

Are There Basic Metaphors?

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Abstract

Considerable empirical evidence supports the existence of numerous conceptual metaphors, and suggests that much of cognitive structure is represented as a function of embodied experiences. However, it is not clear to what extent “all metaphors are created equal”, or whether some metaphors enjoy a more privileged status than others. In this chapter, two main features of embodied experience are identified that are likely to provide the basis for a range of fundamental metaphors. First, the body is a container with a clear boundary that keeps it separate from other objects and people. Second, the body is situated in space and moves in it while maintaining varying distances to objects and people. From these basic properties of the body the following image schemas and associated metaphors are derived: First, verticality provides a sources domain to distinguish between good and bad on the most fundamental level. Second, the notion that the body is a container shapes the understanding of many emotional and social processes. Third, spatial distance facilitates an understanding of immediate and close, versus distant and remote concerns. Spatial distance relates to objects external to the body that are either kept close, incorporated or instead, are rejected, expelled and condemned. This has relevance for other people, because physical closeness further implies physical warmth, which in itself stands for social connection. Evidence is reviewed to suggest that these are likely candidates for basic metaphors that are universal across different cultures.

More than 20 years ago Paul Ekman provocatively asked the question of whether there are basic emotions (Ekman, 1992a; 1992b). He argued that specific facial expressions and underlying physiological reactions involved in emotional experiences suggest that the answer to this question is “yes.” Ekman, and many others who noted the universality of emotion, attributed a fundamental role of physical experience to emotion. Although some of the questions posted at the time remain heavily discussed and disputed (Barrett, 2006; Panksepp, 2007), in present social psychology related considerations have not just involved emotion, but more generally the role of physical experiences in shaping the cognitive processing of social phenomena. Following researchers in other areas of cognitive science (e.g., Barsalou, 1999; 2008; Glenberg, 1997; Lakoff & Johnson, 1980), social psychologists have started to emphasize the benefits of an embodied view of cognition, based on the notion that functioning in the world with specific bodily capabilities fundamentally constrains cognitive processes (e.g., Meier, Schnall, Schwarz, & Bargh, in press; Niedenthal, Barsalou, Winkielman, Krauth-Gruber, & Ric, 2005; Smith & Semin, 2004; Spellman & Schnall, 2009).

In contrast to traditional theories of cognition, according to embodied approaches, cognitive processes do not have the goal of arriving at a mirror image of the world, but rather, cognitive processes allow humans to successfully act in their physical and social world. Thus, one of the main assumptions of embodied cognition is that the human body constrains action and its regulation, and as a consequence, produces a cognitive apparatus that facilitates action. This view has some early precursors (see, for example, Gibson, 1979; Merleau-Ponty, 1962); however, cognitive scientists have largely studied “high-level” cognitive processes as divorced from any “low-level” perceptual or motor input processes (for a history of “disembodied” cognitive science, see Johnson, 1987; Spellman & Schnall, 2009). In contrast, with conceptual structures that are defined by “interactional” (Lakoff & Johnson, 1980), or “experiential” (Varela, Thompson, & Rosch, 1991) properties of the world, the boundaries between perception, cognition and action become increasingly fluid (Barsalou, 1999; Clark, 1997). Because mental representations that are due to interactions with the environment retain the modality of perceptual experience, the resulting

concepts are considered to involve re-enactments, or simulations of such perceptual processes (Barsalou, 1999; Glenberg, 1997).

One of the earliest embodied approaches originated within cognitive linguistics in the form of the theory of conceptual metaphor (Lakoff & Johnson, 1980; 1999), which proposed that bodily processes shape and constrain cognitive information processing. Metaphor, defined as “*understanding and experiencing one kind of thing in terms of another* (Lakoff & Johnson, 1980, p. 5, emphasis in original)” does not only concern language usage, but is informative about underlying cognitive structure, because abstract concepts that are described metaphorically often reflect basic physical experiences.

Whereas early work on metaphor theory was primarily confined to linguistics and involved cataloguing lists of metaphoric expressions and their potential links to basic physical experience, recent empirical research conducted within social psychology has increasingly confirmed the metaphoric basis of many cognitive processes (for a review, see Landau, Meier, & Keefer, 2010). Testing the potential existence of embodied metaphors has become a highly productive enterprise, with research papers on new metaphoric connections between physical experiences and social phenomena accumulating at a rapid pace. However, although this growing literature supports the notion that embodied metaphors play a critical role in social thought and behavior, a wide range of metaphors has been examined without much consideration regarding which specific metaphors might constitute basic, or “core” metaphors. Indeed, critical discussions have pointed to the short-lived strategy of moving from metaphor to metaphor without taking into account what underlying processes and mechanisms might be at play (Landau et al., 2010; Meier et al., in press). In particular, if metaphors are indeed the building blocks of cognitive representation, how many and which such metaphors are required to arrive at a comprehensive conceptual structure? Given the vast number of bodily experiences to draw upon for mappings of physical concepts onto abstract target concepts, are there any bodily experiences that are more fundamental than others? In other words, given the evidence, is there any reason to believe that there are basic embodied metaphors?

