

# The Arc from the Body to Culture: How Affect, Proprioception, Kinesthesia, and Perceptual Imagery Shape Cultural Knowledge (and vice versa)

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**Abstract:** This essay approaches the complex triadic relation between concepts, body, and culture from an angle rooted in the empirical cognitive research of the past three decades or so. Specifically, it reviews approaches to how the body gives a substrate to and shapes cultural cognition. One main section examines how the body contributes to cultural learning and another how abstract cultural concepts and reasoning are grounded in sensorimotor experience, perception, and inner somatic states. Both sections' purpose is to survey and briefly critique different theoretical frameworks, probe into their complementarity, and summarily evaluate to what extent higher cognition is embodied. The third main section outlines elements of an epistemological framework that connects culture, concepts, and the body in a sensible way. The paper closes with a discussion of how the embodied cognition paradigm advances a rapprochement of different areas both within cognitive research and beyond.

**Keywords:** Affect, concepts, convergent evidence, culture, embodiment, imagery, senses.

## Introduction

The cognitive sciences are currently witnessing a surge of research that integrates questions that traditionally were the prerogative of the social sciences and humanities. One cornerstone of this development is an anti-Cartesian view of the human body as a shaper of higher cognition, somewhat parallel to the much cited “body-turn” in the social sciences. A growing camp of cognitive scientists now emphasizes that cognition is not disconnected from the human body, but grounded in sensory percepts, affect and other inner somatic experience, as well as imagery and sensorimotor activations. The debate revolves around the catchwords “embodiment” (of language or thought) and “(perceptual) grounding” or “perceptual simulation”. In this essay I will introduce empirical and theoretical developments of this field. The perspective applied takes into view the contribution of the body and bodily experience to cognition, thereby opening a compellingly fresh vista on ancient quandaries about the human condition bogged down by centuries of dualism and a general disregard for the body. Across academic disciplines contributions to this long-term paradigmatic agenda have cropped up, consolidated, and built up

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momentum towards a critical mass. The best indicator of “embodiment’s” coming of age is a currently emerging theory net that combines methods as well as viewpoints, radiates outwards, and stimulates empirical research.

The paper’s specific task is to demonstrate how recent research fundamentally reshapes our understanding of *cultural* concepts, reasoning, learning, and communication. In doing so, I will survey approaches from linguistics, psychology and anthropology that address these issues. I shall therefore deliberately insert the socio-cultural aspect into a triadic equation together with the body and cognition. This has a double implication: Researchers who understand culture as a generic property of being human use the notion of embodiment to emphasize that human knowledge is rooted not only in physical interaction with the world, but bodily mediated social intersubjectivity. A complementary viewpoint most typical of linguists and anthropologists investigates cultures (in plural), thus prompting questions like: “What is universal about the body and what varies?” and “How do human patterns of anatomy, locomotion, affect, etc. to the extent that they are transcultural, constrain or enable specific cultural manifestations?”<sup>2</sup>

We may begin with a couple of summary observations about recent theorizing that I aim to flesh out in due course, both as regards points of consensus and certain rifts:

1. Cognitive theory is moving away from a view of meaning encapsulated in the “mind”. As the cognitive philosopher Mark Johnson succinctly formulates in an interview, a presently growing view sees meaning as “located in the complex, dynamic arc of interactions that includes brains, bodies, environments, and cultural artifacts and institutions” (Pires de Oliveira & de Souza Bittencourt, 2008, p. 45). Correspondingly, we are currently witnessing a growth of three overlapping research trends that focus on *socio-cultural*, *embodied*, and *collective/ distributed* cognition, respectively. With this triple turn away from the internalistic and disembodied orientation of past cognitive theory research is reaching a point where it is effectively “growing into” the agenda formerly thought to belong to the social sciences.
2. In the embodiment paradigm, my present focus, the body shapes human reasoning and it is a medium for acquiring conceptual skills. Thus, many recent theories bootstrap higher levels of cognition from basic perceptual and bodily skills. With this we have come to a better, although not full, understanding of abstract concepts. I propose that the foundations of abstract thought constitute a key site for our understanding of the relation between body and culture, particularly as they relate to the important but vague notion of ideological “superstructure”. In this field, there is an essential complementariness between views that develop the compositional structure of complex schemas (i.e. morphology) and those that analyze the ontogenetic development of abstract ideas.

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<sup>2</sup> To anticipate a possible misunderstanding it should be noted that a large body of literature on cultural cognition either operates outside the embodiment paradigm (e.g. by positing propositional cultural schema, narratives, reasoning or argumentation patterns without a notable embodied aspects to them) or discusses phenomena that include embodiment, but go beyond it. It is not my present intention to review these, a task that would take a separate paper (see Shore 1996, Cienki 1999, Kimmel 2002, 2004).

3. Embodied cognition views abstain from pitting the body against culture. They agree that it is false to assume that abstract “metaculture” is remote from and ontologically set apart from the body, as many traditional accounts both in the cognitive and social sciences presuppose. Many recent analyses show that bodily constituents (e.g. schemas of verticality, path, or balance) become scaffolded to shape abstract concepts, abstract concept learning often happens via bodily practices, and so forth.
4. The precise relation between body and culture is more debated. It depends on whether we ask cultural phenomenologists, cognitive linguists, or cross-cultural psychologists, to name a few key positions. In my view, a unilateral determination of culture by a (universal) body does not match up with the joint weight of comparative research, although some approaches selectively emphasize this. We need to take scholars seriously who emphasize that inchoate body experience can be inherently cultural or that cultural models in turn filter and modulate what the body contributes to cognition. Starting from an inherently reciprocal causation between culture and body, our task is to work out the specifics and examine the relative contribution of each by domain in a cross-cultural view.
5. Embodied theorizing is still far from monolithic regarding the specific aspects of the body it focuses on. Even when we only look at abstract concepts bodily cognition can refer to anything from kinesthetic or spatial schemas used to build metaphors, via inner affects to subtly “simulated” sensorimotor action tendencies. In fact, various strands of research rarely interact at present. As one important future site of inquiry, I shall pinpoint two complementary, but seldom combined viewpoints. One of these asks how cultural concepts help us reason and create inferences, while the other asks how cultural concepts become motivational by creating qualitatively saturated somatic states that give rise to “embodied commitments”.

The present challenge therefore lies in connecting various perspectives in a nuanced way. An integrative view should make space both for cognitive universals and cultural situatedness, allow for several types of embodiment (e.g. affective and perceptual simulation), and specify how methods and theories at different levels converge (e.g. abstracting and context-situated views). To do this, this paper must cultivate an epistemological sensitivity, while resting on the conviction that key issues like how universal the body is and how putative universals shape cultural ideas also decisively depend on data from as many fields and as many cultures as possible. This strategy alone will allow us to incrementally build domain-specific evidence, so as to avoid premature generalizations.

Here is the plan of the essay: The remainder of this section introduces what the “body” and “embodiment” mean and in reaction to which traditions the paradigm entered the arena. The second section discusses the body’s role in cultural learning and, as a contested but decisive battleground, the nature of abstract concepts. Along the way a host of largely complementary empirical approaches to embodied concept analysis are surveyed. The third section identifies a number of epistemological challenges we face in connecting the triad “culture”, “concepts”, and “body” without succumbing to reductionisms (such as typically result from a narrow scope of

research methods).<sup>3</sup> The concluding section traces the ways in which the cultural side of the embodied cognition paradigm calls into question disciplinary boundaries. It fosters a rapprochement between cognitive scientists, anthropologists, (social) psychologists, sociologists, and linguists, and beyond this may establish a genuine interface within a “vertically integrated” common architecture that reaches out to the humanities (cf. Slingerland 2008).

## How Meaning Comes About

I would like to begin with the fundamental debate in the cognitive sciences that revolves around the general nature of meaning, and specifically about whether it is relative to our experience of the world perceived around and in us or whether it is relative to other concepts. This is called the “symbol grounding problem” after Harnad (1990).

Historically, the theoretical antipode to my later topic has its roots in Cartesian mind-body dualism and formal theories of symbol processing. The so-called symbolic cognition paradigm builds on the assumption that knowledge is independent of the “hardware” it is implemented on. It is just stored and run there via the manipulation of symbols and algorithms. Thus, the *mind-as-computer* metaphor reigns supreme. Concepts are understood as software that is “loaded into” the mental hardware, while their invariant bodily substrate does not otherwise affect the content or process. Reasoning is understood as symbol manipulation. By consequence, the paradigm focuses on mental processes that come about via “amodal” representations, such as a computer would use (cf. Fodor, 1975). Another key metaphor of this field makes reference to the surface level of language, by explaining abstract knowledge as linguaform. They strive to model meaning as *propositional structure*.

Structuralist theories of language hinge on equally disembodied assumptions. They regard linguistic meaning as defined in a self-sustaining semantic network where one conceptual node either cross-references to or sets itself off from another (e.g. “light” = “opposite of dark”). These nodes do not relate to perceptual experience, but operate in a purely symbolic mental currency. Such theorizing is not wholly absurd, as children observe regularities in the usage of concepts, and gather stochastic patterns about usage situations and co-occurring concepts without necessarily having a sensorial experience of what the concept in question refers to (which is impossible with abstract concepts). Structuralist theories have recently received fuel by computational approaches of word and text comprehension, which demonstrate with some success that co-occurring words can, at least in principle, go a pretty long way in defining meaning (Landauer & Dumais, 1997; Burgess & Lund, 2000). This works via high-dimensional matrices that are calculated from millions of word co-occurrences, whilst the software remains completely ignorant of the world and its actual appearance.

The social sciences have a long pedigree of accounts of disembodied ideational structure. The great theorists thought of ideology as devoid of moorings in sensory experience, i.e. a superstructure remote to the senses and body. When Marx posited that material being determines (ideological) consciousness, he may have had the right idea, but did not focus on bodily experiences as a key shaper of social practices or beliefs. Hence, theories prior to Bourdieu and

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<sup>3</sup> Note that I will avoid on purpose the debates on representationalism, objectivism vs. constructivism, and the mind-brain issue.

Foucault graft the Cartesian body-mind dualism onto a stratified architecture where disembodied ideational structures tower high above perceptual experience. Even today, mind-body dualism continues to make its mark in the cognitive analysis of cultural concepts. In psychology and linguistics, propositional structures are a classic way of explaining knowledge. For example, van Dijk (1980) inaugurated the analysis of complex narrative schemas by claiming that text elements incrementally become integrated into macro-propositions. In cognitive anthropology the traditional approach to cultural models like *illness* or cultural concepts like *mind* equally works with propositional networks (D'Andrade, 1976, 1987). The now very popular evolutionary epistemology paradigm stresses domain-specific principles (Hirschfeld et al., 1994) and construes them as organized by “hard-wired” modules for naïve biology, numeracy, essentialism, etc, that need not tie back to bodily experience, except for domains like naïve physics and the visual attribution of causality perhaps. Hence, many theories leave a troublesome gap with their neglect of the body.

Disembodied theorizing held sway, way into the 1990s. A now increasingly powerful countercurrent claims that, at some point, meanings have to refer back to the body, the senses, and what we experience of the world to really mean anything. This countercurrent made its appearance in various fields of academia that have become loosely associated since then. A share of current embodied views ultimately hark back to German Gestalt psychology (e.g. Rudolf Arnheim), albeit indirectly, to various older theories of metaphor (e.g. Giambattista Vico), to the phenomenology of the body (e.g. Maurice Merleau-Ponty), and to American Pragmatism (e.g. John Dewey) as well as, again indirectly, Empiricism (e.g. David Hume). On the whole the disenchantment with the dominant philosophical, linguistic, and psychological theories spawned the movement at several American West-Coast universities in the 1970s and 80s. Since its inception, a number of developments have contributed to the reinvigoration of embodied thinking in cognitive sciences:

- subjective methods such as phenomenology are reemerging again after having been rejected by behaviorism, including interesting new methodologies for tapping into lived experience (see below);
- powerful methods like fMRI scans or transcranial magnetic stimulation are becoming widely available (and more portable), thus paving the way for a better understanding of sensorimotor centers in the brain that feed into higher cognitive tasks like reading texts;
- clever experimental designs like recognition priming are being used by psychologists to tap into structures of the cognitive unconscious (like imagery underlying language comprehension);
- cognitive robotics has drawn attention to the body structures and sensory “kit” needed to perceive and act in a humanoid way;
- neuroscience heralds “mirror neurons”, which were originally discovered in the brains of macaque monkeys, as the biological mechanism underlying mimetic bodily behavior; as well as
- findings from social cognition research and related disciplines demonstrates the importance of bodily interaction to human development (see below).

Provisionally defined, embodiment means that the “higher” realms of cognition associated with conceptual knowledge and culture, build on the “lower” levels of bodily knowledge. In this

vein, my present aim will be to chart the terrain of approaches to the *embodied grounding of cognition* (for extensive summaries of the state-of-the-art see Gibbs, 2005; Pecher & Zwaan, 2005; Semin & Smith, 2008; Barsalou, 2008), i.e. the vertical architecture whereby our proprioception, kinesthesia, bodily affect, and the external sensorial apparatus inform cognition.

## The Notion of the Body and Embodiment

As Violi (2008) points out, there is no unitary usage of the notion of embodiment. Many fields currently offer distinct approaches, which at best form a “theory net” of complementary elements and at worst, run the risk of creating misunderstandings. To avoid the latter we need to deal circumspectly with the notion. Embodiment theories are found at various levels and in varying disciplines, ranging from neuro-physiological and computational approaches, via approaches to a “cognitive unconscious” in linguistics and psychology, to more explicitly phenomenological views (Rohrer 2001). This also implies that the respective methods look at quite different phenomena from the (sub-)cellular level, via language and behavioral experiments, to social interactions in their cultural context.

The lynchpin of the argument, the body itself, is neither a self-evident nor a simple notion, despite appearances. When understood as a theoretical entity (as opposed to the mind, for instance), it is a construct of a complex sort. There is more than one way to understand it. What shows how much “body” is a construal dependent on cultural concepts of the body. The various medical traditions dramatically illustrate this. The Western bio-medical body is surely not the same as that of Traditional Chinese Medicine (TCM) or the numerous other ethnomedical traditions. It is not easy to detect the biological universal underneath the different views. This construal-dependency opens up the possibility that the underlying actual body experiences differ across cultures, a point I shall get to later (cf. Csordas 1994). In philosophical discourse theories also vary in scope. While some look at the physiological organism itself, others focus on the brain and central nervous system that monitor body states and action, and still others include the way the body extends beyond the flesh and outwards by interpenetrating with its spatial, social or other environment (cf. Pires de Oliveira & de Souza Bittencourt, 2008, p. 23). The latter position emphasizes the situatedness and relatedness of human cognition (cf. Bernardez 2008). When we look at applied perspectives, these set their sights on the body quite differently, ranging from phenomenological body experience (“the lived body”), via the body schema/ image as basis of personhood, as well as how the body perceives space and acts in it, to social theories about the body or metaphors of the body. In social science, too, we have seen a distinction between techniques of the body, the body as a source of symbolism, and the body as a locus of social power regimes (Scheper-Hughes & Lock, 1987). None of these perspectives is fully co-extensive with the other, neither notionally nor methodologically.

