypical machines are metaphorically alive: engines "come to *life*" and can "*die*"; cars and boats have "*personalities*". These attributes are summarized in Figure 2.

Much contemporary archaeological theory would be content to note the parallels between these three case studies – and supported by similar data from other societies – then apply the model empirically to other societies analogically. While it is undeniable that, in many circumstances, analogy is both valuable and unavoidable (e.g., Wylie 1985; David and Kramer 2001, 33–61), formal analogies cannot not explain *why* this particular model of society arises, and under what circumstances it might develop in other societies. In this case, however, conceptual metaphor theory and cognitive science allows me to explain why this particular model develops the constraints on it, and how archaeologists can use this information to make strong predictions in other societies.

I claim that these common attributes outlined above share an underlying "image schema". Furthermore, this image schema is a special case of one of the most studied suites of schemas: what

Talmy calls "force dynamics" (Talmy 1988, 2000).

Image Schema

Schemas are central to human cognition. When we perceive or act, we have to deal with a world of infinite variety. We encounter many more situations or aspects than our brains could cope with if they had to deal with each individually and separately. Imagine having to relearn how to drink every time we encountered a new cup! A great deal of human life, however, involves doing similar activities and working with similar objects. We live patterned lives in a structured universe. What our minds do is order our perceptions and actions into a manageable number of forms. A schema – or "image schema" as cognitive linguists have come to call it – is "a recurrent pattern, shape, and regularity in, or of, these ongoing ordering activities" (Johnson 1987, 29).

Most attention in cognitive science has gone to the simplest, most basic schemas at work in perceiving and acting. Examples of detailed analyses include OVER (Lakoff 1987, 416–461), and STRAIGHT (Cienki 1998). These lack the rich detail of an image, but they do have some minimal internal structure, consisting of entities and interrelationships between those entities.

Consider the elements that might go into the schema for CUP. Some are physical properties (or, more properly, "affordances", to use Gibson's [1979] term). A cup has to be a CONTAINER, with a MOUTH-SIZED OPENING and, because we use cups to drink liquids, the opening has to be at the TOP. Other elements of the schema have to do with how we use a cup and our purposes in using it. We FILL a cup with liquid, LIFT it, and TIP the
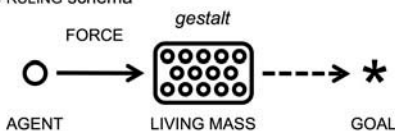

2 the RULING schema

FORCE   *gestalt*

AGENT   LIVING MASS   GOAL

Figure 2.

3 the CUP schema
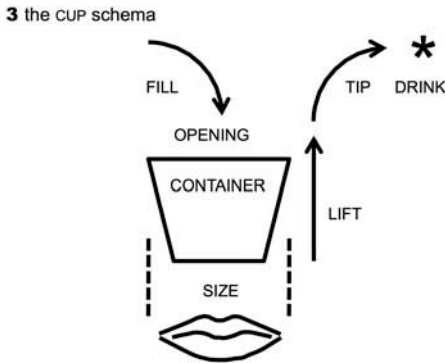

Figure 3.

contents into our mouths, in order to DRINK (Figure 3).

In addition to having entities and interrelationships, all image schemas are gestalts: they operate as a whole, distinct from the individual entities that make them up. For example, although the schema for CUP incorporates affordances, purposes, and how we use cups, these parts have to work together to serve as a useable concept. If they are not all engaged simultaneously, the result is not adequate to serve as the concept of a CUP. Buckets, bowls, basins, and bathtubs all share some of the elements of the CUP schema, but we would not conceptualise them as a cup because not all of the elements of the CUP schema are activated.

All regularly-performed sensorimotor activities have an associated image schema. They allow us to handle common situations with a minimum of cognitive effort. In the case of a cup, the combination of attributes and actions above will allow us to identify and use any cup, regardless of its specific design. Such a schema is not a static template however: it can adapt to new scenarios. If I break my arm, I can still find ways to lift and tip a cup, without having to develop an entirely new way of drinking.

The Schemas of Force Dynamics

The schema illustrated in Figure 2 is a special case of a well-understood family of schemas, "force dynamics", which was first described by Leonard Talmy (Talmy 1988, 2000, 409–470, see also Johnson 1987, 41–64; Lakoff and Johnson 1999, 170–234). By this term, Talmy meant, "how entities interact with respect to force … [including] … the exertion of force, resistance to such a force, the over-coming of such a resistance, blockage of the expression of force, removal of such blockage, and the like" (Talmy 1988, 49). Figure 4a–d shows a number of ways two objects, A and B, can interact forcefully (somewhat simplified from
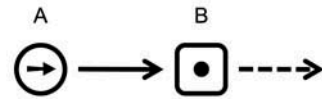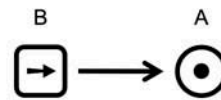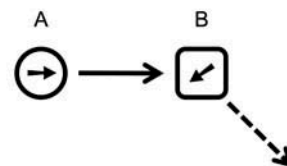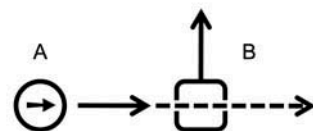

Figure 4.