The goal of this chapter is to extract a number of basic metaphors to guide future empirical investigations. What is first needed, however, is a working definition of what might make certain embodied concepts especially central, or basic. Ultimately, cross-cultural investigations and longitudinal studies following children’s early development will need to establish the extent to which some physical experiences, and their applications to abstract concepts, are universal. Do date, however, such investigations have been scarce (but see Casasanto, this volume). In the meantime, one possibility to determine which metaphors can be considered “basic” is to examine the extent to which a given *source domain*, that is, a concrete physical experience, can be used to understand a wide range of *target domains*, namely structurally dissimilar abstract concepts that otherwise are difficult to understand. Thus, for a given bodily concept to be a good candidate for a basic metaphor, it should have applicability to a wide range of target concepts, and therefore be instrumental in understanding and influencing a variety of cognitive, behavioral and social phenomena related to those abstract concepts.

This chapter will review the evidence for the existence of a number of putatively basic bodily metaphors, based on the following two fundamental observations: First, the body is a container with a clear boundary that keeps it separate from other people, and objects. Second, the body is situated in space and moves in it while maintaining varying distances to objects and people. From these basic properties of the body the following metaphors are derived, which may be considered as relatively basic: First, verticality provides a source domain to distinguish between good and bad entities in multiple contexts. Second, the fact that the body is a container is implicit in the conceptualization of many emotional and social processes. Third, spatial distance contrasts things and people that are close from those that are distant and remote. Physical closeness in social relationships is further associated with physical warmth and therefore indicates a positive social contact. Considerable evidence has accumulated to support the existence of these metaphors. But before reviewing this work, the theoretical framework is discussed that provided much of the basis for such investigations.

Metaphorical Groundings: The Theory of Conceptual Metaphor

According to the theory of conceptual metaphor (Lakoff & Johnson, 1980), the body is a source of knowledge, and by means of conceptual metaphors, very basic “embodied” concepts are mapped onto more abstract concepts. For instance, the spatial metaphor of verticality is used to contrast good and bad things, such as emotional feelings. For example, I might say that “I’m on top of the world”, or “feeling up”, or in contrast, note that “I’m down in the dumps”, or “fell into a depression.” Those mappings of physical body states are not arbitrary, but are correlated with what happens with the human body when one feels a certain emotion: An upright, relaxed posture when feeling happy, vs. a slumped, drooping posture when feeling depressed. Thus, metaphors systematically create similarities between source domains and target domains by mapping abstract concepts onto basic perceptual states.

Embodied metaphors are very prevalent in everyday talk, even if the bodily origin is often not easily evident. For instance, the metaphor TIME IS MONEY implies that time is regarded as a resource (Lakoff & Johnson, 1980). Such metaphorical expressions are usually not isolated instances, but are organized into highly coherent and elaborate systems. For example, some expressions emphasize that time is a *limited* resource (e.g., “using up time,” or “wasting time”), whereas other expressions emphasize that time is a *valuable* resource (e.g., “Thank you for your time.”). Both implications of the concepts systematically emphasize certain aspects of the metaphor and converge on the overall metaphor of TIME IS MONEY, which implies that people think of “using up” time in the same way as “using up” other resources, such as money. Importantly, the metaphorical expressions that treat abstract entities, such as time, as tangible things are not arbitrarily constructed, but are grounded in basic experiences of how the body interacts with the physical world. For example, a body uses resources, such as by eating and breathing, and thus, using up resources is a very basic embodied concept. Thus, although some metaphors might at first glance not have much of a bodily grounding, a closer examination can reveal that even seemingly abstract expressions relate back to specific physical experiences: By likening them to resources, very

abstract things, such as time, are talked about in the same way as the very concrete things that the body consumes, such as food, or air.