Next, how do we define “embodiment”? The expression suggests that something that appears to be in a way different from the body, such as the mind, is nonetheless shaped by it. The body with its capabilities for perception and action thus extends outwards into the realm of cognition. There are various ways of reading the claim that cognition is embodied.<sup>4</sup> An almost trivial version is that cognitive processes have a material substrate that cannot be ignored for understanding mental processes. Simply put, “mind” research can benefit from “brain” research.

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<sup>4</sup> Cf. Ziemke (2003) for robotics and Wilson (2002) for a broad picture of various surrounding disciplines.

Virtually everyone in the cognitive community agrees with this claim, although the emergence of mind from its material substrate is far from being understood. A stronger version of the embodiment claim is that the bodily substrate influences what a cognitive agent can do. At the level of perception, its structures and abilities constrain what can be meaningful, ultimately because organisms have developed cognitively in such a way that they can attune to their environments and meaningfully couple with them. They perceive in order to act or interact. Therefore there is no such thing as a neutral kind of percept. Because evaluations and potential motor actions are always implicated in perception, moving bodies can actively seek out percepts of useful kinds. These may have co-evolved with the environment and reflect an interaction history with it (*affordances* after Gibson 1979, see section 2). More radically, some authors such as Andy Clark suggest that we had best speak of *supersized mind* that extends out in its environment and requires “feedback, feed-forward and feed-around loops: loops that promiscuously criss-cross the boundaries of brain, body and world” (Clark, 2008, p. xxvii). The interactive nature of the body, in some views, actually makes concepts less representations of the world, rather than “control structures for the regulation of interaction with the external world” (Violi, 2008, p. 66). There are several noteworthy sides to “supersizing” that bear on the notion of culture: The exploitation of environmental structure is the basis for complex cognitive skills, as it allows cognitive offloading to *cognitive artifacts* which enable complex feats like *collective* and *distributed cognition* in teams (Hutchins, 1995). Even more fundamentally, cognition requires human interaction and intersubjectivity (Zlatev et. al, 2008) and “a complex, relationally grounded interpersonal social and cultural environment” (Violi, 2008, p. 73). To make this point, I shall later present Michael Tomasello’s approach to language learning and Daniel Stern’s work on the infant’s first developmental steps, both of which emerge from bodily interaction.

In the study of language and thought we again find embodiment claims of various strengths. Here, a developmental version of embodiment holds that sensorimotor knowledge in infant experience creates building blocks for concepts or helps to bootstrap them (Mandler, 1992, 2005; Johnson, 1987). A stronger version holds that conceptual states are accompanied by or constituted by real-time simulations of bodily states. Thinking, planning, and concepts do not involve any time-pressured action in a real environment (cf. Wilson’s 2002 notion of “offline” cognition); cognition is essentially simulative here and operates in an “as if” mode. Many recent studies have looked at such processes in language comprehension (Gibbs 2005). More generally this is based upon the idea that *modality-specific sensory systems* stand at the basis of cognitive processes (Barsalou, 2008). Variants of this basic claim include Damasio’s (1994) theory of emotion and self, Glenberg’s (1997) theory of memory, and Gallese’s (2003) theory of intersubjectivity, as well as forms of imagism by scholars like Lakoff, Johnson, Barsalou and Prinz that explain the representational content of concepts and will be discussed below in some detail.

## Acquiring Culture through the Body

If we accept that the body is continuously shaped by living cultural lives, we can look at it as a culturalized substrate from which further aspects of cognition arise. What we need is a perspective on embodied cultural learning that addresses (a) procedural memory and sensory modalities as loci of learning and (b) specific patterns of bodily social interaction, including institutionalized practices. This section will, accordingly, discuss two strands of embodiment

literature. One of these understands culture as a comparative and ethnographic notion, while another investigates how bodily communication, seen as a generic trait of the culturality of all *homo sapiens*, plays a key role in cognitive maturation. While the flavor of the former strand is more phenomenological the latter is more “cognitive”.

## From “Habitus” to Cognitive Acquisition Studies

An early influential attempt to bridge the chasm between the body and the cultural, ideational realm was Bourdieu’s (1977) theory of habitus. He claims that cultural knowledge is acquired via practices and that day-to-day bodily performance forms the substrate in which ethnicity, class, and gender are enacted. Among the Algerian Kabyles, his ethnographic fieldwork site, formative experiences are written into the household, agricultural work, the usage of artifacts, postures, and habits. For example, he describes a gendered system of homologies that define postures, practices, and loci in social space. All kinds of spatial relations that are up and outwards directed are male, while down and inwards directedness is female. Learning thus largely bypasses explicit instruction; it occurs mimetically by watching elders and peers and is then reproduced in embodied performance. These enacted practices belong to a “cultural unconscious” that naturalizes certain behaviors and aims, while making others unthinkable. Despite Bourdieu’s promising turn to ground ideology in practice and despite his embodied programmatic, he falls short of a viable theory of cultural learning and cultural knowledge. No specifiable motor capacities are involved in his account, just a blank-slate body – a “living memory pad” (see Slingerland, 2008, pp. 95f). This leaves to be explained how bodily knowledge undergirds human cognition and how imagery, affect, motivation, and general-purpose schemas come into the process. Bourdieu makes do without explicit consideration of scaffolding, i.e. how skills are superimposed on earlier or more generic ones. Second, no real account is given of concepts; by disavowing (conscious) thought as locus of culture he makes it seem as if they play little role. Third, Bourdieu’s analysis privileges learning by observation and participation over other channels. His view of acquiring habitus by osmosis, as it were, is incomplete in that it downplays both special formative situations outside everyday occurrences (e.g. in ritual) and the role of discourse or other explicit instruction. Thus, although current sensorimotor theories of learning and representation fit with Bourdieu’s emphasis of the preconscious dimension and mimetic learning, his theory is only a starting point.

In Bourdieu’s wake, a study by Jackson (1983a, pp. 336f) on initiation rites among the Kuranko of Sierra Leone emphasizes that ethical values like moderation are transmitted through kinesthetic and sensory learning. Novices have to learn to *regulate* their body in various ways. Apart from emotion control and facial impassivity under pain, there are taboos on calling for food, speaking out of turn, moving, or crying during the operations which is connected to an ethos of keeping secrets and oaths, forbearance and circumspection. Time spent in a smoke filled house after the novices return from sequestration reinforces the ability to withstand hardship. Keeness of smell is correlated with the newly acquired quality of discrimination, while controlling the eyes is related to the newly acquired sexual proprieties and mindfulness of forbidden domains. Finally, the enforced confinement during initiation serves to instill self-restraint and self-containment. Bodily self-mastery is the precondition for social and intellectual mastery. Correspondingly, Kuranko metaphors for initiation refer mostly to the sensorimotor domain. Much like in Bourdieu’s view, learning by observation and imitation are emphasized as



a key mechanism, but – like for Mead and Bateson (1942) who studied Balinese body habits – the assumed cultural dominance of the mimetic leaves room for other styles.

We find detailed acquisition models for embodied and perceptual knowledge in recent cognitive anthropological research with a developmental bent. For example, Toren (1993) shows how the symbolic and metaphoric dimension of placement in the social space of Fiji gradually develop in young children. Thus, from a bodily meaning that stands for itself space becomes symbolic of something other than itself. Similarly, Shore (1991) argues that the Samoan key concepts of *mana* and *tapu*, the first of which refers to the special potency of gods and chiefs while the second means “sacred”, “marked” or “set aside”, arise through embodied learning. This learning occurs in formative situations to which the concepts apply. Young Samoans begin to acquire these concepts through a position called *fata’i* which requires the young person to sit still in an upright position, with legs crossed, as well as with muscular control and a sense of containedness. The presence of a high-ranking chief is further associated with his central position and immobility as well as with salient features like size, brightness and shiny skin, which prototypically represent *mana*. In effect, *mana* and *tapu* manifest themselves in dance styles, gender styles, attributes of different chiefs, posture or rituals. In that sense the account is Bourdieu-like, but adds a conceptual dimension. The embodiment-induced concepts thus integrate complex proprioceptive and multisensory perceptual schemas from several settings that come to be associated with “awe” or “luck”. Another important case study by Shore (1996, pp. 258f) claims that cultural knowledge with a key status will be coded both in procedural (sensorimotor) and semantic memory to become “a total cognitive fact”. In the walkabout, an Aboriginal initiation ritual, the novice acquires a complex cultural schema by moving through the landscape, which serves as conceptual anchor for narratively expressed cultural notions. Thus, concepts are superimposed on the procedural memory of the walkabout. Progressively, procedural memory and semantic memory become interwoven as layers of abstract semantics are superimposed on procedural memory pegs. Instead of a “direct transfer of a narrative model to novices”, there is a “translation of the narrative into a sequence of kinesthetic experiences and performances” (Shore, 1996, p. 315).

In addition to ritual transmission, embodied acculturation can be embedded in everyday settings. In a truly encompassing case study Geurts (2002) discusses how the highly cultivated schema of balance and, more generally, all kinds of proprioceptive awareness come about among the Anlo-Ewe of Southern Ghana. While balance is a universal human propensity, here it is given special articulation and a distinct cultural direction from infancy on. This begins with limb flexing exercises and continues as infants learn to walk with the frequent exhortation “balance!” Balancing serves the head-carrying of heavy objects, but goes far beyond it. It is said to make free and level-headed. Posture and moving are also linked to the evaluation of a moral character, i.e. the cultivation of an elegant “non-shifty” walk of a purposeful person (but also somatic agility and adaptability). Finally, Geurts reports a host of balance-related metaphors like morality as balance and straightness, the cultural ideal of balancing between cultural and outside influences, as well as a diachronic balance of temperature and keeping a balanced audience in a specific ritual. Thus, somewhat in contrast with Bourdieu, balance is also discursively reflected and elaborated on explicitly for a bundle of cultural aims. From a theoretical viewpoint, it is significant that a sensorimotor schema like BALANCE straddles the fence between the embodied and symbolic domains (more on this later). Note, finally, that we have also seen many affective elements in the value of Kuranko moderation, Samoan *tapu*, and balancing among the Anlo-Ewe.

Thus, an undercurrent in all these examples concerns cultural emotion models, by which I understand the ability to evoke culturally shaped dynamic feeling states.

## Cultural Sensory Formations

The cultural modulation of the body is also thrown into relief by the genre of “sensorial ethnography”, which follows the aim to “reconceptualize the senses as ways of thinking and knowing” (Howes, 2003, p. 50) and turns to cultural sensory formations.<sup>5</sup> Ethnographies akin to Geurts’ work on Anlo-Ewe proprioception have emerged since the 1980s. They have, for example, drawn attention to the supreme importance of smell among the Ongee of the Andaman islands as well as among the Tuareg of Niger, the frequent precedence of hearing over vision with the Kaluli of Papua New Guinea, the Songhay’s cultivation of taste in Niger, and the Tzotzil-Mayas’ focus on temperature (surveyed in Classen, 1993; Howes, 2003; cf. also Stoller, 1989). One point is that people in these cultures hierarchize sensory modalities differently than the often proclaimed (but perhaps equally reductionistic) Western visualism. Moreover, some ethnic groups like the Amazonian Desana cultivate cross-sensory awareness as such, while the Casinuhua of Peru distinguish a special mode of “synesthetic sight” in hallucinogenic experiences. The sensoria literature is relevant to our discussion both with regard to sensory acculturation processes that shape cultural bodies and how sense-scapes are endowed with further social significance, e.g. by concepts defined via sensory indices or metaphors. For example, the Ongee conceptualize the life cycle in terms of different kinds of scent. Or, the Desana, as Howes (2003, p. 46) says, code “every sensory quality with social meaning”.

Of equal interest are studies from the discipline of medical anthropology, which focuses on the nexus of body and knowledge in healing. Laderman (1994) emphasizes that cultural symbols acquire an embodied counterpart, when she recounts her own coming to feel a Malay humoral theory and two special concepts. The concept of *semangat* (“spirit of life”), that, when lost, is felt as a loss of bodily energy and confidence. The concept of *angin* (“inner winds”) determines a person’s temperament and character and equally is used by healers to diagnose bundles of felt bodily states.

The reader may ask herself what the possible ways of bodily involvement in acculturation and learning are. Here, an illuminating study by Hsu (1999) reports on the modes by which Traditional Chinese Medicine is transmitted. She did her fieldwork in three different settings. In the first setting the style of transmission was embodied via meditation (related to *qigong* practice). In the second it was embodied via ritual, using otherwise largely a-semantic learning of formulas. In the third setting, a modern TCM university, theoretical frameworks like the *Five Phases* were presented and gradually applied to diagnosis and healing. These exemplify yet another mode of embodied transmission based on specific imagery and metaphors, which however relies on explicit discourse. A similar (but binary) distinction of memory systems in cultural learning is found in Whitehouse’s (1995) work on religious rituals and initiation in Papua New Guinea.

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<sup>5</sup> According to Shore’s survey of cognitive formats, these may be seen as non-linguistic cultural models that encompass olfactory, sound and visual models, kinesthetic schemas of posture, interpersonal space and muscle tone (as well as more abstract image schemas, see below). Furthermore he lists stylized action sets and performances and emotion models (Shore, 1996, pp. 59f).

## Basic Resources of Space and Kinesthesia

On the linguistic and psychological side we see models that focus on how basic spatial schemas are acquired. One major debate revolves around *image schemas*, i.e. basic experiential gestalts that we get to know from sensorimotor experience in infancy (Johnson, 1987) and that include PATH, CONTAINER, LINK, BALANCE, CYCLE, SYMMETRY, CENTER-PERIPHERY, UP-DOWN, PART-WHOLE, SURFACE, CONTACT, SCALE, NEAR-FAR, STRAIGHT, MULTIPLEX-MASS, ENTITY and AGENCY. Infants acquire image schemas via motion, object manipulation and bodily proprioception. For example, what a container is can be directly experienced because we are ourselves containers for air, blood, and feces and because we experience what it means to be inside a room, going outside, and what a boundary is. Later in life the topological logic of “inside”, “boundary” and “outside” can be redeployed in many conceptual ways, e.g. to understand what a category is (see section on metaphor below). A detailed acquisition model for image schemas is found in Mandler (1992, 2005), although the cultural dimension plays little role here. However, others like Sinha and Jensen de López (2000) explore this dimension by comparing English and Danish children on the one hand and Zapotec children on the other hand regarding their understanding of containment. Children are exposed to cultural objects and environments which influence their ability to notice linguistic differences. Danish and English children are quicker to notice differences between “under” and “in”, because they are encouraged to play with upright cups, whereas Zapotec children use a smaller number of containers and use them more multi-functionally. Linguistic highlighting may play a further role in the acquisition of particular image schemas. In describing two objects, Korean makes children distinguish LOOSE FIT and TIGHT FIT through exposure to the verbs *kkita* and *nehta*, while English highlights CONTAINMENT and SUPPORT instead through the prepositions *in* and *on* (Bowerman 1996). A third influential factor are cultural performance styles in gait, posture, everyday action, and ritual such as illustrated by Geurts’ (2002) study of the BALANCE image schema (see above). Thus, children from all cultures have an innate ability to schematize certain basic spatial and kinesthetic relations, but this is modulated by cultural experience.