Talmy's analysis). In each case, object A is the focus of attention, and is used to judge the results of the interaction with B.

In 4a, A impinges on B, which is initially stationary, making B move. In 4b, B impinges on A, which is stationary but, in this case, A is stronger than B, and so A blocks B's movement. In 4c, B impinges on A at an angle, causing A to change course. In 4d, removing B from the path of A allows A to move.

The four schemas illustrated in Figure 4 are only a subset of Talmy's analysis. Each interaction can be made more specific, depending on whether the force is steady, instantaneous, or changing. Examples 4a-c only deal with *pushing,* but there are other force dynamic schemas in which objects are *pulled* or experience *attraction.* In all these forceful encounters, however, Talmy found that they could be resolved into a few elements and their interactions, which is the essence of image schemas as Johnson (1987, 28–30) defined them.

The various force dynamics Talmy analyzed share the following basic characteristics. All involved two entities, one of which is the focus of attention. Each entity is either at rest or in motion. One entity impinges upon the other. The entities have different relative strengths, and the stronger entity will tend to continue on its way at the expense of the other. The result is either motion or rest, or a change of direction.

What is also notable about concepts structured by the various FORCE schema is what is not usually marked. The entities themselves have no attributes apart from

motion or rest. There is no quantification of speed, and interactions do not increase or decrease speed. Similarly, although interacting entities may change course, the angle of deflection is not specified.

The limited number of elements and ways of interacting within these schema greatly constrains the ways in which interactions can be conceptualized. The result is that people manage the infinite variety of interactions in the world by bundling them into a limited set of distinct schemas. This is reflected in the very limited range of terms available for describing interactions in a general way. We normally talk about interactions like those in Figures 4a and 4b as one object *making* the other move or stop. In English, we have only a handful of general words that describe this interaction, including *make, cause, because,* and *compel.* By contrast, interactions of the type illustrated in Figure 4d are normally described as *letting* or *allowing* or *permitting*: another restricted category.

This family of schemas is not just a product of language or somehow dependent upon it: it is part of our cognitive system. We can see this in the way we interpret a sentence like, "the ball sailed into the window, and the window broke." Our normal interpretation is that the *force* of the ball *caused* the window to break. However, "force" and "causing" are not present in this sentence. It is the FORCE schema, generated out of our experience of forceful interactions, which leads us to infer that there is causal relationship between the ball's impact and the window's breaking, not the words in the sentence.

Extending Force Dynamics Beyond Physical Interactions

Talmy (2000, 531ff.) has shown that people use this family of force dynamic schemas not only to conceptualize physical interactions, but also social and psychological interactions. For example, when we feel the "force of personality", we conceptualize it in the same way as physical force: a *strong* personality might *attract* us or *cause* us to *recoil*. When faced with a *powerful* argument, we are *forced* to accept its consequences: that is, the premises of the argument are *stronger* than we are, *forcing* us to *move* from our initial *position*. Likewise, good manners might sometimes *prevent* us from saying what we really think. That is, manners are an entity that *blocks* the path we would like to take. At work, our boss might *permit* us to take a week's holiday: that is, they *remove* the organizational *forces* that normally *prevent* us from doing what we would like to do. Lakoff and Johnson (1999, 170–234) show we conceptualize these interactions by drawing on our experience of forceful interactions with the physical world around us. Although the details vary somewhat across cultures, in broad outline, this extension from physical to non-physical is found everywhere. And, because our understanding of these non-physical interactions is grounded in the experience of physical force, such concepts inherit the schemas of the physical forces upon which they are based.

All of the linguistic examples I have given so far are based on English, and the vast bulk of research into force dynamics has focused on English expressions. (Talmy's research is based on cross-linguistic analysis, but he does not report which languages were surveyed.) There is, however, one important subset of force dynamic schemas that has been examined in great detail in languages other than English. These are the concepts and linguistic expressions of causation. They are based on the type of interactions shown in Figures 4a and 4b. Song's (1996) survey of 408 languages (effectively, a survey of every language with a grammar sufficiently robust to support detailed analysis) reported that *every one* had some way of marking causation. And, moreover, they all involved a single cognitive model – one that can be harmonized with the schemas illustrated in Figures 4a and 4b. From this finding, we can deduce that that every person in every culture will know the force dynamic schemas illustrated in Figures 4a and b, because every person will have experience of applying force to objects around them. In short, this schema will be universal in human concepts.