However, the similarities used for mapping structural relations from one domain to another domain are not objectively inherent in concepts or categories, but are the result of interactions with the world. This is a central point. Lakoff and Johnson (1980) challenge the view that category membership is determined by objective, inherent properties of objects, and instead, propose that properties emerge from interactions with the physical and social environment. Those “interactional properties” of objects can include perceptual properties (e.g., what an apple looks like), functional properties (the apple satisfies an appetite), motor-activity properties (what it feels like to hold an apple in your hand while taking a bite of it), and purposive properties (eating fruit to stay healthy). Categories based on interactional properties do not have sharp boundaries, but are relatively open-ended. For example, tossing an apple from hand to hand can fall into the category “ball”, even though an apple typically does not generally fall into that category. Thus, in their “experientialist” approach Lakoff and Johnson’s (1980; 1999) claim that objects can only be understood in relation to a particular perceptual and conceptual apparatus of the human body.

Central to Lakoff and Johnson’s theory is the concept of “image schema” (Johnson, 1987), which describes a pattern of perceptual experience that emerges from very basic bodily activities, and which is non-propositional and analogue in nature. Image schemas result in mental representations with a level of abstractness less concrete than a mental picture, or a “rich” image, but still less abstract than propositional knowledge. The sensorimotor experience of using resources is one example of such an image schema; further examples are the concepts of containment, which is derived from the basic understanding of the human body as a container (some things are inside of the body, others are outside of it) and verticality (people are usually situated in an upright position within space, with a clear up-down orientation).

Of course, the proposal that sensorimotor experiences and actions shape cognitive structure is not a new invention of cognitive science, but has been a prominent theme in developmental

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psychology for quite some time (e.g., Werner & Kaplan, 1963). Based on a constructivist framework, Piaget (1980) was one of the pioneers to argue that information does not exist independently from the perceptual and interpretive cognitive system, but that the construction of meaning necessitates an active individual. Through direct, physical action with an object, very young children are able to abstract cognitive schemes that serve as “templates” against which new objects are standardized, or “assimilated”. New information derived from other objects allows for the scheme to be modified, or “adapted”, a process that becomes possible only through the active, constructive role of the individual. Similarly, Mandler (1992) outlines a theory of *perceptual analysis* by which children actively restructure, or redescribe, conceptual information abstracted from perceptual information. The outcome of this process, which takes place as early as in 3-4 month olds, is compacted preverbal information units, and what Lakoff and Johnson (1980) termed image schemas, that involve mappings from sensorimotor activities. Recent work in social psychology has built on such early investigations, and for example, has applied the developmental notion of “scaffolding” (Bruner, 1978; Vygotsky, 1978) to the learning processes that map physical experiences early in life to social phenomena (Williams, Huang & Bargh, 2009). However, as noted above, it would be helpful to know which embodied metaphors matter most, because they have shape the thoughts in many different abstract target domains.

When examining the possibility of basic metaphors it is useful to consider which image schemas might enjoy a special status, based on which certain relatively universal metaphors might have evolved. On the most basic level, the human body is a particular object, namely a container with a discrete surface that delineates it from other objects, and other people. Two fundamental properties of this container relate to how it is situated in space, and how it moves in space. Thus, the following three image schemas might be especially central: First, the body functions in an upright, vertical position, second, it is a container that is separate from other entities, and third, the body maintains a given distance to other people and objects while moving in space. The meaning and ramifications of these image schemas (listed in

Table 1) will be discussed in turn.

Verticality: Being Upright in Space

Lakoff and Johnson (1980) articulated a theory based on which they developed a rich repertoire of metaphors. These include, for example, describing an argument as war, love as a journey, or time as money. Lakoff and Johnson (1980) proposed that a certain set of metaphors uses space as organizing principle in what they refer to as *orientational metaphors*. One central orientational metaphor is verticality. Experience in space, and spatial metaphors, are likely to serve a central function within metaphoric structure. Some of the spatial metaphors proposed by Lakoff and Johnson (1980) were indeed the earliest conceptual metaphors to be put to the test by social psychologists. For example, Meier and Robinson (2004) demonstrated that people represent good things as spatially up, and bad things as spatially down. In their work participants were faster to categorize positive words such as “love” or “candy” as “good” when they were presented in the top section of a computer screen, and negative words such as “danger” or “spider” as “bad” when they were presented in the bottom section. Similarly, being powerful is associated with being high up in space, whereas being powerless is comparatively low (Schubert, 2005).