As to adult cognition, comparative psychological studies point to important differences concerning the perception of grounds and figures as well as causal attribution to either (Nisbett, 2003), spatial reference frames (Pedersen et al., 1998), manner and path of motion (Slobin, 2004), and objects (Lucy, 1996). These perceptual abilities and foci are influenced either by what a language encodes obligatorily (cf. Deutscher, 2010) or by various other cultural factors like the environment or cultural ideology. The partial cultural modulation of perceptual skills does not commit us to a strong relativity assumption, the so-called Sapir-Whorf hypothesis. In light of the present evidence it makes more sense to say that language and culture highlight a part of perceptual reality to attention, without strictly committing to it.

The acquisition of perceptual and actional schemas is not only interesting in its own right, it is equally important for understanding conceptual feats. One of the big discoveries since 1980 is the extent to which spatial and kinesthetic schemas are used to structure abstract concepts via conceptual mappings. Apparently, humans are endowed with a highly differentiated perceptual system geared to real-time action in a physical environment. Such “perceptual reasoning” is a resource that our forbearers possessed long before complex concepts came along and that lends itself to conceptual spin-offs. One model for how this happens claims that recurrent experiences

shape spatial (and in fact multimodal) schemas, which are then decoupled from their usage domain and can then be mapped to abstract domains. For example, physical purposes in space are most typically end-points of paths and we talk about non-physical purposes in the same way (“passing an exam”, “reaching a life goal”, etc). Johnson’s above cited account of image schemas suggests such a viewpoint. A related viewpoint emphasizes to a lesser degree the arbitrary projection of a general purpose image schema on an abstract target, but takes recourse to concrete formative settings much like in Shore’s Samoan account mentioned above in which source and target co-occur. Below I shall discuss a speculative, but linguistically plausible model by Grady (1997, 1999) who explains the way we learn some metaphors through “experiential metonymies” in some simple formative settings like being held tight by a parent, which are likely to occur in similar fashion in all cultures. This model is reinforced by a study of how infants learn to recognize metaphors as a phenomenon in its own right (Johnson, 1997).

### **Interpersonal Learning and the Body’s Role**

The perspectives discussed so far all focus on the cultural environment as a context, but not specifically on the sociality and interactive nature of embodied learning. Our inquiry now shifts to the broader question of what it takes to become “conceptual” in the very first place. Developmental research suggests that bodily interaction with caregivers, gaze, gestures, and shared attention to objects are the touchstone of conceptual and linguistic abilities. To provide one well-known example, Tomasello’s (2008) studies of apes and children investigate how embodied resources are phylogenetically required to bootstrap more abstract linguistic faculties. The possibility to communicate through the body is the basis of all further cultural feats. The basic dimension shared by great apes is the direction of attention of others through one’s gaze or by pointing gestures. This allows requestive functions such as asking for a food item (the analog of linguistic demonstratives like “this”) and understanding the intentionality of others. A step further, the roots of human communication apparently lies in collaborative activities that require a shared intentionality in the pursuit of joint goals. At this level reciprocal “mindreading” is the unique faculty that humans possess, but not apes. (Because both participants know they are engaged in cooperative action, the pressure arises to establish mutual assumptions and communication norms). Following Tomasello, bodily communication again drives the development. Humans have the ability to pantomime and produce iconic gestures for expressing noun and verb concepts, which allows not only for immediate requesting, but for informing about things displaced in space and time. This prepares for a third and final step. The fact that gestures co-occur with vocal signs allow language to become arbitrary and symbolic, because it can piggyback on easy to understand iconic meanings of when the hands shape, draw, or enact something.

In another strand of developmental research, there is an interesting convergence between how shared intentionality and multimodal schemas develop. Stern (1985, 2010) highlights how multimodal correspondences in body expression of caregiver and baby establish schemas. For example, infants learn to match sound and tactile impressions when getting stroked by the mother with a voiced “THEEEeere”. The infant begins to repeat these contour-carrying patterns (in the sense that they change intensity over time and thereby create something akin to the tonal contour of a melody) and engage in a shared game with the mother. At the same time cross-modal patterns are established like contours over time in what one sees, feels, and hears. Stern calls

these basic embodied patterns that help the infant establish shared intentionality as well as a shared social world “vitality affect contours.”

## The Role of the Body in Expert Skills and Super-individual Cognition

Many more complex conceptual operations require training in adulthood. However, conceptual cognition at this level still exploits perceptual resources inherent in the body and the environment on a regular basis. The cognitive anthropologist Edwin Hutchins (1995) has coined the term *cognitive artifacts*, which refers to externalized knowledge recorded in human artifacts. Written records are a basic artifact of this kind. In navigation for example dials, gauges, sextants, or logs provide sensate tools the mind can hook onto and thereby make complex tasks tractable. How these instruments, the different experts on a ship, each with their own skills, as well as the communication channels between them are arrayed and synchronized is crucial for the super-individual unit (i.e. the ship) to work. Some cognitive artifacts can even be projections of the visual imagination, as Hutchins shows in his analysis of Polynesian navigators, who use imaginary islands on the horizon as a fixation point to monitor the boat’s course.

Cultural learning also impacts our ability to engage in interactions and create intersubjectivity. Even mundane interactions typically require us to recognize meaningful *affordances*, i.e. enabling states for our next action perceived in real-time. In particular, we incorporate the dynamic flow of body signals (gestures, gaze, gait, etc.) from others into how we modulate our own actions. Just imagine a simple nonverbal negotiation of two persons sliding past each other in a narrow corridor. Sophisticated martial arts, dance, or bodywork skills that require years of apprenticeship equally highlight *enactive intersubjectivity* (Fuchs & de Jaegher, 2010). As Kimmel (2012) argues, dancers of tango argentino can fluidly improvise together only when they actively explore the partner at every moment and reciprocally make their bodies amenable to being sensed (e.g. a good follower strategically creates muscle chains allowing the leader to sense via her shoulder blade what her leg is up to.) Communication depends on a highly organized “tango body” with ingrained postural, muscle related, and attentional habits. While complex intersubjectivity skills fundamentally build on immediate perception, they place the senses in a continuum with functional concepts and regulative imagery. For example, tango experts stick to basic enabling states by imagining a constant “magnet” or “torch seeking the partner’s sternum.” This helps maintain rapport in any situation. More complex regulators keep track of functionally important sensory coalescences, e.g. an “energy ball” representing the couple’s joint weight at a given moment. Here, multi-channel sensory input gets blended “into” the image, including proprioception, the partner’s body, and space. The current position of the ball summarizes system-level information, allows dynamic feedback to be felt *in the flesh*, and thus provides a control structure for joint action. Finally, the tango case sheds light on the hidden cognitive substrate of dynamic decision making. Accomplished tango leaders fluidly combine basic micro-elements without enacting scripted step sequences and without much premeditation. They simply recognize a large repertory of dynamic configurations that signal affordances to exploit “on the fly” on a given trajectory or to nudge the couple to when still a bit away. Experts do this without enforcing anything, but by “soft-assembling” the interaction within repertoire related as well as sensory constraints (somatic feedback, music, available space).

## Summary of this Section

The reviewed literature underwrites several general claims:

- a) Key elements of a child's acculturation are dependent on the various perceptual (visual, auditory, tactile, olfactory, gustatory), proprioceptive, and kinesthetic faculties of the body. What is acquired includes both performative and conceptual elements;
- b) There is an important degree of contextual situatedness to the process of learning, which is modulated by cultural everyday habits, rituals, and institutions (as well as subject to discursive shaping, which I shall focus on only later);
- c) There is an important element of cultural shaping in embodied learning: structures like the BALANCE schema seem at first blush to relate to a universal human body, but are not quite as universal in the way they are culturally enacted and modulated in usage;
- d) From an enactive viewpoint, other bodies dynamically interpenetrate our own bodily actions and thereby provide a flux of resources for orienting our actions, just as cognitive artifacts do. Complex intersubjectivity skills like pair dance are a key site for studying cultural learning that interweaves the body with concept-like regulators.

## To What Extent are Abstract Concepts Embodied?

A cognitive account of abstract concepts is decisive. Nothing less is at stake than how everyday commonsense and higher cognitive feats are connected. In particular, the study of worldviews, ethos, and ideology needs a cognitive account of representations removed from direct experience. In traditional views, the mind is the operative locus of these, while the body cannot shape what or how we think. As the embodied cognition paradigm is growing to maturity, a broader embodied perspective on elaborate abstractions like *freedom, justice, truth, ownership, democracy, the Kantian Categorical Imperative, God, tapu, karma, and qi* is taking shape. What role does the body play when people “think-feel” abstract cultural concepts? The basic mechanisms our inquiry is after relates to what the cultural anthropologist Fernandez (1986) dubbed the scaffolding of cultural knowledge from the inchoate, i.e. bodily experience, to the symbolic. A whole group of theoretical approaches now engages in what I would call “abstract concept analysis”. They pinpoint perceptual, sensorimotor, and other embodied structures in instances of higher cognition, notably how humans form, hold, and use elaborate abstract concepts. Several competing, but in many respects complementary, theories target how representational content is informed by embodied resources and how a morphological analysis of conceptual structure can be implemented.

## Theoretical Approaches

Probably the most frequently discussed family of theories explains experiential grounding with respect to inferential features that concepts possess. Their common point is that they see concepts as mediated by various kinds of schemas that capture recurrent features of space, motion, or inner body experience. A first such account of abstract concepts is based on scripts<sup>6</sup>

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<sup>6</sup> Scripts are generic schemas of activities that encode stereotypical aspects of episodic structure by defining the action slots and the correct order of events that we culturally expect for this particular

and what needs to be done in a specific situation. It is hard to define *democracy* as a feature list, but to understand the concept we can imagine what people in a democracy do. Boroditsky & Prinz (2008, p. 103) claim that “the democracy script may include representations of hand raising and other means of casting votes”. Hence, a script-based concept is defined by the procedural knowledge that shapes actions and behavioral responses for the concept-defining situation. The basic idea is well established, as many experiments have demonstrated that sensorimotor action potentials arise in connection with a number of different concepts. For example, Chen and Bargh (1999) show that evaluatively loaded words like “love” or “hate” facilitate approach and avoidance gestures, respectively (for overviews see Gibbs, 2005; Pecher & Zwaan, 2005; or Semin & Smith 2008). Still, the limitation for explaining abstract concepts is obvious. Casting a paper in a ballot box or even a bundle of such scripts hardly represents the full meaning of *voting*, not to speak of *democracy* itself. The abstract concept seems to include agent configurations of voters and politicians, non-physical goals like bringing someone to power, concomitant feelings like duty or pride, etc. It is unclear to what extent scripts like *convening to pass laws*, *choosing a leader*, *debating an issue* (or more general script-like structures, say, *unforeseen difficulty*, *trying in vain*, *belated success*, *wanting to avoid harm*) are embodied. Ultimately, if human thinking, wanting, or evaluating are equally co-defined by traces of sensorimotor knowledge remains unclear.

The perceptual symbol systems (PSS) account by the psychologist Lawrence Barsalou aims to confront some of these problems (Barsalou, Yeh, Luka, Olseth, Mix & Wu, n.d.). A perceptual symbol refers to any aspect of experience from external percepts, via proprioception and affect, to the introspection of representational states. The PSS account claims that any kind of concept can be built compositionally from such perceptual symbols as temporary constructions in working memory. For thinking of a concrete, but creative notion like *striped cloud* we can join the concepts of “striped” and “cloud” in a single image. For the concept *kindly* we simulate a dynamic process that includes initial introspective states, followed by facial expressions, and actual behavior (this fits with the scripts approach). PSS also works well for proprioception and affect, e.g. an *angel* may be created by joining the image of how one thinks it looks like with feelings of consolation known through human relationships. But what about the more typical abstract concepts? Barsalou and Wiemer-Hastings (2005) ran a thought elicitation task for the concepts *truth*, *freedom* and *invention* and found that while concrete concepts involve objects, locations and behaviors, abstract concepts focus on social aspects of situations, people, communication and social institutions. The latter seem to have some perceptual content. More problematically, abstract concepts also involve a high proportion of introspections (goals, beliefs, evaluations/ affects, and complex relations like if-then, temporal sequence, possession, or part-whole relations). This implies that abstract concepts involve relational properties, abstract social configurations, beliefs about beliefs, and many other hard to ground aspects. We don’t really know how perceptual these are in nature. In addition to clarifying this more precisely, PSS needs to be applied to a greater number of complex concepts to reach its ambitious aim.

An approach with almost as broad an agenda, but a far greater range of actual applications, has emerged in cognitive linguistics. The oldest theory in this family is the theory of conceptual

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activity. In the now canonical Restaurant Script example a customer needs to enter, sit down, choose, order, eat, pay the bill, and leave, in that order, with optional added slots like washing one’s hands. Classic scripts have defined roles, locations, props, entry conditions, and results, all bound to a scene.

metaphor. Scholars of metaphor have found linguistic and psycholinguistic evidence for reasoning about abstract event structure, values, mental activity, communication, and many others (Lakoff and Johnson, 1999). Their findings are expressed in formulas of the shape “target domain = source domain”, including patterns such as

PURPOSES ARE PATH-END-POINTS  
 CAUSES ARE FORCES  
 GOODNESS IS UP  
 MORALITY IS UP  
 POWER IS UP  
 HONESTY/ TRUTH IS STRAIGHT  
 DECIDING IS WEIGHING  
 REASONING IS A PATH  
 COMMUNICATION IS OBJECT TRANSFER

IDEAS ARE OBJECTS  
 MINDS ARE CONTAINERS  
 THEORIES ARE BUILDINGS  
 REASONING IS A PATH  
 LIFE IS A JOURNEY (PATH)  
 DEATH IS DEPARTURE (PATH)  
 CATEGORIES ARE CONTAINERS  
 TOPICS ARE CONTAINERS  
 EVENTS ARE ACTIONS

The evidential force of the claim that these are actual cognitive patterns comes mainly from the observation that linguistic, gestural, and pictorial realizations exhibit systematicity. For example, THEORIES ARE BUILDINGS may occur as “a resilient/ strong theory”, “collapse/ bring down”, “demolish/ wreck”, “theory building/ buttressing”, “theoretic fundamentals/ building blocks”, and in many other expressions. In fact, most of us are able to come up with further creative example that other people will still understand because they fit the formula (or a related, but better delineated one like THEORIES ARE STRUCTURED SYSTEMS). The discovery of systematic linguistic clues has led Lakoff and Johnson (1980) to conclude that conceptual metaphors, i.e. permanently stored mappings from a concrete to an abstract domain, actually *cause* the observable linguistic metaphors. Although there has been some debate on whether conceptual metaphors are the only or obligatory way that language processing occurs (Gibbs 2005) the argument runs that humans structure abstract concepts through a mapping of an experientially well-understood gestalt. The reader is encouraged to check the terms on the “source domain” side of above examples and it becomes apparent that these source concepts are spatial or have a spatial element to them. More specifically, the gestalts that abstract concepts become grounded in via metaphors are embodied image schemas (see above). Conceptual metaphor theory claims that these intuitive embodied structures map on underspecified abstract domains to enrich or even constitute their meaning. Image-schematic mappings seem to underlie everyday concepts (see below) and a wide range of philosophical, political, economic, scientific, and mathematical concepts. Philosophy from the Pre-Socratics via Descartes and Kant to Analytic Philosophy and Rational Choice Theory is fundamentally metaphoric, based on FORCE, PATH, CONTAINER, LINK, or BALANCE image schemas (Lakoff & Johnson, 1999, pp. 337-548; cf. Holyoak & Thagard, 1995). For example, Kant’s notion of “Ends” presupposes PATHS, permissible actions towards them are based on FORCE CONSTRAINTS, and immoral actions are those that interfere with other people reaching their ends (Lakoff & Johnson, 1999, p. 428). In turn, people and their freedom become “ends-in-themselves” through *Universal Reason*, whereby the latter is the causal source (FORCE) for morality and being moral is obeying a categorical imperative for its own sake.