Forming the Metaphors of Social Organization

The existence of this force dynamic schema in all culture allows me to explain the formation of the social metaphors I outlined earlier Figure 5a shows the basic FORCE schema from Figure 4a alongside the RULING schema that structured the three case studies. What is apparent is that, structurally, the RULING schema is a special case of the FORCE schema, with four constraints. The first is that the force involved is *goal directed*: A acts on B *in order to cause* some outcome (Figure 5b). Like the FORCE schema, we can assume that this schema will be universal, because people usually apply force with the goal of achieving some outcome. I am going to call this schema the FORCE-OUTCOME schema.
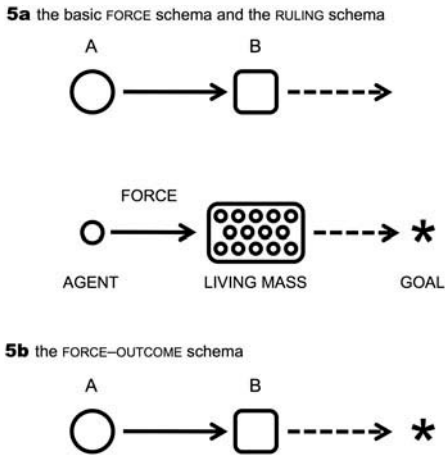
5a the basic FORCE schema and the RULING schema

5b the FORCE–OUTCOME schema

Figure 5.

The other three restrictions concern the social entity that the agent acts on. It is: (a) a MASS of like objects (b) a gestalt, and (c) composed of objects having one of two attributes of living things: specifically, they MOVE or they GROW.

Developments in cognitive science over the last decade (e.g., Feldman 2006; Lakoff 2008), make it possible to explain how the FORCE-OUTCOME schema could form the RULING schema and the various metaphors for society. To help keep the following discussion concrete, I will focus on sheep-herding and the formation of the Sumerian model of kingship. The MACHINE and CORN metaphors form in broadly similar ways.

I have divided the formation process into five stages. The first involves the creation of the SHEEP-HERDING schema. The second concerns the creation of a human MASS. The third describes the activation of the elements that make up the RULING schema. The fourth covers the formation of the RULING schema from these elements, under the influence of the FORCE-OUTCOME schema. And finally, the fifth explains how the SHEEP-HERDING

schema becomes connected with the RULING schema, resulting in specific metaphors like THE KING IS A SHEPHERD and THE PEOPLE ARE A FLOCK.
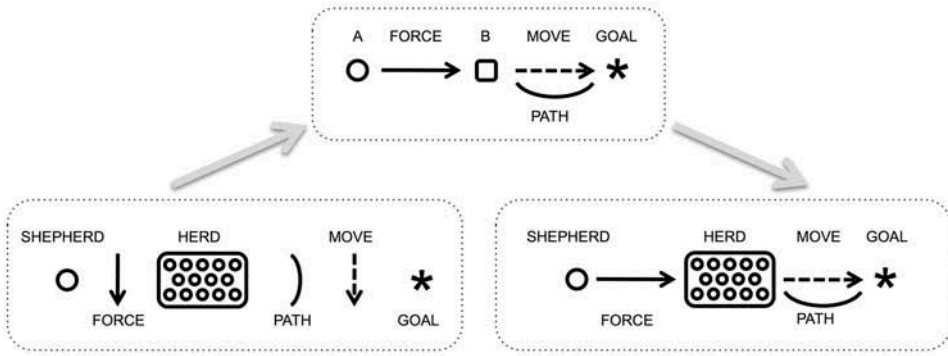
Stage 0: Forming the SHEEP-HERDING Schema

The basic task of a shepherd is to move sheep to pasture, water, and shelter, and to prevent the sheep straying off wherever they want. Applying blows and shouts at the rear of the flock will drive it forward. A hand waved on the left side will send the mob to the right. As herd animals, sheep will also tend to follow the lead animal, so if the shepherd leads that individual, the rest will follow. (Humans will also take over the role of the lead ram, and as a result, the sheep learn to follow the shepherd.) In each case, *pushing* (from the rear or the side) and *pulling* (the lead animal) will see the sheep go where the shepherd wants.

The FORCE-OUTCOME schema suggests to the shepherd that steering and leading the herd is essentially a matter of applying force. It also suggests what types of force are required and where they need to be applied. The result is a special application of the FORCE-OUTCOME schema, which I will term the SHEEP-HERDING schema (Figure 6a). It consists of the individual SHEPHERD, the gestalt HERD (made up of individual sheep), the shepherd's GOAL (whether water, pasture, or shelter), the PATH which the shepherd wants to take to reach the GOAL, and the FORCE the shepherd needs to apply to keep the sheep, MOVING along the PATH.