Consistent with Lakoff and Johnson’s (1980) early proposal, the vertical dimension that pulls the mind up to higher values originates from the very basic physical experience of verticality: People use the vertical dimension to contrast moral virtue and vice when talking about “high-minded” and “upstanding” citizens, versus the “low-life” of society. However, moral considerations and verticality are not as strongly associated for people who are not very concerned with social norms, namely those scoring high on measures of psychopathy (Meier, Sellbom, & Wygant, 2007). Further, when people feel metaphorically “uplifted” and “elevated” because of having witnessed another person’s morally exemplary behaviour, they are more likely to engage in prosocial behaviour themselves (Schnall, Roper, & Fessler, 2010). Moreover, participants considering acts of moral excellence not only express more “high-level” concepts such as abstract values, they also gaze up more in space while doing so than participants

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considering acts of non-moral excellence (Pavarini, Schnall, & Immordino-Yang, 2012). Beyond valence, power, and morality, a further target domain that maps onto the source domain of verticality is divinity: Participants associate God with being high up in the sky, and the Devil as being down low in the underworld (Meier, Hauser, Robinson, Friesen, & Schjeldahl, 2007).

All this evidence suggests that one single source domain, namely verticality, is sufficient to make sense of a broad variety of target domains. Thus, verticality may be considered a very central, core embodied concept, based on which many abstract concepts can be understood. Indeed, given the very limited number of direct physical experiences relative to the almost unlimited number of abstract concepts it is remarkable how efficiently the same source domain can be applied to vastly different cognitive concepts. Another such example of an embodied source domain with wide applicability is the notion of the body as a specific kind of object.

The Body As A Container: Drawing The Line Between “In” And “Out”

The fact that the body can be considered as a container with an inside and an outside has several implications. First, the language reflecting control and responsibility often describes the lack thereof as a force coming over, or getting into a person (“what has gotten into him?!”). In particular, emotions that are considered to involve the lack of rational thinking are talked about as some force acting within the bodily confines of a person. Within cognitive linguistics, the most comprehensive account of such embodied emotion metaphors has been developed by Zoltan Kövecses (1990; 2000). While investigating the general metaphors used in talking about emotions, he noted the centrality of the container metaphor in providing the basis for conceptualizing all kinds of objects as containers, with having an “inside” and “outside”. In the context of emotions, two spatial metaphors make use of the image schema of containment, namely that emotions are fluids in a container, and that emotions relate to the heat of the fluid in a container. The latter is especially important because it yields a number of metaphorical consequences, by describing emotions that involve a lack of control and that are often regarded as “typical” emotions,

because they interrupt and disturb everyday functioning, such as anger or hatred.

The metaphors referring to anger tend to reflect the physiological effects of anger, such as feeling hot and flushed. Heat of a fluid in a container is the source domain for the target domain of anger, and various “entailments” (Lakoff & Johnson, 1980) follow. For example, when a person explodes, the “inside” of the person comes to the surface, suggesting that an authentic aspect of the person emerges that was previously “deep down” and hidden. Similar to anger, metaphors about fear correspond to physiological and behavioral aspects of fear. The notion of fluid in a container is used as well, but in contrast to anger, the fluid is not hot. Again, this is no coincidence, but correlates with the bodily experience of those emotions: Anger is experienced as hot, and is characterized by an increase in skin temperature, whereas the opposite is the case for fear (e.g., Ekman, Levenson, & Friesen, 1983). In the case of anger, the emotion develops inside the container, whereas in the case of fear, the emotion appears to be independent of the person, and then moves into the body as a result of some force (Kövecses, 1990).

If embodied metaphors indeed reflect the physiological experiences when feeling an emotion, then the same source domain (e.g., heat, when describing anger) should be used across cultures. Indeed, cross-language comparisons show that the concept of heat is central in linguistic expressions of anger not only in English, but also in Chinese (Yu, 1995), and in Japanese, Hungarian, Wolof, Zulu, Polish (Kövecses, 2000). Similarly, if heat and anger are conceptually related, then activating one should simultaneously activate the other, and this has in fact been shown. Participants are better at categorizing anger-related word when presented with a background involving heat, compared to a cold, or neutral background image. Further, participants primed with anger provided higher estimates of average annual temperature for unfamiliar cities than participants primed with fear, or neutral words (Wilkowski, Meier, Robinson, Carter, & Feltman, 2009). The reverse relationship also holds: Priming participants with heat activates thoughts related to anger and aggression (DeWall & Bushman, 2009). Because one metaphorical entailment of anger and heat is the association with the color red, priming participants with the concept

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of anger, or inducing the emotional state of anger facilitates the perception of redness (Fetterman, Robinson, Gordon, & Elliot, 2011).

