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Jordan Zlatev and Johan Blomberg

Abstract
As part of a long-term project investigating the relevance of phenomenology for (cognitive) linguistics we analyse two central, interrelated concepts: *embodied intersubjectivity* (intercorporeality) and *sedimentation*. With respect to the first, we spell out a number of different intercorporeal structures, emanating at the most fundamental level from the dual *Leibkörper* nature of the body. Further, we demonstrate that sedimentation is more than a 'geological metaphor' as meaning is intrinsically *layered* in human experience. This is first illustrated by reviewing evidence from ontogenetic semiotic development within the framework of the Mimesis Hierarchy model (Zlatev 2013). Then, we focus on the linguistic construal of situations lacking actual motion in dynamic terms through expressions of non-actual motion such as *The road goes through the forest* and *He was uplifted by her smile*. We review studies of non-actual motion in Swedish, English, French, Bulgarian and Thai extending and re-formulating previous analyses. We argue that the present analysis is more adequate than cognitive linguistic explanations in terms of 'mental simulation' and 'conceptual metaphor'. We conclude by pointing out how our phenomenological investigation can help resolve a number of classical dilemmas in semantics: Is language primarily grounded in the body or in society? Is the ontology of linguistic meaning mental or social? What is the relationship between pre-linguistic experiences and and linguistic conventions?

Keywords: body, construal, conventions, embodiment, emotions, intersubjectivity, *Leibkörper*, metaphor, motivations, phenomenology

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1. INTRODUCTION
Is linguistic meaning *primarily* grounded in bodily experiences or in sociocultural practices? To put in even more tersely: is embodiment or culture more important for language? While one may find the question too oppositional, there has been a persistent tension between those who have argued for the primacy of sensorimotor experience (e.g. Piaget 1962), and those who have emphasized the key role of sociocultural practices in meaning making (e.g. Wittgenstein 1953). Cognitive linguists have in general cast their votes on the side of the body (Lakoff & Johnson 1999), but even among them many have found this troublesome, as bodies are individual while language is social (Zlatev 1997). Accordingly, there has been a growing 'social turn" in the field, with emphasis on intersubjectivity (Verhagen 2005; Harder 2010), which brings back the dilemma: body or society? The main goal of this article is to show that this dilemma can be resolved with the help of the philosophical tradition emanating from Husserl known as *phenomenology.*[i]

Two key concepts from phenomenology will be essential for our argument. The first is that of intercorporeality, or *embodied intersubjectivity,* usually associated with the work of (Merleau-Ponty [1945]1962) but actually a *Leitmotif* running from the late Husserl, the 'first modern philosopher of embodiment" according to Moran (2005), to modern phenomenologists like Zahavi (2014). To explain the concept, in Section 2 we outline a number of different aspects in which the sentient and active human body is essential for relating to others and for the constitution of a joint life-world.

The second concept is that of *sedimentation*, originating in Husserl's brief but influential analysis in *The Origin of Geometry* (Husserl [1936]1970), according to which propositional meaning is superimposed, or sedimented upon the intentionality of practical actions and perception. We will spell out this notion along the way, and eventually propose a more explicit definition going beyond the geological metaphor, but for now it is sufficient to point out that if one kind of meaning structure A is sedimented upon another B, then A presupposes the prior existence of B, but is qualitatively different from and cannot be reduced to B.

Armed with these notions, we can describe how language is sedimented upon embodied intersubjectivity in two different ways. Using the *Mimesis Hierarchy* model of ontogenetic semiotic development (Zlatev 2013), we show in Section 3 how the intercorporal structures studied by phenomenologists, and outlined in the previous section, are important for characterizing the developmental stages that precede the emergence of language and prefigure some of its key properties like conceptual structure and the third-level knowledge of linguistic conventions (Itkonen 2003).