The SHEEP-HERDING schema is the necessary background for the specific metaphors of society. It is fully autonomous from the business of ruling people,

6a forming the SHEEP-HERDING schema

6b the PROBLEM OF RULING and the formation of the RULER schema
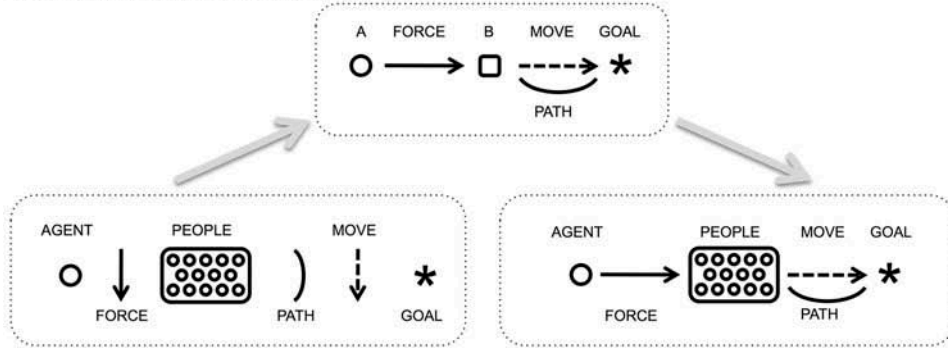
6c activating the RULING SCHEMA with the SHEEP-HERDING schema

Figure 6.

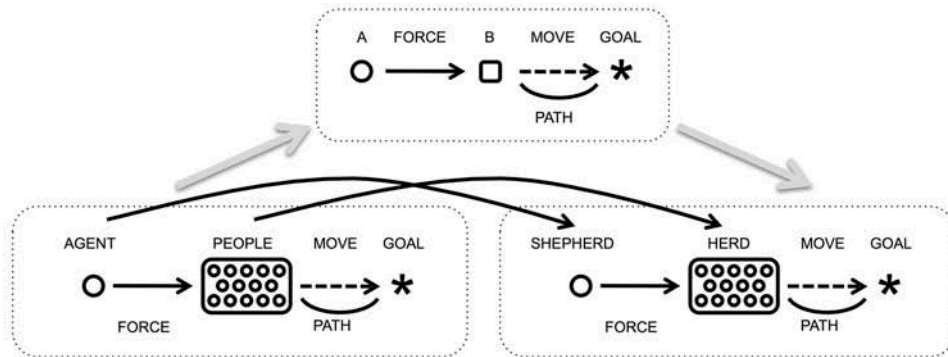however, which is why I have labeled this Phase 0, rather than Phase 1. The next five phases are all specifically concerned with the creation of concepts of society.

Stage 1. Forming the Human MASS

Phase 1 involves conceptualizing people as a MASS. Lakoff (1987, 428–429) notes that it is a simple mental operation to transform a MULTIPLEX (a collection of many entities)

into a MASS (a single entity). Essentially, we picture the objects involved at a distance, so that individuals blur together into a single mass. This is the way that *trees* become a *forest, buildings* become a *city*, and *soldiers* become an *army*.

In the case of human masses, however, there are some constraints, because the concept DISTANCE features in some other fundamental concepts. In particular, people conceptualize their social relations in terms of DISTANCE via the metaphor SOCIAL DISTANCE IS PHYSICAL DISTANCE ("*near* friends", "*distant* relations"). This concept appears to be universal and develops within the first year of life (Wiseman 2014). A consequence is that, if one person is "close" to another, they cannot also be made "distant".

How many people do humans typically regard as being "close" to them? Dunbar (1992, 1993) has argued, based on studies of primate brain size, that humans are capable of maintaining stable personal relationships with up to 100–230 others, with a mean of around 150. The result is that, in communities below this size, where everyone knows everyone else "closely", it would be difficult for any individual to get the "mental distance" from others to see them as an undifferentiated MASS. Forming a MASS in which people's individuality becomes blurred requires living in a community in which the bulk people are strangers or, at least, not intimate. This suggests a minimum population of maybe one or two thousand people is required before the concept of MASS might develop readily.

Stage 2. Activating the PROBLEM-OF-RULING

Phase 2 involves a person framing the problem: How do I MAKE the MASS of people MOVE toward my GOALS, and, specifically, go in a DIRECTION or along the PATH that the MASS is currently not travelling. I am going to call this the PROBLEM-OF-RULING. The exact formulation is not crucial: what is necessary is the activation of most or all of the "element concepts", including AGENT, MASS, MOVE, DIRECTION, PATH, GOAL, and MAKE/FORCE.

Stage 3. Forming the RULING schema from the PROBLEM OF RULING

Phase 3 sees the triggering of the FORCE-OUTCOME schema. This will occur because concepts and schemas are, ultimately, activity within the brain. Specifically, they are networks of neurons. Such networks form and are activated in a limited number of ways. Over the last decade, computational neuroscientists have elucidated various elementary neural "circuits" (Lakoff 2008, 21–23). One type that is relevant to the formation of schemas is the "gestalt" circuit. Since all schemas are gestalts, all of them will have this type of circuit, which will activate or "fire" the neurons that make up the circuit.