What are the limits of this embodiment account? Jackendoff (1992) argues that conceptual metaphors cannot explain concepts exhaustively, even when image schemas are present. The cultural concept of *ownership* relates to CONTAINER metaphors such as being “in” someone’s



possession, but non-metaphorical knowledge defines the sentiments of anger or the wish to see a thief punished (Prinz, 2002, see below). Hence, other kinds of embodied knowledge may be involved (as in the PSS account). More critically, many conceptual metaphors cannot be easily explained through image schemas at all. ARGUMENT IS WAR includes references to generals, strategy, allies, etc. Thus, elements get mapped to the abstract target domains that are themselves complex. A strategy, an item from the war domain, is certainly not anything simple image-schematic or merely spatial, even though certain aspects may be related to paths via yet different metaphors like “following a strategy”. Because of this complexity, the challenge here would be to find appropriate perceptual simulations of all the aspects of a source domain like *war*. Finally, for many metaphorical mappings to be created some proto-knowledge about the concept in question may need to be in place already, which is then presumably non-metaphoric. Not all conceptual metaphors are equally central in this respect. Some are created because a concept is intrinsically poor in structure and the concept can therefore be said to be metaphorically *constituted* (e.g. some scientific key concepts), while other conceptual metaphors simply contribute further inferential patterns for reasoning. The question is: do mappings simply exploit an existing image-schematic resemblance between the source and the inchoate knowledge of the target concept or do they project image schemas into a very weakly structured near-void?

Part of the answer is given by one of Lakoff’s students, Joseph Grady, who claims that a number of basic conceptual metaphors are rooted in prototypical bodily experiences from early childhood. Grady (1997, 1999) speaks of basic “experiential metonymies”. These are multi-sensory correlations in the parent-child relationship like AFFECTION IS WARMTH (→body temperature), INTIMACY IS CLOSENESS (→being held close by a caretaker), or RELATIONSHIPS ARE ENCLOSURES (→living together). Others derive from affects like HAPPY IS UP (→walking erectly), BAD IS STINKY (→putrid food), and POWERFUL IS UP (→wrestling) or come from object manipulation like UNDERSTANDING IS GRASPING (→manual exploration), MORE IS UP (→piling up objects), IMPORTANT IS BIG (→ visual salience) or FUNCTIONALITY IS STABILITY/ ERECTNESS (→shelter building, etc.). Finally, locomotion shapes TIME IS MOTION, STATES ARE LOCATIONS, and PURPOSES ARE DESIRED OBJECTS. Following Grady, both sensory (warm, stinky) and image-schematic (up-down, path) sources come to constitute the prototypical instance of the respective target concept. The metaphors in language come about because a source repeatedly co-occurs with the target in a concrete setting (or did so in our formative periods), so that a connection is created between an abstract concept of wider applicability and its most common experiential form. Grady calls these mappings “primary metaphors”, which compositionally inform several “complex metaphors”.

A third cognitive linguistic theory addresses the fact that, to explain complex concepts, we also need to account for the selection, combination, and interaction of conceptual inputs. Metaphor theory is restricted by its uni-directionality, whereas many concepts require multiple inputs or selectively recruit these both from source and target. Fauconnier and Turner (2002) remedy such shortcomings in their theory of *conceptual integration networks* (aka. *blends*). They claim that the selective co-projection of knowledge from two or more input spaces results in a blended space, where this knowledge is integrated so that novel inference can unfold and *emergent structure* of a complex sort can arise. The approach is semiotic and encompasses metaphor, analogy, counterfactual reasoning, creativity and art, ritual, and many other fields. Since, we just discussed metaphor, let us use one typical case as an example: Saying that “this surgeon is a butcher” creates the suggestion of incompetence neither from the source domain of

butchery (where healing is not the actual aim) nor from the target of surgery. The intended inference results by selectively projecting the tools and means of butchery onto a surgeon's task. Only by actualizing the tension between source and target, once we "run the blend", the inference arises that this surgeon cannot be doing a good job. Blending goes beyond a mere addition of constituents and describes how structure that is not predictable from any input alone comes about. Whether blending is more than a versatile semiotic notation remains debated (Gibbs, 2000; *pace* Coulson & van Petten, 2002). Although it provides a heuristic model, it remains non-predictive with regard to emergent structures and difficult to falsify. The major caveat for our context is that blending is rarely discussed for its relevance to embodiment. Only some very recent attempts focus on the role of embodied input structures explicitly. Slingerland (2008, p. 195) uses blending as "a special tool for tracing the manner in which basic emotional reactions can be harnessed and attached to novel stimuli". Turner (2001, p. 44) and Deacon (2006) propose that blends can function as carriers for complex emotional effects. Deacon (2006, p. 48) suggests that "art brings together uncharacteristically associated emotional schemas" that can play out their tensions. Blends might project a visceral reaction originally reserved to a part of its input to the emergent structure. A religious blend invoking paradise as a garden transfers the soothing emotional response to nature to the potentially unsettling idea of death. We may also deploy the framework to think of the process whereby something qualitatively more complex emerges from basic inputs, e.g. cultural emotions like awe (appreciation + fragility) or nostalgia (happiness + fear of loss). Of course, somatic aspects like these are only one possible kind of embodied input structure; imagery would be another and muscular action potentials a third. Overall, blends are a promising tool for analysis because they allow for merging various kinds of embodied structures, including affects, with less embodied ones. As such there seems to be some potential to re-describe all previous theories in terms of blending, although this has not yet been attempted.

## **The Motivational and Affective Dimension of Concepts**

It is interesting to note to what extent all the above theories focus on inferential aspects of concept meaning (with the exception of Slingerland and Deacon). However, there seems to be more to concepts, namely that which lends mere ideas affective, evaluative, and motivational saturation and gives rise to "embodied commitments" (Clare & Schnall, 2008). How the embodied dimension of concepts creates normative power is a question too important to pass over lightly. Thus, I shall survey a second family of theories, which has focused most on emotion concepts in the past, but could be applied on a broader basis. This family of theories appeals less to abstract imagery or inferences, and more to the visceral dimension and the felt internal milieu. They claim that proprioceptive-affective experiences are constitutive for meaning. Using a concept means activating a specific somatic state. A theory that has been widely received, but also contested is Damasio's (1994, 1999, 2003) "somatic marker hypothesis". He proposes that proprioceptive feedback from muscle tension, skin temperature, hunger, indigestion, homeostasis, or pain is central to cognitive functioning. Somatic markers are held to be involved in responding to a perceptual trigger situation, action preparation, and using body feedback from actions. Emotions, for example, are defined by a patterned set of somatic markers (which in turn explain differences like what makes anger different from fear). What makes this theory of interest for understanding abstract concepts? To Damasio, specific somatic feelings are irreducible aspects of all rational processes. He reports that the neurologically impaired who have a diminished range of affect (qua somatic feedback from one's own body) also have difficulties making rational

decisions or altogether lack motivation to decide. This can either concern embodied preferences for choosing among options, or, depending on the version of the theory, the more specific claim that long-term outcomes are considered via embodied preferences (cf. Colombetti, 2008). Feelings provide a necessary somatic ingredient of reason, i.e. normative judgments and cost-benefit calculations. Thus, without somatic affects no sense of concern drives towards a decision. Without a bodily feeling acts lack full meaning. While negative somatic markers function as “alarm bells”, positive ones are “beacons of incentive” (Damasio, 1994, p. 174). While arguing for a necessary augmentation of the somatic core through symbolization and narrative, Damasio emphasizes the basic fact that somatic markers stamp valences on putative options. Compatible with this, recent emotion research speaks of core affect, a somatic primary form of meaning analysis determining whether a stimulus is helpful or harmful and whether an active behavioral response is required (Barrett 2006). Core affect appears to be a psychological primitive (Mesquita & Walker, 2003). All humans can distinguish feeling good from feeling bad (Barrett, 2006, p. 31) and all languages have words for them (Wierzbicka, 1992). The somatic dimensions most reliably and stably associated with concepts relate to the core dimensions of activation of the autonomous nervous system (arousal) and valence (pleasant/ unpleasant). In addition, we find elements of action readiness and behavioral goal setting. This might still reduce the somatic to a few general patterns. Complexity enters through conceptual appraisals that seamlessly interweave with the somatic (Mesquita & Walker, 2003, p. 778). Several critical voices have remarked that conceptual forms must take on an organizing role (Parkinson, 1996; Parkinson et al., 2005; Ratner, 2000), because core affect does not neatly match specific triggers, specify any reactions, or have any precise physiological substrate in which a specific emotion is located, especially not in cultural comparison (Heider, 1991). Only a full conceptual appraisal of a situation tells us, for example, whether we pound our fists, cry, sulk, or become chillingly polite in response to anger.<sup>7</sup> Independent somatic components of emotions could also mix and fluctuate with the situation or the environment (Griffiths & Scarantino, 2008).

Complex concepts that accompany culture-specific articulations of affect have drawn substantial ethnographic interest. For instance, Renato Rosaldo (1984) discusses the culture-specific concept *liget* of the Ilongot of the Philippines (glossed as energy, passion, driving force). He also gives an account of how he suddenly understood the Ilongot headhunters upon being bereft (his wife had a fatal accident) and experiencing a similar state of rage. His self-report underscores the importance of empathically experiencing somatic marker arrays. Further cultural concepts with a strong emotion component are surveyed by Wierzbicka (1992, pp. 135-179). Note that all concepts briefly glossed in what follows go with elaborate cultural theories: Japanese *amae* (“wish to be interdependently loved”), Javanese *sungkan* (“polite restraint not to disturb the equanimity of equals”), Ifaluk *sago* (a mix of compassion, love and sadness), and Tahitian *arofa* (a mix of empathy, pity and compassion). In all these cases the appraisal of the emotion triggers and processes is analyzable into (potentially universal) primary components.

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<sup>7</sup> Integrative approaches like Scherer (2000) or Lewis (2005) try to model particular patterns of synchronization between the embodied and appraisal related subsystems within a non-linear dynamic systems framework (i.e. reciprocal, recursive, and multi-causal processes whereby higher-level effects can emerge). This allows us to pinpoint event onsets that kick off further events in a non-linear, intertwined process. However, it makes little advance for understanding types of complex cultural concepts and their affective components.

Wierzbicka does this with a focus on the simple evaluative aspects like “good” and “bad”. By refining this approach into a more extensive description of somatic aspects much could be gained.

In psychology much of the current debate still revolves narrowly around emotion concepts as such, rather than taking abstract concepts (including cultural key notions) as a point of departure for inquiring into the somatic affect matrix they elicit. However, where ideological appraisals are concerned, Tomkins’ (1991) affect-script account proposes an interesting starting point. He argues that basic affects, together with their distinct physiological profiles (e.g. enjoyment creates a rapidly relaxed tonus), define classes of behavioral scripts. Tomkins experimentally demonstrates that affective scripts correlate with ideological preferences along the humanistic vs. normative dimensions. This is somewhat similar to the study by Caspers et al. (2011) who describe neural patterns for collectivism vs. individualism. The limitation remains that both merely correlate affect with highly general cognitive orientations. We know very little about which somato-visceral signatures go with *specific* ideological concepts. Future case studies might emulate the style of Slingerland (2005, 2008) who applies somatic marker theory to ancient Chinese ethics, hence cultural concepts designed to evoke specific normative feelings. He investigates how ethical discourses exploit the linkage between the somato-affective and conceptual such that rhetoricians map familiar visceral responses to new trigger concepts, often via metaphor.

A view publicized under the banner of “affect logic” attempts to shed light on the affect matrix of ideological concepts. When the theory was first articulated by Ciompi (1997) it aimed to trace the co-evolution of affective – hence, embodied – and cognitive states. Ciompi starts from clinical evidence to investigate how thought and affect create two-way trade-offs and stabilize into mutually supporting patterns over time. Specifically, repeatedly activated feeling and thinking trajectories become entrenched as “tracks” and may ultimately achieve conceptual closure, thus creating mentalities with particular properties to them. For example, a psychotic-phobic creates an intrinsic world (“Eigenwelt”) of fear in which all cognitions align with this dominant affect (“Leitgefühl”). The latter select for concepts in memory that are compatible with them, and activate them while suppressing others. Such trade-offs between affect and cognition do not only characterize disorders; even the “neutral” affects of the mundane world and the “disembodied” feel of abstract reasoning work like this. What is more, these trade-offs are held to inform various self-similar scales, somewhat after the fashion of mathematical fractals. Focusing on collective mentalities, Ciompi and Endert (2011) extend the theory into what we may call a historic-genetic account. They examine the affect logic underlying National Socialism, the Arab-Israeli conflict, the relation between Islam and the West, and Obama’s election. Again, dominant affects act as facilitators or inhibitors, for example when extreme anger leads one to polarize conceptually and to assign blame to scapegoats. Mechanisms like group resonance and multiplication add to this. Even individual affects of a charismatic leader can enter into reinforcement loops with feedback from the masses, e.g. when the German people’s enthusiastic feedback boosted Hitler’s self-stylization as a Messiah. Importantly, general affective-cognitive mechanisms apply to quite different dominant affects and these affects in turn can be realized within yet more specific historically situated concepts. The dominant affects of Nazism were anger and hatred, which were coupled with specific concepts like the master race ideology and anti-semitism. In Islam the dominant affect of a mystic “love of the Whole” couples with a belief in social equality and a personally mediated, yet abstract God. In the current crisis of the Arab world affects of shame and weakness couple with conservatism and the belief that lacking secular

power means having deviated from God's path. Feelings like weakness or shame are somatically realized. At the positive end of the continuum, feelings of solidarity, love, joy or empathy, all of which enhance somatic well-being, can become self-reinforcing. In president Obama's electoral campaign the affects of sympathy, trust, and hope kicked off an unprecedented wave of solidarity. Generally, the collective level brings "we-feelings" into play as mediators. These are conceptually reflected in ideas like the Nazi *Volksgemeinschaft* or the *umma* in the Islamic Renaissance. They may historically spring from reactions to shame affects (by the victors of the 1<sup>st</sup> World War, by Western economic dominance), but also from a need for renewed perspectives as in the case of Obama. To explain the dynamic properties of dominant affects Ciompi applies a systems theoretical viewpoint. Systems of affect logic tend to create group-specific mentalities that become self-reinforcing at times by gravitating towards attractors, although when they experience tension unexpected "leaps" into new stable states equally occur, e.g. after the breakdown of the Third Reich. Finally, the book also analyzes why belief systems clash. The affective incompatibility of collective mentalities often makes it near-impossible to defuse powder-kegs such the Arab-Israeli conflict. Affective filters make the two parties perceive dissimilar issues and sources of conflict, while the tie to collective identities and the group history (such as the Shoah) entrench the conflict further. In sum, Ciompi and Ender's view focuses on how the relation between affects and concepts plays out over time. It traces why ideological concepts come to be established against the backdrop of dominant embodied affects with a main emphasis on the top-down effects of affective macro-systems. The theory's merit is its attempt to span different levels of analysis, whereas a shortcoming for our purposes remains that it seldom becomes very specific in analyzing the somatic states underlying affect.