The container metaphor, especially when the fluid in the container is conceptualized as hot, mirrors the control aspect of emotion: The level of a fluid in a container rises as the intensity of the emotion rises, and as it gets too intense, the container explodes, reflecting that the person has to give up control over the emotion. Notably, it is perhaps less common to talk about the body as a container for emotions that do not involve high levels of physiological arousal, such as pride, or respect (Kövecses, 1990), nor do they usually exert a disturbing influence on everyday actions, and thus, they are considered less prototypical, or less “good” examples of emotion.

Not only specific emotions are talked about with reference to the metaphor of the body as a container, but language used to talk about emotions more generally consists of spatial language, such as “deep feelings”. The usage of this particular type of language can be traced back to properties of a container, because the deeper the container, the more substance in the form of fluid it can hold (Kövecses, 1990). In addition to more intense, “deep” can also mean “more sincere”, and is reflected in the fact that points farther away from the container surface are deep inside the container. Using the container metaphor thus exemplifies the more general principle of MORE IS UP: More fluid in the container stands for higher intensity of the emotion, or conversely, a lack of fluid (“I feel empty.”) indicates a lack of emotion.

Keeping One’s Boundaries

The emotion that is most clearly concerned with maintaining the boundaries of the bodily container is disgust. On its most basic level, disgust has a functional role in the context of food consumption, that is, when it comes to which substances to physically incorporate by ingesting (Rozin, Haidt, & McCauley, 2008). The rejection of potentially edible items that look, taste or smell bad is adaptive because it reduces the likelihood of consuming food that may be harmful to one’s health. Similarly, the potential of coming into contact with contaminated objects and surfaces is reduced in the face of reluctant physical contact due to feelings of disgust and repulsion. Behavioral

responses of literally expelling bad-tasting food by spitting it out, or pulling up the nose in disgust to reduce the amount of airflow stemming from the contaminant (Susskind, Lee, Cusi, Feiman, Grabski, & Anderson, 2008) further ensure that potentially harmful substances do not enter the bodily container. The role of disgust in protecting the body of harm and contamination therefore has a clear bodily basis.

Built on this, however, is a sense of disgust that goes beyond the realm of the bodily container because it extends to metaphorical contamination: Not only bad food makes us feel repulsed and sick to the stomach, the same is the case for bad people and their bad, repulsive behaviors. In other words, in addition to physical disgust another sense of disgust involves moral disgust (Rozin et al., 2008), and it is likely that the two have a very close metaphorical link. Indeed, functional neuroimaging studies suggest that the same brain structures may be implicated in the experience of physical and moral disgust (Moll et al., 2005; Schaich Borg, Lieberman, & Kiehl, 2008). Further, inductions of physical disgust change judgments and decisions involving moral disgust (Schnall, Haidt, Clore, & Jordan, 2008; Wheatley & Haidt, 2005). For example, in one study my colleagues and I exposed some participants to a bad smell in the form of “fart spray.” Participants who sensed this disgusting smell judged various moral transgressions, such as falsifying a resume or not returning a lost wallet, to be more wrong than participants not exposed to the smell. Similarly, in a different study, participants who happened to sit at a disgusting table and were surrounded by dirty pizza boxes and used tissues made more severe moral judgments than participants sitting at the same table when it was clean and untainted (Schnall, Haidt et al., 2008). Further, people’s spontaneous facial expression are similar toward physically and morally disgusting stimuli (Cannon, Schnall, & White, 2011; Chapman, Kim, Susskind, & Anderson, 2009). These findings suggest that people often equate physical disgust and moral disgust, such as when experimentally induced feelings of repulsion are taken as evidence of moral condemnation. The conflation of physical and social disgust seems to take place especially when the metaphor of the body as a container is made salient. Landau, Sullivan and Greenberg (2009) showed that after describing the United

States in ways that highlighted its properties as a bodily entity, participants exposed to contamination fears were especially likely to express concerns about foreign immigration. Thus, physical and metaphorical notions of containment are closely linked.

Related to the function of disgust as guardian of the body's actual and metaphorical boundaries against physical and moral contamination, studies have investigated the link between physical and moral purity. Experiments have documented the so-called "Macbeth Effect," named after Lady Macbeth who attempted to rinse off the imaginary stains of murder. After having considered their past immoral actions, participants found cleansing products to be more attractive, and expressed a greater desire to wash themselves (Zhong & Liljenquest, 2006). Further, different types of transgression lead to different kinds of cleansing desires: After speaking immoral things people want to use mouthwash, but after typing something immoral using a computer keyboard people want to use a hand-sanitizer (Lee & Schwarz, 2010a). Further, being primed with words related to cleanliness or engaging in hand washing can influence moral judgments, and make moral judgments less harsh when participants interpret feelings of cleanliness to be relevant to specific transgressions (Schnall, Benton, & Harvey, 2008), but more harsh when the cleanliness is seen as indicative of one's own superior moral standing (Zhong, Strejcek, & Sivanathan, 2010).