The "gestalt circuit" consists of a number of elements or "nodes", along with a "gestalt node". There are two ways a gestalt circuit may be activated. (1) When the gestalt node is stimulated, it stimulates all of the other nodes in the circuit (Figure 7a). (2) When a sufficient number of the individual nodes are activated, the gestalt node is also stimulated, triggering the remainder (Figure 7b).

The FORCE–OUTCOME schema will become activated because it shares a number of nodes or "element concepts" with the PROBLEM-OF-RULING. If enough of these shared nodes become activated when a person is thinking of the

firing the gestalt node...   activates the other nodes

7b

firing enough nodes... fires the gestalt node... which fires the rest
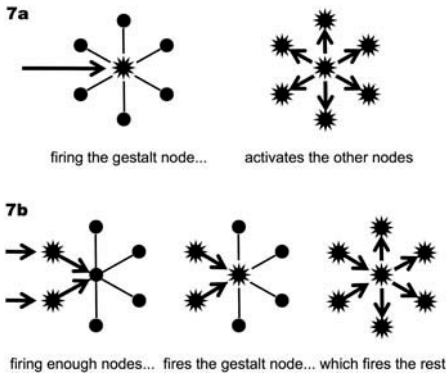
Figure 7.

PROBLEM-OF-RULING, then the FORCE-OUTCOME schema will also become activated.

The result of repeatedly co-activating the FORCE–OUTCOME schema and the PROBLEM-OF-RULING is that the individual ''element concepts'' – including AGENT, FORCE, MASS, PATH, and GOAL – will become linked in a structure that parallels the FORCE-OUTCOME schema (Figure 6b).

Stage 4. Linking the SHEEPHERDING Schema With the PROBLEM-OF-RULING

The next phase also rests on the behavior of neural networks. When a neural network, a concept, is activated, the activation radiates to other neurons and other neural networks via synaptic links. If these other neurons or networks receive sufficient stimulation, they will fire in turn. Closely associated concepts – that is, neural networks with many synaptic connections between them – are those most likely to become activated, because they receive the most stimulation.

When the FORCE-OUTCOME schema is activated, the SHEEP-HERDING schema will be amongst those that will receive neural

stimulation, as one amongst many applications of this schema. In a culture where sheepherding is a common experience, the synaptic links between the FORCE-OUTCOME schema and the SHEEP-HERDING schema are likely to be strong, because repeated co-activation of concepts – repeated stimulation of the synaptic pathways – leads to the growth of synaptic links between the underlying neural networks (what neuroscientists call ''Hebbian learning'': Feldman 2006, 79ff.). Consequently, the SHEEP-HERDING schema will be amongst the most likely instances of FORCE-OUTCOME schema to be triggered.

Stimulation of neural networks is also likely to be strongest where there is maximum positive reinforcement of the synaptic signals. In the case of the PROBLEM-OF-RULING, the MASS has the attributes of being a *mass*, a *gestalt*, and *living* (specifically, it *moves*). This will tend to promote stimulation of other concepts with similar qualities – concepts like HERD. This establishes a chain of neural excitation between the RULING schema and the SHEEP-HERDING schema (Figure 6c). This will lead to the simultaneous activation of corresponding parts of each schema: PEOPLE with HERD, AGENT with SHEPHERD.

Repeated co-activation of the PROBLEM-OF-RULE and the SHEPHERDING schema will lead to the growth of synaptic links between the two – another case of Hebbian learning. Individual connections will be established first between the core parts of each schema. This is the basis of the metaphors KINGS ARE SHEPHERDS and PEOPLE ARE FLOCKS. With experience, entailments like KINGS ARE STEWARDS OF THEIR GODS' FLOCKS develop, drawing on detailed experience of sheepherding.

One-Way Metaphors between Domains

This sequence of connections explains why metaphors used in a particular society are based on the most common activities carried out in that society. It is a function of which activities have strongest synaptic connection with the FORCE-OUTCOME schema.

The way these neural networks form also explains why the various metaphors I have described only run in one direction: kings may be shepherds, but shepherds are not kings (not routinely anyway). When a Sumerian thought about the PROBLEM-OF-RULING, it activated the FORCE-OUTCOME schema. In a society like ancient Sumer, where sheep-herding was a widely familiar activity, one of the major instances of the FORCE-OUTCOME schema would have been the SHEEP-HERDING schema, because there would have been strong synaptic connections between them in the brains of all Sumerians. The result is that activating the PROBLEM-OF-RULING was likely to activate the SHEEP-HERDING schema. (Figure 8a).

8a

RULING   FORCE-OUTCOME   SHEEP-HERDING

8b

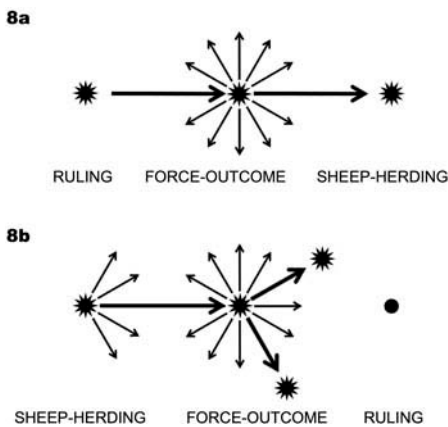SHEEP-HERDING   FORCE-OUTCOME   RULING

Figure 8.