In Section 4, we turn to a different kind of sedimentation, where the bodily and *actual* motion-related experiences that underlie the meanings of expressions like *run through*, *lift up* and *soar* become 'covered up' with more abstract semantics over historical time. This can be seen in the English examples (1) and (2), and similar (though non-identical) ones across many of the world's languages.

(1) The road runs through the dessert.
(2) He was uplifted by her smile.

Standard accounts in cognitive linguistics rely on notions like *fictive motion* (Talmy 2000), especially for examples such as (1), and *conceptual metaphor* (Lakoff & Johnson 1980; Kövecses 2000) for examples like (2). More recently, both have been subsumed under notions like *mental simulation* (Matlock 2010), which rest on the idea that (predominantly) unconscious forms of mental imagery underlie the use of such sentences. Building on earlier analyses (Zlatev et al. 2012; Blomberg & Zlatev 2014), but unifying them and developing them in a novel way, we question the validity of such accounts in two respects, both of which follow from our phenomenological approach. First, we claim that the experiences and motivations on which such expressions are based are not individual cognitive acts, but precisely aspects of embodied intersubjectivity, such as those illustrated in Section 2 and 3. Second, as the conventions of using such sentences – which are always in part language-specific – arise through historical processes of sedimentation, they can never be equated with the pre-linguistic experiences that may motivate their existence. This claim may sound self-evident, but it stands in contrast to many, if not most, accounts in cognitive linguistics (cf. Itkonen 2016). In the final section, we summarize the main steps of our argument, and point out its potential for resolving a number of conceptual and theoretical controversies.

2. THE PHENOMENOLOGY OF EMBODIED INTERSUBJECTIVITY

The general idea of 'embodiment' has been popular not only in cognitive linguistics, but in the 'new' cognitive science of the past two decades (Varela, Thompson, & Rosch 1991; Gibbs 2005). Still, as a number of studies have shown (Rohrer 2007; Ziemke, Zlatev, & Frank 2007; Zlatev 2009) the notion is heavily ambiguous, with different authors and disciplines offering different concepts of *the body*. Following other modern interpreters (Zahavi 2003; Moran 2005; Gallagher & Zahavi 2008), we find the concept of the *lived body* (*Leib* for Husserl; *corps vécu* for Merleau-Ponty) especially productive for dealing with thorny issues such as the nature of consciousness and our epistemological relationship to the world. Most relevant for our present concerns is that the phenomenological concept of the body implies a number of different aspects or structures of intersubjectivity that are more basic than (and fundamental for) language:

> Without ever denying the eminently intersubjective character of language, phenomenologists have often endeavoured to unearth pre- or extra-linguistic forms of intersubjectivity, be it in simple perception, tool-use, emotions, drives, or bodily awareness (Zahavi 2001:166).

In line with the implicit sedimentation metaphor of this citation, we here proceed to 'unearth' several central aspects of embodied intersubjectivity. For reasons of space, these will not be fully elaborated, and this section may read a bit as an annotated 'checklist' of intercorporeal structures. Still, each of these structures appears in the discussion of the sedimentation of meaning in following sections where their relevance should become obvious.

The first, and arguably most fundamental structure of embodied intersubjectivity is *the dual nature of the body*: on the one hand as 'internally' perceived subjectivity and agency, on the other as an 'externally" perceived biological entity. To capture this duality, Husserl often refers to the human body with the compound term *Leibkörper*, utilizing the fact that German has two terms for the human body: one term profiles the lived aspect (*Leib*), and another the observed (*Körper*) aspect, respectively. As profiling does not imply different ontological entities but different foci,[ii] the lived and living bodies ultimately coincide. For Husserl, as well as for Merleau-Ponty, this is shown in the experience of *double sensation*, where there is an oscillation between experiencing the body as *Leib* and as *Körper*:

> [W]hen I touch my right hand with my left, my right hand, as an object, has the strange property of being able to feel too. […] the two hands are never simultaneously in the relationship of touched and touching to each other. When I press my two hands together, it is not a matter of two sensations felt together as one perceives two objects placed side by side, but of an ambiguous set-up in which both hands can alternate the rôles of 'touching' and being 'touched' (Merleau-Ponty [1945] 1962:106).