An approach from a non-cognitive background launches its inquiry from complex somatic matrixes and the cultural dimension of bodily experience. Cultural phenomenology (Csordas 1990, 1994a, 1999) examines unique ways in which the "lived body" unfolds in experiences of and cultural practices surrounding sickness, ritual, dance and sports, healing, and music. Csordas deliberately moves away from representational theories that see bodies as symbols of cultural ideology, enacted metaphors, or anything else in a "stand-for" relation. He emphasizes a primary level of meaning where experiential qualities stand for themselves, thus bringing the inchoate, pre-representational layers of experience into focus. Somatic experience is inherently meaningful and represents the "existential ground of culture" by shaping the lived self. This view seems eminently compatible with Damasio's emphasis that the ongoing stream of body feedback is the basis of the self and primary for creating meaning. However, while Damasio writes on a (universal) core consciousness from a neurological perspective, Csordas focuses on the complex cultural phenomena and apparent multidimensional somatic marking. Contributions in the 1994 volume trace this in cultural body images (e.g. obesity), suffering (e.g., in torture and rape) and culture-bound syndromes, such as anorexia, Victorian hysteria, Central American *susto*, etc. For example, the experience of *nervios* in Latino communities is expressed as incorporating foreign sensations, loss of bodily control, or feelings of fragmentation and absence (Low, 1994). Somatically marked symptoms surface metaphorically, together with literal language that expresses symptoms like heat, trembling, or perspiration. So where does conceptuality enter this framework emphasizing the pre-objectified and pre-reflexive level of bodily experience? A first answer is that the mediating power of metaphor elevates inchoate somatic states to a conceptual level. A related answer is that concepts arise through (often, but not necessarily metaphoric) discursive acts that causally objectify somatic state, e.g. spontaneous and pre-conceptual feelings that get objectified by healers as "being possessed by a demon". The causal interpretation is then

back-projected to the inchoate somatic experience and provides a way of changing it. The third answer is that pre-objectified somatics are seen as functional concept-equivalents, insofar as they stamp valences on options that prepare for complex actions. Several studies reviewed by Csordas point to an autonomous physiological level at which bodies (re)act in genuinely cultural ways. Thus, once we take the position that concepts are for action “conceptualness” in the sense of reflexivity or focal awareness is not a requirement. From the present perspective, cultural phenomenology seems to provide a kind of compositional, if not always systematic, morphology of complex somatic states and some studies specify how acts of objectification meld inferential signals into inchoately somatic states of bodily being.

## Lessons for an Integrative Theory of Concept Analysis

In summary, no single theoretical framework for embodied concept analysis is currently able to provide a comprehensive account for all abstract concepts. Even their joint weight cannot fully *reduce* abstractions to perceptually grounded elements. The question to what extent abstraction is grounded must remain open pending further developments (e.g. concerning abstract scripts, relational and introspective knowledge). For the time being, mixed models can claim much attractiveness, such as Shore’s model of procedural-cum-semantic cultural learning (1996), the double-coding approach by Sadoski and Paivio (2001), or Louwse and Jeuniaux’s (2008) integration attempt between semantic web and simulation approaches. However, the theory landscape gives us a fair idea of what a more integrative theory will require. I have suggested that the major watershed in the current strands of theorizing runs between a somato-visceral, affective and motivational viewpoint on the one hand and a focus on complex inference and the deployment of mapped schemas on the other hand. Ultimately a cognitive approach to cultural embodiment will need to address the motivational and inferential power of concepts in conjunction. From the viewpoint of a given abstract concept the analysis may include any combination of the following dimensions: (1) perceptual features of the situation that trigger the concept, (2) typical behaviors and action scripts, (3) a somatic core affect with a positive or negative basic valence, (4) a more complex and culturally situated somato-affective quality, (5) an image-schematic ontology of the event itself (e.g. an object moving on a path over time) or other kinds of image-schematic input structures, and (6) a combinatorial model that explains how the inputs give rise to the overall concept morphology. A mature paradigm should integrate all of these dimensions.

All this does not imply that every conceptual act involves the body to the same degree; quite the contrary. As an illustration take some religious metaphors, presupposing, for the sake of argument, that most individuals of a group represent the concepts in approximately the same way. Conceptualizing God as fire, energy flow, flash, or felt potency invites affectively and sensorially saturated imagery, which is grounded in the bodily experience of some religious people. By contrast, conceptualizing the deity as residing in an abode above us, as a father or as a king refers to the social domain and usually functions to create inferences rather than evoking a somatic experience of potency. (While some may really feel dwarfed *physically* or experience filial love *within*, when we look at it on a gradient the verticality, kinship, and royalty metaphors produce much less saturated somatic experiences than fire, flow, light, or strength metaphors.) One could also say that the main focus of the concepts differs a bit in usage. So researchers should be aware of the fact that embodiment phenomena occur on a gradient. It may well be that a concept is

embodied in one way and not another. In any case, several levels require an explanation. It won't do to reduce concepts to a single dimension like inferential power and to evaluate the embodiment issue in those limited terms only. We therefore need sub-theories, of which several are presently available.

## **A Selection of Cultural Domains Where Abstract Concept Analysis has been Applied**

As socio-cultural and embodied theories of concepts are coming of age, the embodiment paradigm needs the application to a range of diverse conceptual domains, if possible across cultures. Such analyses are cropping up in many important domains, four of which I shall now outline. The findings shall allow me to reiterate the point that two stories of embodied grounding can be told in almost any field, one more somato-affective and the other more inferential.

In the study of time concepts we see both levels. At one level, time is an experiential fundamental that enters into the experience of everything else. It is embodied in the body-clock, an inchoate feel of time-flow coming about through breathing, heartbeat, locomotion, mental states that change, or visual flow, as well as a periodic bodily urges such as hunger and sleep. It seems that universal neural mechanisms underlie the span of the "felt present moment", at maximum 3 seconds (Evans, 2004). At a second, linguistically mediated level reasoning about time becomes possible. It draws on a conceptual "master mapping" TIME IS SPACE that is apparently licensed by the experiential correlation between these two domains. Specifically, time is conceptualized either as motion or as location. Besides this general pattern, some culture-specific elaborations are documented concerning the orientation of the time axis and who moves on it, the direction of future and past, as well as the variety of time models (Alverson, 1994; Yu, 1998; Boroditsky, 2001, Nuñez & Sweetser, 2006). Finally, time aspects like reckoning in clock or calendar time or cultural constructions of the past are culturally highly variable (Munn, 1992).

In the field of self concepts we again have reason to believe that a basic sense of self is rooted in somatic experience. Damasio's (1999) concept of "core consciousness" refers to a moment-by-moment automatic awareness of our embodied state that arises via a flow of intero-, proprio- and exteroceptive input. Damasio explains subjectivity as grounded in somatic signals of changes from one moment to the next. The counterpart to core consciousness, which comes in pulses activated by the present situation, are triggered memories at the conceptual level. It is here that metaphorical mappings for the self are found. Metaphorical self concepts focus variously on the aspects of boundaries, control and regulation, continuity, parts/ layers, essences, autonomy/ interdependency, and agency (Lakoff & Johnson 1999, pp. 267ff.; Hirose, 2002). It is easy to speculate how the most widespread metaphors emanate directly from various aspects of self phenomenology. SELF CONTROL IS OBJECT CONTROL and SELF CONTROL IS MOVEMENT OF AN OBJECT relates to a felt bodily sense of agency, while SELF CONTROL IS POSSESSION relates to a typical instance of object control, possession. The locational self, i.e. SELF CONTROL IS BEING IN ONE'S NORMAL LOCATION, is motivated by the human body schema and the perspectival nature of experience. ATTENTIONAL SELF CONTROL IS HAVING THE SELF'S PARTS TOGETHER corresponds to the experience of focally situated attention. An experiential motivation that is perhaps less bodily is SELF ROLES ARE DIFFERENT LOCATIONS ONE MOVES BETWEEN. It seems to derive from the social experience that being in different places leads to different ways of self-experiencing. SELF-

EXAMINATION IS GETTING OUTSIDE THE SELF CONTAINER is based on an experiential mapping from visual perception, not proprioception. Finally, some metaphors may not much correspond to somatic marker information. We often talk of a split self in which SUBJECT AND SELF ARE INTERACTING AGENTS (adversaries, friends, interlocutors, caretakers, masters, controllers) and an essential self THE TRUE SELF IS AN ESSENTIAL SUBSTANCE OR OBJECT (as hidden inner layer, an object to be found). It may be that these are less based on embodied experience. Finally, we may note that both the ethnographic and cultural psychological literatures are replete with claims of interdependent selves, i.e. selves reaching out across the skin barrier and privileging group agency over individual agency in non-Western societies (cf. Markus & Kitayama, 1991). These have not yet been discussed from a genuinely embodied angle to my knowledge, but such an interactional phenomenology could be rooted in recent theorizing about intersubjectivity. We know that attunement to or complex co-regulation with others is constitutive for the self (Stern, 1985), that our bodies regularly become continuous with other bodies in a super-individual embodiment, and that we routinely create body “extensions” forth into the environment (Clark, 2008).

Concepts for morality constitute a domain where somato-affective and more metaphoric-inferential approaches are both needed.<sup>8</sup> According to Prinz, a philosopher who champions the former aspect, moral judgments such as *good/ bad, right/ wrong, justice, obligation, permission, entitlement* or *responsibility* are ultimately grounded in emotions and these in turn are observations of our sensorimotor states, for example, an aversive response. Thus, “[t]o recognize the moral value of an event is [...] to perceive the perturbation that it causes” (Prinz, 2005, p. 99). Moral concepts are stored records of perceptuo-motor states, specifically of the preparations for action that accompany emotions (e.g. repelling for something disgusting). Since morality is a fairly complex domain, it is excellent for demonstrating that the somato-affective and motivational aspects highlighted by Prinz’s approach cannot constitute a full theory, although some metaphors for morality per se seem to be compatible with Prinz’s claim about stored records of perceptual-motor state. Following Lakoff and Johnson (1999, chapter 14) we find the conceptual metaphors MORALITY IS PHYSICAL STRENGTH and MORALITY IS RESISTING A FORCE, BEING GOOD IS BEING UPRIGHT/ DOING EVIL IS FALLING, and MORALITY IS STAYING ON A STRAIGHT PATH. Arguably, these force image schemas are not kinetic abstractions, but can be felt within as embodied qualities. The awareness of moral strength may be felt inside one’s body container, temptations to be immoral may create sensorimotor activations which the conscience resist only by keeping these impulses “in check”. This can even be felt as sapping one’s strength. One somewhat further reaching aspect of morality for which conceptual metaphor is apparently needed revolves around specific reasoning about just retribution, revenge, and related cultural notions. This involves a *moral accounting* model, which is partly based on a BALANCE image schema, but also on non-image-schematic notions of bookkeeping. Interpersonal interaction should be like an exchange of commodities whose values have equal weight. Retribution is about “setting the balance straight”, fairness is about “paying debts”. In contradistinction to the moral strength metaphors, it is open to debate whether these metaphors produce direct sensorimotor activations of the same kind. Finally, although there is little comparative or historical research

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<sup>8</sup> Interestingly, the pioneering experiment by Caspers et al. (2011) discovered neural activation patterns that point to different processing strategies of moral issues in collectivists and individualists, respectively. Although caution is warranted in interpreting the findings, they may suggest that the relative proportion of somato-affective and inferential elements varies with personality.



here (pace Slingerland 2004, 2008), it is obvious that at such a higher level of reasoning embodied motivations for morality are secondary to cultural ideology.

In the religious field, finally, there are a number of theories which emphasize primary somato-affective qualities. James (1902) and many after him argued that religious experience resides in feelings that accompany conceptual appraisals. More recent phenomenological approaches emphasize the pre-reflexive dimension, like Csordas' (1993, 1994b) notion of "somatic modes of attention" in religious experience. The somato-affective element in religion is well known from sensory regimes (kneeling, incense, a choral) to active phenomena like speaking in tongues, self-chastising, or pilgrimages, all of which aim to create specific bodily states. The somatic effects of beliefs and practices are investigated by neuro-theologians (e.g. Newberg & Lee, 2005), who provide evidence that body techniques and pharmacological substances correlate with blood pressure, hormones, the limbic and immune system. Important as this primary somatic level is, again, religious reasoning requires more than this. Some approaches emphasize the continuity between the somato-affective and conceptual, saying that believers graft the created moods on concepts and use somato-affective elements as a basis for inference (Ozorak, 1997, p. 194) and for religious transmission (Thagard, 2005). Other approaches emphasize strictly schematic structures, in particular for explaining concepts of the nature of true reality, of deities and supernatural agency, and the special status of religious specialists. A perhaps near-universal example is that supernatural agency seems to be rooted in FORCE image schemas. Justin Barrett (1999) claims that a universal "theological correctness" in thinking about supernatural agents is fashioned after everyday modes of agency. It rests upon the general human propensity to detect intentionality in all kinds of perceived information. When deities are understood to possess intentionality and causal power a FORCE-mover and a kind of caused motion is imagined. Many far more complex (and less universal) religious concepts based on metaphors and blends have been analyzed, including imagery of interrelatedness and wholeness (Olds, 1992; cf. Kimmel, 2002, 2005) or notions of paradise (Evola, 2009).

## **A Critical Epistemology for the Body-Culture Arc**

After having delineated theoretical angles and types of phenomena, I want to turn to general precepts conducive to a non-reductionistic understanding of the terminological triad "culture", "concepts", and "body". How do humans create extremely diverse concepts through far less dissimilar bodies? And that said, how do we best deal with the (often unnoticed) fact that the body is definitely not in all respects universal? Finally, how much de-contextualization is admissible for analytic concepts when we address these issues? I will primarily depart from cognitive linguistics, a discipline I am closely familiar with, for illustrating the kind of epistemology needed.

### **Learning: The Dialectics of Discourse and Body**

First, I would like to return to embodied learning. If we conceive of the body as the experiential shaper of concepts and culture as their discursive shaper, then a possible reductionism meets the eye. Some theories privilege one avenue of embodied learning over others, in principle, often implicitly. A telling example is the research on conceptual metaphor, where a universal body bias enters (cf. Kimmel, 2005, 2008) and the analysis is usually done in

such a way that basic embodied image schemas acquired in early infancy are the privileged source of explanation. Lakoff and Johnson, who espouse a philosophy of “embodied realism”, operate on rather unidirectional assumptions and a developmental perspective. In essence the argument runs that embodied image schemas provide the basis of abstract discourse because they are acquired by infants in the spatio-kinesthetic domain and later projected to abstract domains. The learner possesses a repository of well understood image schemas and ways of spatial reasoning through them; later these get mapped onto concepts and surface in linguistic metaphors expressing the former. Thus a pre-linguistic understanding precedes conceptual learning. Bodily skills are, for the most part, already in place so that no new schemas need to be mastered with the move to the discursive. Let us call this account “projection”, i.e. a feed-forward mapping of schemas.