The reverse order of events was much less likely. A shepherd herding sheep would have activated the SHEEP-HERDING schema. This in turn would have activated the FORCE-OUTCOME schema, because herding sheep involves the purposeful application of force. However, the FORCE-OUTCOME schema is connected with *all* neural circuits involved in the purposeful application of force – not just the RULING schema. Indeed, for a Sumerian shepherd, the neural circuits involved in ruling many people were unlikely to be prominent amongst these many connections. Other neural circuits connected with FORCE-OUTCOME were more likely to activate first (Figure 8b). The result is that activation of the SHEEP-HERDING schema was unlikely to trigger the RULING schema.

Cultural Schemas for Force: The Problem of the Maya

The MACHINE metaphor will develop in a similar way to the SHEEP-HERDING metaphor outlined above, even though the source domain is quite different. There would, though, appear to be a major problem with the formation of the Mayan metaphors. The MACHINE and SHEEP-HERDING schemas rest on the experience of applying *physical* force: an engineer pulls on levers; a shepherd uses a crook. But the Mayan system rests on "calling the rain". We would not normally think of this activity as involving physical force. The consequence is that Phase 0 (forming the Mayan equivalent to the SHEEP-HERDING schema) should not occur. Without it, the remaining phases should not connect RULING with RAIN-MAKING.

As Mayan myth and iconography make clear, however, rainmaking was in fact regarded as a forceful activity, which

the Mayans conceived in terms of *splitting* and *pouring*.

The metaphor of SPLITTING appears in one of the central myths of the Maya, concerned with the annual growth of maize. Part of the *Popol Vuh* relates how the Maize God was captured and decapitated by the gods of the underworld, and his head imprisoned underneath a mountain (*witz nal*, "Maize Mountain"). Sometime after, the Rain God, Chaak, split open the mountain using his axe, K'awiil: a symbol for lightning (Houston and Inomata 2009, 207; Taube 1992, 17; Sharer and Traxler 2006, 729–731). The resurrected Maize God emerged from the mountain, bringing forth abundance. The breaking of the *witz nal* by Chaak, and the reappearance of the Maize God is a common theme in Classic Mayan paintings (Stone and Zender 2011, 41).

This myth appears to have been co-opted by Classic Maya rulers. For example, one term for a king's accession was *ch'am K'awiil* "receiving the K'awiil", which Sharer and Traxler (2006, 739) say is "the royal sceptre with an image of K'awiil, the lightning deity". We also know that Mayan temples were referred to as "mountains", *witz*, and "their entrances seen as caves that gave entrance to the underworld …" (Sharer and Traxler 2006, 272), that is, to the places where the Maize God was imprisoned. Mayan kings were plainly expected to re-enact the release and resurrection of the Maize God, and were equipped with an axe/lightning/K'awiil to *strike* the *mountain* (e.g., in the tablet of the Foliated Cross, Palenque: Foster 2002, 176–177). In short, *splitting* with the lightning bolt makes corn come forth from the earth.

The other Mayan metaphor of rain-making, based on SPILLING or POURING,

appears in an alternative to the myth of the Maize God's rescue. In it, the Maize God is freed by his sons, the Hero Twins. In paintings of the scene, one of the Twins is normally shown pouring out water from a jar (e.g. Coe 2011, 227). The Rain God, Chaak, is also often portrayed with an upturned water jar around his neck, pouring out rain (e.g., Sharer and Traxler 2006, 726, Figure 13.4.b; Miller 2012, 182, Figure 163, 185, Figure 178; Taube 1992, 25, Figure b). There is good evidence that one way the Maya conceptualized rain-making was as pouring water out of a jug, as Chaak and the Hero Twins are shown doing. Moyes et al. (2009) report that the Classic Maya left offerings of water jars for Chaak during water rituals conducted in caves. They show that these ceremonies peaked in times of drought, and clearly link the collection and spilling of water with the Mayans' need for rain. Underlying such rituals must be a concept, MAKING RAIN IS POURING OUT WATER.

Both activities, *splitting* the mountain and *pouring* out water, illustrate how the Maya conceived of natural processes in terms of forceful activities. In doing so, they activated force dynamic schemas. Once conceived in this way, these activities could be incorporated into Mayan schema for organizing society.

Using the Schema in Archaeological Interpretation

The consequence of the formation process described in this article is that the RULING schema and associated metaphors are likely to develop if two preconditions are met: (1) the community is large enough for the concept of a HUMAN MASS to develop and, (2) the community has experience of forceful

interaction involving massed, living objects.