Moving beyond the immediate need to protect one's bodily boundaries, recent findings suggest that the effects of cleansing can go beyond the moral domain. For example, a form of cognitive dissonance, namely nagging doubts about whether one made the right decision, can be reduced by hand-washing (Lee & Schwarz, 2010b). However, not only negative states can be removed, but physical cleansing can also get rid of positive states, such as one's sense of having a "lucky streak" (Xu, Zwick, & Schwarz, 2012). In this sense, physically cleansing the body can serve as a "reset" button for the mind.

Actual and Metaphorical Distance in Space and Time

As reviewed in the previous section, on a very basic level the human body is a container with

a clearly delineated inside and outside. Smith (2008) discussed how Aron, Aron, Tudor and Nelson's (1991) notion of self-other overlap is a fundamentally embodied concept: Once another person is "close", the distinction between self and body, and that of the other, breaks down. Terms such as "in-group" or "out-group" further denote the distinction between those who we keep so close that they almost seem part of the self, compared to those who are not. Because each person is separated from the surrounding world by a skin, we see objects as possessing boundaries even if they are not clearly defined: A peak in a mountain range might appear as a distinct entity and be labelled as such, even if its boundary from the rest of the geological structure is fuzzy at best. Overall, the tendency to impose real and metaphorical boundaries implies that some things are close, whereas others are not.

On the most basic level physical distance reflects the extent to which objects and people are brought close and within reach, or are kept at "arm's length." Indeed, approach and avoidance are considered some of the most basic behavioral tendencies (e.g., Elliot, 2008). Distance is further used metaphorically to denote social relationships, for example, by speaking of a *close* contact, versus a *distant* acquaintance. These metaphors reflect how people move and act in space as a reflection of specific social relationships. Indeed, people get close to intimate others to whom they feel close (Patterson, 1977; Willis, 1966), but they literally distance themselves from others who are seen as less attractive, such as people marked by a physical stigma (Kleck, 1968), as if one is afraid that too close of a contact might literally pose the danger of the stigma "rubbing off".

In general, people feel highly protective of the area of space immediately around them that has been termed "personal space" (Hall, 1968). Discomfort results when this space is invaded, and people engage in compensatory behaviors by reducing other indicators of intimacy, such as eye gaze (Argyle & Dean, 1965). Thus, social factors constrain how people act and move in physical space, and this has consequences for how this space is perceived. Distances are perceived very differently depending on whether they imply entities that are considered part of one's in-group, or instead, an out-group (Kerkman, Stea, Norris, & Rice, 2004; Burriss & Branscombe, 2005). For

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instance, distances that involve crossing the borders between participants' home country (e.g., the U.S.) into a foreign country (e.g., Mexico) are estimated as greater than distances within the home country (Burris & Branscombe, 2005). Similarly, participants estimate distances between city pairs that used to be separated by the "Iron Curtain", with one city located within East Germany and the other city located within West Germany, to be greater than distances of cities located within the same areas of Germany (Carbon & Leder, 2005). This overestimation was greatest for participants who had a negative attitude toward the reunification of Germany, presumably reflecting a strong personal sense of the country's social and political boundaries.

Findings such as these suggest that rather than being objectively determined by a low-level modular process that takes place in a "computationally encapsulated" (Fodor, 1983) manner, visual processes such as estimating small-scale distances on maps are constrained by various contextual factors, which can include social and cognitive variables. On a more broad level, visual perceptions of various kinds, including those of the physical environment, relate back to how people and their bodies use space, and how they act in space. Such considerations can shape how close or far objects appear, because the visual perception of distance takes into account how easy or difficult it would be to reach a target object, given one's bodily capabilities (Proffitt, 2006). For example, while wearing a heavy backpack objects placed within a few meters from participants appear farther away than when not wearing such a backpack (Proffitt, Stefanucci, Banton, & Epstein, 2003). Presumably, the physical state of being weighted down is indicative of how easy or difficult it would be to cover a distance, and it therefore shapes how close or far a given target appears. Similarly, because the effort involved in throwing a heavy ball participants is greater than the effort involved in throwing a light ball, after throwing the heavy ball distances appear to be farther (Witt, Proffitt, & Epstein, 2004). In addition to relative difficulty or effort of engaging with an object, motivational states relating to the desirability to objects also change perceptual affordances. Balcetis and Dunning (2010) showed that desirable objects, such as a glass of water when one is thirsty, appear as closer than undesirable objects; such a perceptual bias would presumably

facilitate the goal-relevant action of approaching the object, such as grabbing the glass of water in order to quench one's thirst.