Not all embodied learning works like this ideal-type model. No full pre-linguistic understanding needs to be in place. Instead discourse can be used as a tool to create embodied knowledge within a still underspecified experiential substrate. Dance classes, body therapy, meditation practices, or all kinds of professional drill, military or other, all bear witness to this. Instructors use metaphors to encourage embodied experiencing in others, thus externalizing their own experience. Discourse can also “go under our skin” when a narrative triggers new somato-affective processes. For these reasons, the projection account needs a dialectic counterpart explaining how individual body awareness becomes a map onto which experts and elders prompt us to inscribe discursive imagery. Let us call this “retrojection” (cf. Kimmel, 2008), a process whereby discursively objectified knowledge comes to resonate gradually with our own proprioceptive awareness, sensorimotor habits in walk, posture, gesture or gaze, as well as affects and moods. Discourse, whether it is words, gesture, onomatopoeia, paralinguistic signals, or pictures thereby becomes an effective shaper of bodily experience. It is crucial to see that in many cultural settings retrojection infuses into the body something beyond simple image schemas like PATH or simple mimetic schemas like KICK. Discursive input can give rise to quite novel embodied experiences for two reasons: One is the compositional structure of language. Another is that the acquisition of complex imagery happens very gradually and often over various stages of trial-wise accommodation in a body that already possesses certain skills, but not others.<sup>9</sup> My own ethnographic research investigates how practitioners of martial arts, dance, and somatic healing disciplines acquire complex imagery over years of apprenticeship. Their feats are considerable. Experts simultaneously manage complex imagery matrices that combine action-vectors, attentional foci, distributed muscle tone, kinesthetic readiness and energy channels,

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<sup>9</sup> Let me illustrate both points, starting with the second one. In contact improvisation teachers employ metaphors to make dancers experiment with new body experiences, e.g. water imagery that depicts dancing as a continuous flux and the bodies as “pouring through” their partners (Felton, n.d.). While the image schemas needed to understand these metaphors are familiar, they produce something new when the learner figures out how exactly the metaphor could be projected into the own muscles, experiments with timing and learns to recognize specific triggers when the pattern is appropriate. Novel embodied patterns typically emerge from compound image schemas. Teachers of the pair dance tango argentino often use several metaphors to convey complex body-concepts (Kimmel, 2012). How these complement each other may be seen from the following example: To execute a pivot one metaphor may target how the torso produces the energy, a second how muscle chains between shoulders and hips are created for energy transmission, a third how the axis remains stable, an a fourth how knee bending produces a lower center of gravity for increased stability. The pupil who succeeds in placing these metaphors “into the body” and in simultaneously enacting them thereby creates a novel bodily gestalt with a unique feel to it.

complex trajectories in space, or modes of metabolic activity (flow, relaxation, or arousal). While such examples are more on the side of “bodily” skills than “embodied” concepts, we have seen in section 2 conceptual aspects that mesh with this in tango and that would become even more pronounced in healing systems like Shiatsu where bodily sensing meshes with regulative “concept maps” like the Five Phases. Earlier, we have also seen in Geurts’ and Shore’s ethnographic analyses that abstract conceptual domains can become receptors of such bodily imagery and that discourse is part-and-parcel of a multimodal transmission.

Retrojection also suggests a new perspective on how conceptual metaphors are acquired by children. Let us return to the conceptual metaphors for morality, which showcase how somatic resonance and “embodied commitments” are created via force schemas. However, moral training is more complex than simply grafting a fully embodied image schema to the moral domain. Why? First of all, metaphors can be used to some effect long before their embodied power fully unfolds. A child hearing “do not stray from the right(eous) path”, “pull yourself together”, “show backbone” over and over again may understand the implied meaning globally due to the pragmatic usage setting, e.g. due to the parents’ being angry when they use it. Yet, the child may not have experienced the metaphors’ full somatic implications. Toddlers who have a far simpler vocabulary (e.g. *happy, tired, and mad*) need frequent negotiations around morality related issues with the mother to slowly develop their comprehension of internal states within the global cognitive maturation especially regarding empathy (Lamb, 1991). Something similar could be the case for embodied metaphors later in development. Second and related, the image schemas in the above metaphors need to be augmented in a complex process.<sup>10</sup> Even preschoolers will understand that motor control can be important to avoid disaster (e.g. from a high-bar on the playground). Then, a parent who applies this to morality will encourage a mapping onto a generalized constraint of *inner* impulses without any visible PATH. To distinguish admissible from inadmissible “courses of action” a new imaginary path needs to be formed in the moral domain (always assuming the child’s proto-understanding of morality as such). My point now is this: discourse as a whole, i.e. metaphor and the rest, will focalize somatic states and control features differently from any pre-existing motor schemata of walking when somatic control must be understood as applying to subtle inner impulses to constrain appropriate thinking. As part of the discursive augmentation, the idea of a moral path throws an affective loading (e.g. “taboo”) into the mix that has a phenomenological “flavor” different from the fear of losing one’s footing on a physical path and which children have access to at an early age. And, for abstract morality a socially defined somatic action pattern needs to be assimilated by the body, which will happen only gradually, often mediated through complex social performances that infuse a schema with social significance (see Jackson, 1983a, 1983b). These performances use language amongst several other means. We may thus assume that few children who are old enough to understand metaphors (and willing to please their parents) are able to produce the appropriate somatic self-control right upon hearing the injunctions against straying and the like.

The avenues of retrojection (discourse => body) and projection (body => discourse) aren’t mutually exclusive. Neither cultural discourse necessarily precedes the body, nor vice versa. The body-discourse loop is genuinely bi-directional and perhaps even dialectic in a diachronic view.

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<sup>10</sup> An interview-based study of primary school children by Gansen (2009) suggests that the pragmatics of everyday situations (speech acts and their purposes, observed affects and situations, conflicts, etc.) figure importantly in the process of mastering metaphors.

A child may inferentially understand a metaphor and only later endow it with full embodied resonance, or, conversely understand its motivational aspects and the inferences only later. It may thus be best to ask at which point discursive learning and at which pre-linguistic embodied experience take precedence.

Finally, schema acquisition may by-pass discourse altogether. Recall our ethnographic examples that focused on pre-verbal and mimetic learning. Or, take Western gender habitus. Girls typically learn to sit with the knees closed and they throw differently from boys, without being explicitly instructed to do so (Young, 1990). Neuroscience attributes mimetic capabilities to dedicated brain mechanisms. Much excitement has surrounded the discovery of mirror-neurons – or large cell assemblies in the case of humans – that underlie imitative behavior. Thus, hand gestures when observed subliminally activate the same neural assemblies that actively produce them (Gallese & Lakoff, 2005). However, especially at a complex socio-cultural level of analysis a simplistic view of bodily mirroring as a mere “copy-paste” process can be ruled out. Mimetic learning of advanced skills sits within a (cultural) environment of already mastered skills, which in turn constrain what can be *a priori* perceived and at what level of detail.<sup>11</sup> From that angle, mimesis comprises an active effort at construction within the aforementioned perception-action-cognition continuum and – at a reasonable complexity level – requires scaffolding by earlier acquired skills. It is subject to general constraints from human action systems as well as the knowledge of general “good tricks” and heuristics for learning (*deutero-learning*). These are the reasons to think Bourdieu’s account remains reductionistic even where mimesis is the transmission channel of choice.

A similar multi-stranded analysis could be applied to the cultural formation of emotions, which often happens via kinesthetic and body-based habits, including emotion displays and direct interaction with one’s caretakers in infancy, the encouraging or discouraging of emotions, but also via verbalization and cultural narratives (Ratner, 2000, pp. 22f). All in all, mimesis, projection and retrojection are all plausible mechanisms and require a broad and at the same time sufficiently granular approach to trace which process takes precedence when in the interplay.

## A Middle Ground Between Universalism and Relativism

Studies of embodied grounding provide an excellent starting point for inquiring into human universals and variation, and many scholars have in fact done so. Even if culture-invariant bodies cannot, strictly speaking, exist, it seems tempting to posit some limited universals of bodily experience. In some domains we may assume some cross-cultural similarity of experience that motivates similar conceptual patterns. Let us look at two of the better-studied fields where one would expect this and see what they teach us. Concerning time, many languages use the mapping THE FUTURE IS AHEAD and THE PAST IS BEHIND US. This is motivated by the experience that the

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<sup>11</sup> This is highlighted by a laboratory study of the brain activities in observers of ballet dancers and Capoeira experts performing complex movements (Calvo-Merino et al., 2005). Unsurprisingly, the highest mirror-like brain activity occurred among those observers who were able to perform the movements themselves. Interestingly, however, Capoeira performers and ballet dancers showed more activation when watching experts from the other discipline than people untrained in either discipline. This either points to shared motion patterns across the two disciplines, a generally enhanced mirroring ability among those who actively train, or both.

path before us is the path we step on in the future. However, the Andean language Aymara is the sole known exception to this pattern. It uses space inversely, i.e. THE FUTURE IS BEHIND (Nuñez & Sweetser, 2006). The experiential motivation here is visual via the inference that the future, which is unknown, is like an unseen object behind the back. (Another conceptual metaphor, namely KNOWING IS SEEING here influences the time mapping). The lesson from the Aymara outlier to the general pattern is that the body can motivate concepts in more than one way.

For a second lesson, take emotion concepts, an example sitting at the interface of the somato-affective and the inferential. A comparative study of emotion concepts by Kövecses (2000) reveals that all sorts of emotions are metaphorically conceptualized as forces, be it as opponent, wild beast, agitation or natural force, and by extension as social or mental forces (tricksters, insanity). One variant of this is ANGER IS A HOT FLUID IN A CONTAINER (“I was fuming with rage”, “He was close to exploding”), in which case the force comes from within and creates pressure. There is a clear somatic motivation for these concepts through blood pressure, body heat, muscle tension and the body boundary. Attempts to control negative emotions such as anger are equally somatically motivated. They are conceptualized as vying forces, one of which wins out. This conceptualization is somatically grounded in a sensorimotor impetus to act out the negative emotion, while rationality restrains the impulse, creating a tension between muscle agonist and antagonist. With minor variations similar patterns were found in about 10 languages.<sup>12</sup> Yet, surprisingly, on the Micronesian atoll Ifaluk (Lutz, 1986) the body as a whole is downplayed for conceptualizing emotions. The key concept *song* (anger) does not take the body as its ontological locus to begin with. Instead, anger happens in the public field, and the concept accordingly emphasizes moral and social implications. We don’t know exactly if the people of Ifaluk experience emotions in a similar way as in other cultures. Perhaps they do, but with a much greater sensitivity for what goes on around them and how they interact. The point is that this putative inner anger experience does not become relevant for motivating conceptual thinking about emotion. Apparently, the wider cultural ideology, i.e. the cultural model of EMOTIONS ARE IN SOCIAL SPACE, can become an equally possible source. In fact, it can actually override bodily motivations if these indeed exist, by deemphasizing the ontological relevance of somatic experience for the domain at hand. (A third possible point will be discussed later, namely that cultural discourse can actually change bodily experience.)

My argument so far was this: near-universal conceptual metaphors are suggestive pointers to a level of shared human somatic experience that is powerful enough to create similar concepts. The somatic experience of emotions and time probably has something universal to it. Yet, exceptions from the rule established by research show that no full conceptual universals follow suit. So how can we best reframe the issue? Cognitive linguists can be credited with the elegant notion of *experiential motivation* which steers clear both of determinism and relativism (e.g. Kövecses et al., 2003). The idea is that concepts are likely to be motivated in some way through embodied or perceptual experience, but that we cannot predict beforehand which these will be. Yet, even if somatic experiences exert bottom-up influences on the conceptual system, these need not necessarily be deterministic. (Several types of somatic experience can be drawn upon to motivate

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<sup>12</sup> Other findings by Wierzbicka (1992) indicate that all languages use involuntary external body behavior for expressing emotion, involuntary accompanying reactions observed in others, and body-based descriptions of psychological experience. However, the specifics of all three dimensions vary substantially.

the same type of concept.) And, cultural fields can interact with bodily motivation in a top-down fashion. Thus, what are the particular mechanisms of *constrained variability* that explain why and how culture modifies or even interrupts the causal arc in cases where we assume some near-universals of somatic experience? First, body phenomenology may be prevented from motivating concepts because it is culturally *hypocognized* (i.e. de-emphasized) in a given domain. For example, the skin as a container may be hypocognized in the context of thinking about the self, as Frank (2003, pp. 76ff) claims on the basis of an analysis of the Basque language. There also is research showing that the opposite, namely cultural *hypercognizing*, and therefore an experiential differentiation leads to more nuanced concepts in a domain like emotion (Levy, 1984). Bodily signals may also be genuinely transformed top-down by cultural appraisals that, for instance, give a positive status, to a painful experience. Somatics are subject to shaping by cultural goals, such as honor, and prevalent norms such as individual achievement vs. group harmony (Mesquita & Walker, 2003, pp. 781f). Certain somatic signals may not even arise in acculturated adults when their habitus becomes a tool to preempt them (cf. Laderman, 1994). Thus people do not become angry as much because social means of control anticipate this. Finally, certain somatic motivations may exert effects very infrequently because the cultural environment avoids the relevant triggers (Mesquita & Walker, 2003).

Thus, a multi-deterministic and dynamic framework is needed. Using emotion metaphors as an example, Kövecses (2000) suggests several dimensions of cultural variation within universals. He discusses (partial) motivation via widespread embodied metaphors and metonymies, but also culture-specific factors. To him, conceptualized emotions minimally need to be consistent with some constraints of universal physiology. Yu (2008) proposes, specifically, a “circular triangle relationship” between metaphor, body, and cultural models. He posits that conceptual metaphors are usually grounded in bodily experiences that may be universal, while culture interprets the body by filtering for target domains. For example, experiences of what hands are good for are culturally similar, but metaphors and metonymies of the type “point out” or “put one’s finger on” differ in terms of conceptual range, explicitness, and number of expressions. Yu also argues that further metaphors may influence some of the cultural models that select for the aforementioned metaphors, such as the body-relevant Chinese models of Ying-Yang and the Five Phases, which specify the body parts (such as the gallbladder) in which a specific emotion (such as courage) is situated. Overall, any part of the triangle implicates the other two: “Thus, culture, by interpreting the bodily experience, affects the formation of conceptual metaphors; body, by grounding metaphorical mappings, affects cultural understanding; and metaphor, by structuring cultural models, affects the understanding of bodily experience” (Yu, 2008, p. 389). In my view, the details of that complex relationship will differ (not all cultural models are metaphorically constituted or influence other metaphors, nor are all body experiences as universal as hand actions), yet the model shows how bottom-up and top-down viewpoints may be intertwined.