The specific metaphors that develop around the world will vary considerably, as societies draw on different experiences (crops, herds, machines, etc.), involving the application of different types of forces (pushing, pulling, permitting, etc.). However, the underlying schemas ought to be similar in each case and, moreover, will all draw upon major activities the communities are engaged in.

This conclusion allows archaeologists to make strong predictions about concepts that might have structured past societies. Such predictions can then be checked against material evidence. Doing this for a specific culture involves analysis in four stages.

(1) Establish that the concept of a human MASS could develop in the given culture. This involves demonstrating that people live and interact in communities where the bulk of others could not be known intimately. I have suggested a minimum of maybe two thousand people, but this may vary in specific circumstances.

(2) Identify the main activities and practices within the community that the bulk of people would experience first-hand or that would be common knowledge. Many of these will be economic activities, but some might be well known because they have high prestige or involve strong emotions (such as war or sport).

(3) Select from these major activities those which readily fit into the FORCE-OUTCOME schema: that is, they have (1) a MASS which

moves or grows, and is a gestalt; (2) an individual AGENT who acts on the mass; and (3) the agent's actions involve the application of FORCE in order to direct or control the MASS.

(4) Mapping the elements of these selected activities onto society: AGENT onto RULER, MASS onto PEOPLE, and so on.

This process generates hypotheses. But, by itself, it is not proof of what concepts a society used. Such hypotheses need to be checked. Archaeologists can do this by generating entailments of the metaphor, then checking whether they are actually expressed in the society they are studying. For example, in the case of Sumerian SHEEP-HERDING, some entailments would be:

shepherds use a crook
    >   kings have a   crook
shepherds follow the sheep
    >   ruling   is termed "following"
shepherds replace the leading animal
    >   ruling is termed "leading"
shepherd are stewards for the owner
    >   kings are stewards
shepherds lead sheep to pasture
    >   kings provide pasture/food

Such entailments can be compared with the archaeological record. Because conceptual metaphors are cognitive, they may be expressed in many modes, not just in language or written records. Indeed, because the original context for many archaeological remains has been lost, it is important for archaeologists to seek evidence for the metaphor from a range of sources. In the case of Sumer, the metaphorical concepts of KINGS ARE SHEPHERDS and PEOPLE ARE SHEEP were expressed explicitly in royal claims, in

myths, in accounting systems; in the language people employed for terms of governance; and in the symbols of power.

To avoid circular logic, it is important that archaeologists check their hypothesis using categories of evidence independent of those used to generate the hypothesis in the first place. The hypothesis of SHEEP-HERDING in Sumer could be generated from faunal remains, then checked using elite literature, iconography, and epigraphy.

I need to stress that the process of both hypothesis generation and checking does not require written record. Archaeologists can apply the steps above even in pre-literate societies. Written evidence is, of course, a useful source of evidence, but it is not the only way that major conceptual metaphors of a society will be expressed. In the Sumerian and Mayan case studies, I illustrated how metaphoric concepts could be expressed in art, iconography, insignia, and accounting systems. An important discussion on identifying metaphors in material culture without the aid of writing is presented by Ortman (2000, 2012).

Constraints and Competition from Other Concepts

Not all societies will develop metaphors based on the RULING schema, and even in those that do, such metaphors may not become dominant. There are several reasons. The first is that the conditions necessary for the formation of the schema and metaphors may not be met in some way. Ancient India provides a good example. Cows have a significant place in Indian life in the first millennium BC. This might suggest a social organization based on the metaphors, the PEOPLE ARE CATTLE and a KING DRIVES CATTLE. A few

such metaphors do exist in the earliest Sanskrit literature: the Vedas (e.g., *gopā janasya* "herdsman of people" from *go-* "cow" *Ṛg Veda* 3:43:5). However, the metaphors never became commonplace. What prevented them was India's castes or *varna* – also apparent in the Vedas (e.g., *Ṛg Veda* 10:90:11–12). With society divided into castes, the concept of a HUMAN MASS would be difficult to develop, as people routinely saw themselves as members of distinct groups. (The reason that the few extant metaphors developed in the Vedas was because they were originally attributes of the gods, who are described as "herders of people", e.g., *Ṛg Veda* 1:91:21b, 1:144:6a, 5:11:1a, 7:60:3d, 9:35:5c. Relative to the gods, all people *as humans* belong to the one category, and so could be conceptualized as a MASS. Once this concept was in place, the rest of the ruling schema developed, with the result that Hindu gods are called "herders" in Vedic literature.) The moral for archaeologists is that they to ensure that each stage in the formation process could actually happen in the society they are studying.