Psychological Distance

As reviewed in detail above, the theory of conceptual metaphor (Lakoff & Johnson, 1980; 1999) proposes that physical experiences are linked with abstract concepts through embodied metaphors. Thus, there is a basic distinction between a concrete experience, for example, the actual distance to an object in space, and an abstract concept, for example, the subjective valence assigned to this object. In a somewhat similar way, construal level theory (Lieberman & Trope, 2008; Trope & Liberman, 2010) proposes a fundamental distinction regarding what is termed *psychological distance*: Experiences can be concrete, immediate and happening at the present moment, or in contrast, be abstract, distant and remote. As a consequence, psychological distance involves different mental representations of events, such that thinking about the here and now involves concrete, low-level construals tied to direct perceptual experience, whereas thinking about distant places, other people, or one's future self involves abstract, high-level construals that are detached from current experience.

Accumulating evidence suggests that people process the same kind of information differently depending on metaphorical distance and resulting construal level. Relative to events and situations that are psychological "close," taking a more "removed" psychological perspective facilitates abstract and global processing (e.g., Liberman & Förster, 2009; Henderson, Fujita, Trope & Liberman, 2006; Williams & Bargh, 2006). For example, abstract moral principles are more likely to be emphasized over situational constraints when participants use a high-level construal rather than a low-level construal (Eyal, Liberman, & Trope, 2008), and moral transgressions are condemned more in the distant future than in the near future, presumably because high-level construals make abstract moral values especially salient (Agerström & Björklund, 2009). Further, increased psychological distance can lead to better economic decisions, such as a greater focus on long-term benefits over short-term benefits (Kim, Schnall, & White, 2012), or the enhanced goal of maximizing financial gains in an economic game (Kim, Schnall,

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Yi & White, 2012). These findings suggest that a distant psychological perspective and its associated high level construal may literally help people “step back” from the immediate concerns and instead, focus on more abstract, “higher-level” goals.

Construal level theory notes that the central construct of psychological distance manifests itself in various domains, including space (close vs. far), time (now vs. later), social distance (self vs. other) and hypothetical distance (likely vs. unlikely) (Lieberman, Trope, & Stephan, 2007). Indeed, all four dimensions of psychological distance are highly correlated (Fiedler, Jung, Wänke, & Alexopoulos, 2012). Lieberman and Förster (2011), however, raise the issue of whether spatial distance might be more primary, and therefore more basic than other types of psychological distance. As reviewed above, this is likely to be the case, given that physical space provides the perceptual source domain for many other target domains. Thus, spatial distance serves as the source domain for other, more metaphorical types of psychological distance, such as temporal distance or social distance. Indeed, the way in which space facilitates thinking about time is well documented (Boroditsky, 2000; Boroditsky & Ramscar, 2002). Overall, findings derived from the construal level framework suggest that psychological distance is a fundamental dimension that is used to organize experiences and concepts, thus lending support to the notion that distance, whether concrete or abstract, constitutes a fundamental embodied metaphor.

Being Close = Being Warm

As noted previously, physical and metaphorical closeness is indicative of immediate experiences and concerns. Because it means potentially putting oneself in danger, we only let those people get close toward whom we are favorably disposed. Being close therefore often coincides with close bodily contact, or touching. In his seminal work Bowlby (1969) noted that the close relationship between infant and caregiver provides a critical relationship template for future romantic relationships, and such close primary relationships are characterized by close physical contact and warmth. Thus, from very early on in childhood feeling warm becomes synonymous with being cared for and loved by others. Indeed, Fiske, Cuddy and Glick (2007) have proposed that when

making evaluations about other people, one of the two most basic dimensions, along with judgments of competence, is the judgment of how warm and friendly that person is. Thus, warmth is a basic perceptual concept that grows out of the understanding that relative to one’s own bodily boundaries, we keep those whom we like so close that we can sense the warmth radiating from them.

Just like physical and moral purity can become conflated, as noted above (Zhong & Liljenquist, 2006; Schnall, Benton et al., 2008), physical and interpersonal warmth can become conflated. For example, research participants rated a neutral stranger as more warm and friendly after holding a cup containing a hot drink compared to after holding a cold drink (Williams & Bargh, 2008). Similarly, research participants express more relational thinking in a warm relative to a cold room (IJzerman & Semin, 2009). Looking at the reverse relationship, participants who were made to feel lonely and excluded rated the ambient room temperature to be colder than those who felt accepted, and presumably “warm” (Zhong, & Leonardelli, 2008). As a means of emotional self-regulation, experienced loneliness can be ameliorated by seeking out warm comfort in the form of a hot bath or shower (Bargh & Shalev, 2012).