We may have to discuss top-down motivations by cultural ideology more head-on. Goatly (2007, chapter 6) lists social motivations that complement bodily ones as well as various possible reasons for non-universality at the level of metaphorical conceptualization (ranging from the very absence of target concepts, via variable pairings of source and target, to subtle differences within the latter). He also points out that many kinds of metaphors do not seem to be motivated in the same sense that emotions are. With reference to Bourdieu, Goatly (2007, p. 279) highlights that metaphors like HUMAN IS MACHINE may be “ideologically constructed in order to produce

particular embodied experiences". This inverted directionality of explanation radically calls biologicistic views into question; and it shows how domain specific our claims ultimately are.<sup>13</sup>

## Equality between Abstract and Situated Theorizing

Let me turn to one assumption of paradigms such as PSS and image schema theory that often blocks an interdisciplinary dialog with scholars of culture. What the latter find unattractive is that psychologists and linguists focus so much on highly abstract primary constituents. For instance, image schema theory posits primary experiential units like PATHS, CONTAINERS, or VERTICALITY that seem to be universal precisely because they are so simple. In view of cultural experience being essentially contextual and holistic, it may be an artificial exercise when these disciplines try to tease basic embodied schemas from richer contexts. What do we make of this skepticism concerning the units of embodied analysis? I agree with psychologists and linguists that there must be a level that represents image schemas in a de-contextualized fashion in entrenched memory. For example, we represent the word meaning of "into" (or other prepositions) by evoking a highly schematic topology before the mind's eye, i.e. an in-out relation. No further complementation through specific object shapes or other contextual details is needed. Because it is so reduced, this simple image-schematic relation can be shared by a maximum of otherwise different scenes (different boundaries, different agents, etc.) Such "pure" image schemas are most consonant with Johnson's (1987) original formulation. Yet, this is only half the story. It would be reductionistic to treat image schemas exclusively as non-situated units that reflect the most general properties of the human cognitive inventory. I agree with the following reflection on Csordas' ethnographic work on healing:

[d]emonic possession (...) begins with an inchoate (pre-objectified) feeling of loss of control over the body ... This is then objectified by a healer in terms of what Johnson calls the "container schema" and is diagnosed as an intrusion across a boundary, to be corrected by a suitable form of embodied action in response. What emerges, then, is *something quite particular and also something comparable to other contexts in which the container schema is similarly activated*. (Strathern, 1996, pp. 188-189) [my italics]

Rich cultural experiences such as symbolic healing have experiential uniqueness, even if some building blocks, such as CONTAINER schemas, are universal. Whence originates this uniqueness? First, new emergent qualities arise when basic image schemas coalesce in compounds. In our example, the healer's image-schematic *scene* in which a powerful agent drives another agent from a body-container by force creates a far more complex topology than any contributing element and instantiates what I have called a *compound image schema* (see above and Kimmel, 2005).<sup>14</sup> To amplify the point, some embodied knowledge is probably even learned to begin with at the level of specific scenes or scripts rather than at that of independent constituents. This would

<sup>13</sup> More generally I would urge caution against the common practice of making emotion concepts a paragon case for embodied grounding at large. They seem to be tied up with physiology more than others (via metonymies) and are rather atypical for what we call an "abstract" domain to begin with, especially if we espouse the Jamesian view that emotions are apperceptions of felt somatic states.

<sup>14</sup> This notion runs parallel to the cognitive linguistic theory of grammar proposed by Langacker (1987), who envisages complex imagistic scenes that each word in a sentence contributes to with one particular feature. The constituent parts are familiar, yet the overall outcome is novel.

fit with theories of embodied learning appealing to mostly culture-specific and in any case complex formative settings or body techniques (e.g. Grady, Shore, as well as a paper by Alverson, 1991).

Second, in many contexts we use stylized versions of specific actions such as skipping, kicking, sitting, pinching, turning a screw, or picking up an object, rather than the more generic image schemas. The stylized actions have a higher degree of experiential saturation. In memory these action concepts require a different kind of gestalt representation, as it references onto specific action properties of the human body and not only its topological and kinesthetic invariants. Zlatev (2005) dubs this image type *mimetic schemas* and suggests that more abstract image schemas like UP-DOWN may in part emerge inductively when infants generalize across shared features of action concepts like CLIMB and JUMP.

Third, context can be all-important to fully render schemas effective, a point emphasized by theorists of situated cognition (e.g. Lave, 1991; Griffiths & Scarantino, 2008). In particular, the motivational and somato-affective layer that creates “embodied commitments” seems to arise only with contexts that disambiguate and flesh them out. In on-line cognition motivational aspects arise because the schemas are embedded into a context with rich sensory information, specific goal knowledge, and so forth. This is beautifully illustrated by Geurts (2002) concerning BALANCE in a Ghanaian context where the cultural elaboration of this universal schema, the refined balancing skills and many practices surrounding it, as well as many metaphorical uses of balance stamp the schema with uniqueness. Thus an entire level of embodiment is not predictable at the level of very abstract schemas but only from the situating context. Image schemas at the level Johnson has in mind are so flexible that they are still motivationally uncommitted. The psycholinguist Gibbs (2005) is a notable advocate of the view that these and similar cognitive structures may be primarily created “on-the-fly”.

Finally, a neuro-cognitive perspective points to an inherently multi-level ontology. Image schemas can be encoded at multiple hierarchical levels, with the aim to make the mind flexible to generate both high-level gestalts and simple constituents where needed. Neuro-cognitive models posit sensorimotor feature maps that are progressively funneled into so-called “convergence zones” (e.g. Damasio, 1989).

From the developmental viewpoint it remains an empirical question which level of schematicity arises first. For example, Mandler’s (2005) evidence for the claim that infants acquire singular features like PATH before more complex gestalts this does not rule out the importance of Zlatev’s mimetic schemas. Coming earlier in time is simply not the same as being ontologically more basic in the cognitive system of adults. Furthermore, in one important sense image schemas remain theoretical constructs. How universal they appear to us depends on how contextual our description of a phenomenon is and which phenomena we compare under the same rubric. The more our methods are geared to going into the details of situated concept usage the less we will find universals. So whenever we search for universal embodied schemas this presupposes some degree of abstracting away from situated and cultural specifics (cf. Goatly, 2007, pp. 272f). While many researchers now acknowledge the inevitable necessity of choosing a limiting vantage point, it is commonly overlooked how much our view of cognitive situatedness actually depends on our research method. As I have argued, both de-contextualized and highly context-modulated aspects of cognition are real from certain vantage points and thus both need to



be explained. I thus propose a “stereoscopic view” that understands cognition both at the situated level of the phenomenologist and social scientist and at the more functional and abstractive level of the cognitive researcher.

## Recursiveness and Emergence

At the end of the section on emotion and time metaphors I considered how bodily experience and concepts motivated by it could be culturally modulated. An idea of equal importance was just hinted at when I talked about compound image schemas that create a scene structure of a non-universal sort. The argument runs that (a) human thought is combinatorial and recursive, which allows huge expanses of knowledge to be generated out of a finite inventory of conceptual tools (Pinker, 1997, p. 360), and that (b) embodied constituents are key elements of this inventory. This is intuitively plausible, but the challenge lies in doing the appropriate concept analysis. It requires a framework with recursive scaffolding, recombination devices, and an explanation for the emergent structure at the output level. We got a brief glimpse of scaffolding earlier, when I discussed source domain aspects like “strategy” (from the war domain) which may themselves, in part, be metaphorically constituted at the next lower level. Yu’s examples from Chinese pointed to criss-crossing scaffolding relations between various types of cultural knowledge. However, the merit of an extended empirical demonstration for recursiveness belongs to Slingerland (2008, pp. 196ff), who applies the blending framework. His analysis of ancient Chinese moral philosophy illustrates how complex blends combine metaphorical mappings, imbue them with emotions, and connect their inferences. For example, in the philosopher Mencius’ view of proper *moral self-cultivation* an array of metaphors from the domains of warfare and agriculture is presented within an extended argument to suggest that self-cultivation needs to be gradual, should happen in accordance with nature, but also requires some effort. The upshot is of two sorts: First, Mencius’ overall rhetoric purpose is only served by the emergent structure of all metaphors taken together. Second, the basic elements, the individual metaphors, could probably be used for the purposes of very different concepts and the same is true of their embodied elements, notably FORCE imagery (manifested as water flow, irrigation, military force, etc.) We have seen that such complex combinatory patterns arising from more elementary units can also reside in the body and procedural memory. Two examples broached earlier concerned the complex sensorimotor gestalts Shore uses for his analysis of Samoan *tapu/mana* and the complex somato-affective patterns that determine cultural affliction in Csordas’ paradigm.

Hence, basic constituents can combine into cultural gestalts with unique emergent effects. This integrative argument may go a long way in explaining cultural concepts, while at the same time tying these to a more limited experiential basis. The argument is of special appeal for those who think that variations in bodily experience are not huge. It is quite possible that many fundamental somatic experiences are cross-culturally similar, while their compositional derivations and emergent structures are highly varied. Whether or not we believe this the creation of *emergent structure* from *basic* elements remains an irreducible part of any investigation. In other words, it is a prerequisite for the morphological analysis of concepts as such. Note in this regard that, although many social scientists find it little palatable, we must not discard the notion of certain universal “primaries” too rashly. Much empirical evidence is still out, but the research aim as such is a worthy one.

By its very nature, cognitive cultural research is after two things. First, a detailed morphological understanding of the “stuff” a concept is made of, and second, a “toolbox” of general elements that accounts for shared functional principles across content variation. Shore’s (1996, chapters 1 and 2) discussion of the *psychic unity of mankind* provides us with an excellent survey of “toolbox” items, as he lists several dozens of structural-functional model genres from the cognitive literature (synesthesia, image schemas, scripts, metaphors, propositional models, narratives, etc.) The analytic dimensions specified by each model type provide a certain common ground by letting us accommodate cultural specifics in them. Meanwhile, three levels of current theorizing have a bearing upon the psychic unity claim. At the first level *functional process universals* delineate generic mechanisms that remain uncommitted as to their content and that otherwise different phenomena share. Core affect, somatic marking, cross-modal correspondences, analogical mappings, and conceptual integration structure cognitive processes at this level. (Note that some, but not all of these deserve the epithet “embodied”). At a second level we see embodied *content universals* (or near universals) of a substantive kind. Examples are the five or six basic emotions, a universal directionality in synesthetic language (e.g. tactile stands for auditory but seldom vice versa), universal spatial reference frames, and even some near-universal metaphors (cf. Kimmel, 2004; Popova, 2005; also see above). There is a third level more difficult to accommodate in this scheme. It seems to be situated somewhere between process and content, and may be thought of as adding to them *domain-specific constraints*. A thriving research community has laid claim to domain-specific knowledge being universal because it is rooted in human evolution. This includes the body schema, folk theories of mind, religious agency, essences (in biology and social kinds), numeracy, naïve physics, and categorization principles (for a good summary see Slingerland, 2008, pp. 115-137). Some of these domains can be related to embodiment, although the connection is seldom drawn explicitly. It is a priori evident concerning the body schema. Naïve physics is largely grounded in gestalt perception and the pan-cultural tendency of attributing agency at least piggy-backs on perceptual habits. (Apparently falsely attributing intentions is a safer evolutionary strategy than missing an actual agent, e.g. a predator). Other evolutionary patterns from the above list like essentialist thinking and folk theories of mind have an unclear status with respect to embodied grounding.

Be that as it may, my first point is that all domain-specific theories rightly eschew a “blank slate” which cultural cognition would simply get superimposed on. Instead, there are evident constraints that issue from our biological make-up.<sup>15</sup> My second point is that a nuanced understanding of human universals can ultimately only gain from an improved grasp of the interrelations between the three levels I have specified. While evolutionary cognition research cannot be ignored, we must abstain from the false dichotomy of pitting psychic unity against psychic diversity, an argument based in an overly essentialist biology (Shore, 1996, p. 312). Third, none of what has been said commits us to a sharp distinction between a so-called A and a B system of cognition, where the A system comprises a *universal* common-sense, including a shared bodily and perceptual reality, and the B system includes variable higher concepts. Cognitive scholars of religion like Pyysiäinen (2009, pp. 189ff) exemplify this view. Indeed, our

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<sup>15</sup> In addition, theorists of the “epidemiology of representations” (Tooby & Cosmides, 1992; Sperber, 1996) claim that universal trends in thinking may become established because the cognitive make-up of humans ensures their easy use and transmission in a group. One impetus for transmission can be phenomenological plausibility and experiential grounding (“intuitiveness”), but as we shall see in the last section of this paper, contravening forces to plausibility may enhance a concept’s memorability.

intuition clings to the hunch that certain body-based elements of being human are not terribly different across cultures, while ideology almost always is.<sup>16</sup> In the extreme, the notion of an A versus a B system invites dualism by suggesting that the two realms are rather disconnected. Embodiment approaches, by contrast, attempt to trace where the two levels of human cognition are connected. Slingerland's discussion aims to ground meta-culture on the bedrock of innate cognition, while according embodiment a key role. According to him, counterintuitive and complex ideas become comprehensible via being grounded in a set of commonsensical ones. For example, scientific theories are informed by complex blends that recursively link back to innate domains, "their final court of appeal" (Slingerland, 2008, pp. 212f, 237). To be sure, Slingerland does not reduce common-sense to perceptual grounding alone because innate modules are added and acknowledges limits to the recursiveness of blends (Slingerland, personal communication). In my view this approach to bootstrapping from commonsensical domains provides an appealing hypothesis if, indeed, the embodied inputs can be traced to the output level. Yet, many case studies of specific counterintuitive or complex representations will be needed to make general claims on recursive grounding, be it through blending or other scaffolds.

## Implications of Embodiment Research

Finally, what role should we accord embodied grounding in understanding human society? A relatively weak view holds that embodied, especially perceptual, elements simply underlie complex meta-cultural representations in a morphological analysis. A stronger and more controversial claim is that a concept derives its credibility, intuitiveness, and authenticity from grounding, thus becoming an "embodied commitment". Do certain concepts thrive thanks to their embodied status? Can something wholly ungrounded in embodied common-sense catch on at all in a culture? And, do all input elements need to be grounded or only some? Let us, again, take on the inferential and somato-affective levels separately.

Many cases make evident that perceptually grounded elements are needed to discursively articulate a worldview and its inferences (e.g. boundary and exclusion metaphors have quite different inferential consequences than such of proximity and relationship). However, whether grounding in perceptual commonsense is always needed for concepts to be successful remains open to debate. *Contra* this claim, Boyer (2001) speculates that religious concepts are viable because they paint a starkly counter-intuitive element with a veneer of the known and have just the right degree of counter-intuitiveness, thus enhancing the retention rate in memory and thereby the concept's cultural transmission. If we equate "counterintuitive" with "non-grounded", full perceptual grounding would a priori be undesirable for this class of concepts. On the other hand, Boyer's claim has little predictive power, especially concerning types of counter-intuitiveness that do not catch on (besides the problem that the framing of the problem inoculates it against falsification). Another counterargument to obligatory grounding is that common-sense elements such as essentialism are "hardwired" in the brain and therefore need not be experience-based to begin with.