A second reason that the RULING schema may not develop is that it has to compete with other concepts. In Confucian China, social organization was based on *dé*, "virtue". In Confucianism, the chief virtue was familial piety, *xiào*. The effect of combining these two principles was to map the duties of children to their parents onto the operation of the ancient Chinese state. Despite its size and complexity, China remained committed to SOCIETY IS A FAMILY as one of its primary social concepts. This poses the question: Why did machine metaphors dominate the modern West but China continued to use conceptually simpler, family-based

concepts? In part it is because different metaphors highlight different aspects of society. In his analysis of modern organizations, Morgan presents nine metaphors commonly used in the late twentieth century: MACHINES, ORGANISMS, BRAINS, CULTURES, POLITICAL SYSTEMS, PSYCHIC PRISONS, FLUX and TRANSFORMATION, and INSTRUMENTS OF DOMINATION. Seeing organization as a BRAIN highlights memory and learning as important issues, whereas the MACHINE metaphor emphasis control and synchronization. Another reason that some ideas dominate over other is because of the way human brains operate. All concepts are, at root, neural networks. Not all neural networks can be activated at once. Circumstances may lead to some networks, some concepts, being activated in favor of others. The exact processes by which one takes precedence over another has not been addressed in detail by cognitive science, although it is agreed that concepts which activate more frequently or strongly are likely to be dominant (Lakoff 2014). For this reason, conceptual metaphors based on common experiences are those most likely to become dominant over others. The most common experience all human beings have are those involving their bodies and their social interactions. Teasing out the reason specific metaphors become dominant is, though, an issue that would benefit from further research.

I need to emphasize that the concepts discussed in this article are of a fundamental type. They do not directly generate political concepts like "democracy" or "socialism". These are far more elaborate constellations of ideas. They may incorporate elementary schemas like FAMILY, BODY, and the RULING, but

they go well beyond them as well. The formation of such "constellations" occurs through the process of "conceptual blending". This process has been explored over the last 30 years within cognitive science, alongside the theory of conceptual metaphor (e.g., Grady, Oakley, and Coulson 1999; Coulson 2001; Fauconnier and Turner 2002; Hutchins 2005). It provides another body of theory for archaeologists to draw on to interpret the organization of past societies.

Conceptual blends draw together aspects of different concepts, to form new, hybrid networks. While most research to date has focused on metaphoric blends, other concepts can also be integrated within the brain's neural networks. Examples of non-metaphoric concepts familiar to archaeologists, that might be important in explaining social organization, are religious concepts based on the entopic phenomena and shamanistic practices explored by Lewis-Williams (2002, 2005). Many ancient societies treated their rulers as either divine or divinely-connected – the Inka, Maya, early Chinese, Egyptians, Babylonians, Ashanti, and Yoruba are all examples (e.g., Trigger 2003; Brisch 2008) – and altered states of consciousness appear to have played a role in the religious experience of these cultures. Outside of religion, another potential source of social concepts are those predicted by Marxist theory. It suggests how particular social forms develop in response to relations of production (e.g., Childe 1936, 1951; McGuire 1992). Conceptual blends (like competition amongst concepts) would benefit from further research by archaeologists, to understand how concepts form and shape society.

Conclusion

In this article, I have shown how an important family of social concepts forms. All members of this family are conceptual metaphors. These metaphors are cognitive mappings and, ultimately, neural networks within the human brain. When these concepts and neural networks activate, people comprehend and reason about their society by drawing on commonplace experiences within their culture. Modern Westerners draw on their use of machines, Sumerians on sheep-herding, and the Maya on corn-growing. They use these experiences to suggest how people should be organized within society. While people in the three case studies employed very different source materials, the concepts they used all share a common structure: the RULING schema. The reason that these three unrelated cultures all employed the same schema is because it is based in the universal human experience of applying force to objects.

In the second half of the article, I showed how the RULING schema and the specific metaphors based on it would form as neural networks. Social metaphors based on this schema are likely to develop if: (1) people live in communities large enough for the concept of a human MASS to form; (2) the community has widespread experience of forceful activities, and (3) the concepts do not face competition from others, which prevent the formation of the necessary neural connections.

Finally, I showed how this formation process provides archaeologists with a framework for developing robust hypotheses about concepts that might have structured particular ancient societies. These hypotheses can be generated from material remains, and checked against the archaeological record. Crucially, archaeologists do not need written materials to create these hypotheses or test them. Since the metaphors are based on commonplace activities within society, these should leave widespread traces in the archaeological record. In the three case studies presented, material evidence I used to illustrate the metaphors in action included art, iconography, royal insignia, and accounting systems. Ortman (2000, 2012) has used pottery decoration and settlement layout as evidence.

The foundation of this article has been conceptual metaphor theory. As noted at the beginning of this article, it has been little used by archaeologists. It has, though, taken a central place in cognitive science and, after 30 years of research, now possesses a detailed body of theory and a large corpus of experimental evidence. In this article, I have shown how it can provide insights into one long-standing area of archaeological interest. But cognitive scientists have shown that conceptual metaphors structure many other concepts fundamental to human life and experience. It is a rich resource for archaeologists who wish to understand the concepts that shaped the lives of ancient peoples.

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