Thus, interpersonal closeness seems to be closely associated with warmth. Fay and Maner (in press) found direct evidence for precisely this link. They had participants hold a warm or cold cup of coffee, and then estimate the distance to the cup. Participants low in avoidant attachment saw the warm cup as closer than the cold cup, whereas participants high in avoidant attachment showed the opposite effect. A second study further showed that when feelings of warmth were induced, participants were more likely to report a desire to be close to others, but again this effect was moderated by attachment style, with only participant low in avoidant attachment demonstrating this connection. The association between warmth and proximity, and the moderating effect of attachment styles indicates that such a connection is not innate or invariable, but at least to some extent is shaped by specific experience. Thus, warmth originating from a caregiver early in life is the result of being “close” to this person.

Other Basic Metaphors?

I have argued for a given set of bodily images schemas and resulting metaphorical concepts to be central. However, what is the reason to believe that other embodied concepts are less central? Much of what was discussed concerned potential basic metaphors derived from how the human body is situated and functions within space. In addition, information from different sensory modalities may provide fundamental source domains for potential use with abstract target domains. Although human beings take in information about the surrounding world through five distinct senses, namely vision, audition, taste, smell and touch, it is well established that vision is much more important for human beings than is the sense of audition, or smell. As a consequence, it is likely that specific visual experiences, such as the light of dawn and sunshine are experienced positively across practically all cultures, whereas the darkness and potential danger of night is universally experienced negatively. A reflection of this importance of telling light from dark, such as day from night, is that all language communities studied to date have distinct terms for 'black' and 'white', even if they lack words for other colors (Berlin & Kay, 1969). Thus, it is likely that findings with Western samples suggesting a positive valence of brightness, relative to darkness (Meier, Robinson & Clore, 2004; Sherman & Clore, 2009) also hold for non-Western samples.

Visual cues of light and dark are more likely to cross-culturally represent similar metaphoric ideas than, for example, specific smells that are associated with moral connotations. Indeed, Lee and Schwarz (in press) recently showed that while the specific smell of "fishy" is linked with something being suspicious, this expression is not necessarily universal across cultures. Thus, while it may be that unpleasant smells of various kinds are linguistically reflected as spelling trouble, because the sense of smell is less central than the sense of vision, there is cultural variability in what particular type of smell has a suspicious meaning attached to it.

Most important in this context will be cross-cultural investigations using the metaphoric transfer strategy described by Landau and colleagues (2010) that has been so productively used with Western samples. As reviewed elsewhere (Casasanto, this volume; Leung, Qiu, Ong, & Tam, 2011), some findings already suggest that some embodied

metaphors hold across various cultural communities.

Conclusion

Embodied approaches to language and cognition propose that all thought processes need to be conceptualized as taking place in the service of embodied action that is contextually constrained. Such a view suggests that cognition depends heavily on perceptual and interactional processes of the human body in the physical world. The most fundamental such bodily experiences are based on the fact that the body is a container that moves in space. It is a bounded entity that has a surface. Objects and people are positioned at varying distances to the body, and the distance to them is manipulated depending on action goals. This chapter has proposed a list of potentially basic metaphors that result from these set of fundamental images schemas that are grounded in physical experience. In contrast to Ekman's (1992b) forceful conclusion that there definitely are basic emotions, for now, the conclusion regarding the existence of basic metaphors needs to remain somewhat more tentative and speculative. Based on the existing evidence a number of basic metaphors is likely, but further evidence needs to test more directly such proposed universality.

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Table 1

Basic Embodied Source Domains and Corresponding Abstract Target Domains

Source Domain	Aspect of Source Domain	Target Domain	Sample Articles
VERTICALITY		Valence	Meier & Robinson (2004)
		Power	Schubert (2005)
		Morality	Meier, Sellbom et al. (2007)
		Divinity	Meier, Hauser et al. (2007)
CONTAINER	Depth of Container	Emotion	Kövecses (2000)
	Heat of Fluid in Container	Anger	Wilkowski et al. (2009)
	Maintaining Boundaries	Disgust Cleanliness	Schnall, Haidt et al. (2008) Zhong & Liljenquist (2006)
DISTANCE	Closeness	Intimacy	Argyle & Dean (1965)
	Warmth	Intimacy	Williams & Bargh (2008)
	Distance	Abstraction	Trope & Liberman (2010)