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<sup>16</sup> This applies especially to functional bodily skills like learning to walk or ones that are easily adopted like driving cars. By contrast, the realm of abstract ideas seems to produce an infinitely greater diversity, clash, learning difficulty across cultures, and, we may add, greater resilience to change under conditions of globalization. My point is not to negate differences at the bodily level, which have been amply studied by the anthropology of the body, but to draw attention to a possible difference in extent.

Somato-affective grounding of “embodied commitments” is clearly needed for many levels of society to work: People act in conformity with society for many affective reasons, including such unrelated to the accepted key concepts, e.g. opportunism. What is more, analytically it may often be impermissible to analyze single concepts only for their own somato-affective payoffs while neglecting those provided by the wider socio-cultural field (especially elective affinities with other concepts and/ or somatic states). It may well be that a particular concept is accepted not due to its payoff, but that it stabilizes through somatic affects permeating an entire lifestyle (e.g. children accept harsh ideologies because they love their parents). Macro-affects and local cognitive concepts can dynamically stabilize each other. Inculcation by “brainwashing” would largely depend on such mechanisms, although it can just as well work as structuralist theoreticians would predict, i.e. a concept is accepted mainly because its surrounding web of mutually cross-buttrussing concepts stabilizes it. If the latter mechanisms can completely override the need for affective acceptance remains open to debate.

The grounding of concept systems in particular somato-affective qualities often has a normative aspect to it. Lakoff (1996) argues that American conservatives have a metaphor system much like their liberals counterparts, in which image schemas, metaphorical mappings and other principles play a role. What distinguishes the two (in addition to different metaphor related preference orders and contextuality) is that the liberal system respects a very basic somatic level of nurturance while the conservative emphasis on discipline, punishment, and strict morality fails to do so. Thus, Lakoff argues, liberal ideology is better grounded in the human condition, which is geared towards well-being. I actually doubt that it is *always* possible to equate conservatism with an upbringing devoid of nurturance and embodied welfare, but whatever the empirical case may be, Lakoff showcases the normative implications underlying embodied concept grounding.

Beyond this, repercussions on normative arguments are perhaps most evident concerning emotion. There is an ongoing debate about whether morality is primarily driven by emotions like anger, shame and guilt or by feelings of empathy (cf. Prinz, 2011), while others emphasize appraisal related over embodied constituents altogether. Repercussions on conflict management are evident as well. The acceptance of somato-affective components as being part-and-parcel of conceptual processes is the accepted first step in conflict mediation; only when we acknowledge anger, etc. we can channel its more deleterious effects. (cf. Ciompi and Endert, 2011). Finally, social cognition research dramatically strengthens the role of embodied subjectivity in teaching, therapy, and many other fields. Bodily communication is the fundament of language acquisition. And, the enacted bodily self is a primary source of intersubjectivity. Phenomenological research in particular relativizes rationalistic (“Cartesian”) interaction ideologies. Young parents, caregivers of dementia patients, therapists, coaches, and many others now receive support from research when they use the bodily sense of being with one another as a key resource. Practitioners in many fields also use what we may call embodied language (e.g. gestures, metaphor, synesthetic images) in order to saturate reason with affect and imagery.

## Summary

In this section I have argued that an integrative theory of embodied cognition and culture requires a number of epistemological strategies. These envisage;

- a) a bi-causal loop between body and culture as concerns learning;
- b) a middle ground between bodily determinism on the one hand and cultural determinism and arbitrariness of ideas on the other;
- c) a multi-level theory that accounts for the situatedness of cognition (but also the occasional absence thereof) together with a critical reflection of the abstraction in our analytic constructs;
- d) a morphological apparatus for analysis that addresses how complex knowledge is combined out of simple elements and how embodiment thus creates variation, and
- e) a careful consideration of what we wish to imply with embodied cognition arguments about the human condition and, by further consequence, for disciplines like pedagogy, ethics, and politics.

## Embodied Cognition as Integrator of Disciplines

In conclusion, what role does our topic play for integrating cognitive research itself and for a rapprochement to surrounding areas of scholarship? Building on the sketched notional arc that encompasses body, mind, and culture (as envisioned by Frank et al, 2008) I propose that this arc can simultaneously become an interdisciplinary one, a process already under way.

### “Embodiment:” a Fuzzy Notion?

Viewed from a distance we notice how much “embodiment” has become a vogue term, yet how different the meanings accorded to it in different disciplines are. It is therefore crucial to specify the level of research and the focalized cognitive mechanisms at this level (e.g. grounding in external percepts vs. grounding in proprioception; phenomenology vs. sub-conscious cognition). A cavalier lumping together of everything that surrounds embodiment hampers a genuine dialog by suggesting pseudo-similarities. The notion’s associative richness turns into a hurdle when it becomes a catch-all term for performance and habitus, learning by various mechanisms, and different kinds of concepts. Especially the often postulated “body turn” invites generalizing claims about the embodied mind *tout court*. In view of this, a more reflexive handling of the matter is called for in two ways:

- a) *Level specificity*: we need to operate with precise definitions that foster an acute awareness of the level of embodiment that a given study is addressing, and
- b) *Domain specificity*: we need to evaluate evidence piece-meal and for a specific domain of human cognition, before making overarching claims. Only thereby do we acknowledge that different kinds of concepts come about in different ways.

Hence, although a sizable body of data is now available, years of comparative cultural research lie ahead of us to fully flesh out the picture. And, as I will argue next, existing interdisciplinary ties will have to be exploited and strengthened.

## The Need for Convergence and Scaffolding

This paper selectively looked at research from the embodiment literature that is pertinent to the complexity level of culture (and even then I haven't had space to address topics like synesthesia or many aspects of current social cognition research). Surveying approaches from cognitive linguistics, cognitive psychology, and cognitive anthropology in one single spot makes sense. There is an evident degree of complementariness between these approaches, all of which study cognition and embodiment with a focus either on cultures (plural, i.e. comparatively) or display an interest in the fact of socio-cultural mediation of cognition. While these disciplines strive towards a common goal, convergences are not being exploited as much as they could. Somewhat paradoxically, discussions of how we may bridge the gap to the "brain" sciences are attracting far greater attention than the arguably easier interpolation between areas that belong to the approximately same realm on the "mind" side of things. Important convergence zones remain neglected due to a lack of mutual awareness of neighboring disciplines. For example, most cognitive psychologists are at best vaguely aware of linguistic research, while work in cognitive anthropology tends to be read by neither. One crucial convergence zone has been drawn attention to when I suggested both that somato-visceral and inferentially oriented theories must eventually join forces within a single framework. Connecting these areas would, as a beneficial side-effect, create a greater typological awareness of aspects of embodiment and, as I shall argue in the next sub-section, its multi-tier architecture.

On the asset side, the aim of integrating embodied cognition phenomena from various different levels has appeared on the agenda. A description of the multi-level architecture of research is a first step that Rohrer's (2001) survey of approaches from the neural to the socio-cultural levels takes into view. Actually linking these levels in an integrative model is the obvious next step, as in Feldman's (2008) computationally implemented "Neural Theory of Metaphor", or Slingerland's (2008) argument for *scaffolding* from innate or otherwise universal cognitive elements to metaculture with high variability. Incomplete as these attempts remain, they show the direction to go in the future.

I hope the reader has glimpsed, at various points, affinities between discussed theories which occupy an important juncture of the multi-tier architecture described by Rohrer. What kinds of scaffolds and bridges do I have in mind, then? First of all, by acknowledging that embodiment can refer to unique, rich experiences as well as to schemas at various levels of abstraction we can focus on relations of progressive "enrichment" between these levels. We may thus compare the Anlo-Ewe "enriched concept" of BALANCE discussed by ethnographer Geurts (2002) to the more generic schema suggested by the philosopher Johnson (1987) and specify contextual or cultural constraints responsible for the difference. Second, it seems that different methodologies fill different slots in a scaffolded multi-tier architecture. Most importantly, some methods reflect more cultural situatedness than others. Cognitive anthropologists and cultural phenomenologists aim to be ecologically valid, cognitive linguists come next, in cultural psychology the picture is somewhat split, while experimental psychologists gravitate towards a more context-free paradigm. Along this continuum an evident trade-off meets the eye here: The immersive methods of ethnographers capture context and allow us to understand culture holistically and, often, from the viewpoint of lived experience. At the middle level linguistics provides dimensionally more focused (hence less holistic), but systematic data from across several cultures. The far end of the

continuum is occupied by controlled laboratory methods (e.g. Nisbett, 2003) and specializes in causal explanations. This depends on isolating variables and investigating how variations in one variable (like cultural origin or mother tongue) influence a second, dependent variable (like the performance in a cognitive task). The net gain can be causal models for adjudicating debates like the long standing controversy around the Sapir-Whorf hypothesis (cf. Deutscher, 2010). The flipside is that experiments reduce socio-cultural context to somewhat artificial settings. Thus, “stereoscopic theorizing”, as I called it earlier, between ecologically valid and controlled methods is imperative.

I see particular promise in sub-disciplines that straddle disciplinary fences to begin with. Cognitive linguistics is becoming one such “hub”. It displays considerable ability for traversing boundaries (cf. Frank, 2008, p.5) not least because of its gestalt approach. The eschewing of propositional modeling and the current paradigm switch to a simulation based account appeals to phenomenological and ethnographic quarters alike and inherently requires far less bridge-building than, say, traditional AI frameworks or 1970s-style cognitive models would. It is far from accidental that cognitive linguistics has expanded beyond linguistics proper and spawned much multimodal research, as witnessed by a burgeoning field of gestural and pictorial studies. Hence, particular frameworks are inherently more connectable than others both thanks to their theoretical paradigm and the methods that go with it. Accordingly, since its inception in the early 1980s the discipline has proven its ability to engender new convergence zones such as *cognitive semiotics*, *cognitive poetics* or *cultural linguistics*, and radiates outward into discourse analysis, musicology, and performance studies.

## **Convergent Evidence, Triangulation, and Methodological Pluralism**

Various method-related developments now also make it easier to cross disciplinary divides. For one thing phenomenology is now taken seriously and has created important applied perspectives. Compared to the time when Jackson (1983a, p. 330) diagnosed a “dearth of studies of the body-as-subject” much has changed, both in anthropology and cognitive science. The advent of empirical phenomenology (Pollio et al., 1997) demonstrates that subjective approaches need not veer off into the impressionistic and can systematically address aspects of subjective experience. Special methods both of interviewing (Stern, 2004; Petitmengin, 2006) and doing think-alouds create snapshots of cultural/ individual experience, arrest its fleetingness, and – with reference to embodied knowledge – make explicit praxeological skills that lie “hidden in the body” or just below the consciousness threshold (Kimmel, 2012). Likewise buzzer-cued spontaneous recordings select a small slice of subjective experience for later scrutiny by the researchers (Hurlburt & Heavey, 2006), yielding exciting insights on some individual’s tendency to be in a “somatic”, or “imagistic” state of awareness, while others tend to engage in verbal thought.

On the behavioral side, multimodal approaches to cultural communication are providing unprecedented resources (e.g. Finnegan, 2002, pp. 223ff), often in conjunction with a video-based micro-analysis and complex coding schemes (e.g. Norris, 2004). Scholars have taken to comparative work on non-verbal communication modes like facial expression (Levenson et al., 1992), speech-accompanying gesture (e.g. Efron, 1941; McNeill, 1992), gaze (e.g. Rossano et al., 2009), and rhythm (e.g. Agliati et al., 2005). The latter study is also exemplary for many others in

that a micro-analytic qualitative approach is embraced which simultaneously takes advantage of pattern detection software. Mixed methods like these are of value in general, not least because social scientists are beginning to realize that the fear of “measuring” is unfounded with the advent of micro-analytic methods.

What about methodology as such? Many quarters within cognitive science are showing great ability to harness together different sources of empirical data in exploring cultural cognition. Lakoff and Johnson (1999) push for this explicitly in their “convergent evidence” framework. They claim that, since sub-personal cognition is difficult to access, theoretical constructs unfalsified by six or eight independent methods must have great strength. While this point is well taken, method triangulation in single projects is an even more important ideal to aim for, for approaches like Geurts’ mix of developmental, linguistic, and ethnographic tools remain rare to date. By applying different methods to the *same* data pool much is gained over a post hoc arraying of convergent evidence. An example for this, again, comes from my aforementioned project on tango in which I applied phenomenological methods in conjunction with motion tracking by high-speed cameras, hence measurements of corresponding factors to the dancers’ subjective theories of technique. What is special about a triangulation such as this? It is not only that specific data slices are compared across methods. To begin a motion tracking study we need a great deal of qualitative input gained through introspection, expert interviews, and projecting these on the initial results in a continuous loop of refinement often over months (e.g. when expert dancers provide feedback to some data samples). And what is the outcome? To give an example, we discovered precise kinetic counterparts of subjectively marked phases experts think and speak of in characterizing tango gait. Thus, an evolving dialog between the methods creates granular descriptions far beyond what convergences from across data sources can give us.

### **“Vertical Integration” and the Role of Embodied Cognition**

When I called for the exploitation of convergence zones above this suggested a near-horizontal interpolation between not quite so remote research areas. However, the interpolation may become more vertical when we widen our purview and look at cognitive science on the one hand, which branches out into the natural sciences, and the social sciences and some of the humanities on the other. Embodied perspectives on cognition, especially to the extent that they are situated, display a natural affinity to the social sciences and can infuse the latter conceptually and empirically. Cognitive scientists on their part should pick up impulses from the sociology of knowledge, phenomenology, and all kinds of qualitative social research to gain in ecological validity.

In a valiant book-length effort to stimulate an interdisciplinary dialog, Slingerland (2008) recently coined the notion of “vertical integration”. He claims that the cognitive arc from basic elements to meta-culture implicates a disciplinary arc, where the humanistic or social sciences hold the top position and the natural sciences form the fundament. Slingerland proposes that the humanities are not necessarily incommensurate with cognitive research, despite the doubts of the former. He claims that for a true rapprochement between the often-cited “Two Cultures” embodied cognition research is a key site, a point well worth underscoring. In my view, the humanities and social sciences can gain in several respects from the empirically-minded, but also epistemologically grounded debate I have surveyed. First of all, other disciplines stand to gain



from descriptive tools such as conceptual integration networks, notions such as image schemas, and multi-level models like those from emotion research. Second, the cognitive embodiment paradigm tidies up some conceptual clutter and formulates in a tractable way the key question “how can universals lead to cultural specifics?” Related to this, it dominantly challenges views that assume a causal supremacy of culture over cognition *tout court*, i.e. cultural constructionism, or see culture as removed from the realm of the body, i.e. a form of dualism. Researching functional cognitive universals while allowing for content specifics (and near-universals) is perhaps *the* paradigmatic achievement the social sciences and humanities should emulate. Ultimately, the very framing of the research agenda, which crucially benefits from domain-specific evidence, a multi-tier architecture, and empirical methods as such, helps us reject false dichotomies.

I close with expressing my conviction that the study of embodiment is a cornerstone of the important enterprise linking cultural processes to the trans-human cognitive makeup. The scholarly discourse is fairly broad now with a sizeable number of cultural areas that have been empirically investigated (although many others are still missing) and with many different methods employed in the service of a common goal. With the recognition that no approach has full answers for the complex set of questions discussed here we need to knit ever closer ties and transform the emerging multi-perspective mosaic formed around a shared programmatic into a genuine theory network.

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