Crucially, this serves as a transcendental condition, i.e. an essential precondition, for the ability to apprehend others as fundamentally like myself:

> I am experiencing myself in a manner that anticipates both the way in which an Other would experience me and the way in which I would experience an Other. […] The possibility of sociality presupposes a certain intersubjectivity of the body (Zahavi 2003:104).

Closely related to the intersubjective character of the human body is the claim in much of the

phenomenological literature that *emotions* are not, strictly speaking, internal or private experiences that can be apprehended in another person only through processes of inference or simulation: 'I perceive the grief or the anger of the other in his conduct, in his face or his hands … undivided between the body and consciousness' (Merleau-Ponty [1945]1962:415). At the same time, there remains an asymmetry between self and other, as Merleau-Ponty continues to elaborate:

> [T]he grief and anger of another have never quite the same significance for him as they have for me. For him these situations are lived through, for me they are displayed (*ibid*:415).

Fuchs (2005) explicates this aspect of embodied intersubjectivity with the concept of *(inter)bodily resonance*. Emotions are seamless blends of an internal 'affective' component, and an outward-directed 'emotive' component. In a social context, the felt affect of the *Leib* is displayed in its *Körper's* emotive expression, which then results in an affect in the *Leib* of another embodied subject, giving rise to emotive expression through its *Körper* and so on. In such a loop, one can be said to literally perceive (rather than 'infer' or 'simulate') the other's emotion through a form of *enactive perception* (Gallagher & Zahavi 2008).

Another structure of embodied intersubjectivity, building on Husserl's notion of *operative intentionality* (i.e. a basic pre-conceptual, but meaningful directedness towards the world and others) is Merleau-Ponty's notion of *body schema* (*schéma corporel*) that can be explicated as 'a system of sensorimotor capacities that function without awareness or the necessity of perceptual monitoring' (Gallagher 2005:24). This is distinct from the notion of *body image*, which 'consists of a system of perceptions, attitudes and beliefs pertaining to one's own body' (*ibid*:24). Thus the body image takes the body into focal consciousness, making it an intentional object of perception or conception, while the body schema constitutes the pre-personal embodied *subject* himself or herself. Merleau-Ponty and Gallagher proceed to offer empirical evidence for the separation between body schema and body image in some clinical cases where one is compromised while the other is preserved.[iii]

The body schema involves learning and memory, referred to in the phenomenological tradition as *body memory*, which 'does not represent the past, but re-enacts it through the body's present performance' (Fuchs 2012:11). At least two kinds of body memory distinguished by Fuchs are inherently intersubjective. The first, deeper and least open to reflection is called *intercorporeal*, emerging from infancy, resulting in '*implicit relational know-how* – bodily knowing of how to interact with others, how to have fun together, how to elicit attention, how to avoid rejection, etc.' (*ibid*:15). A second, and more reliant on conscious attention form of body memory is called *incorporative*; it presupposes self-other differentiation, and the more or less intentional adoption of postures, gestures, and styles from others, based on (explicit) imitation.

The structures of embodied intersubjectivity mentioned so far predominantly involve *dyadic*, subject-subject relations. However, actions and gestures may of course also involve objects (Andrén 2010). For Husserl, the transcendent (i.e. 'objective') nature of an object like a chair was of central concern (for else the world-directedness of intentionality would be in question), and he eventually concluded that even 'simple' object-directed intentionality presupposes intersubjectivity. The argument, in very brief, is that while we may only see the mentioned chair from a single perspective at a given moment, we co-perceive ('apperceive') its other sides, its back, its bottom, etc. and synthesize these into an identity: the chair itself. In other words, we are implicitly aware that the other perspectives are available for other embodied subjects:

My perceptual objects are not exhausted in their appearance for me; rather, each object always possesses a horizon of co-extending profiles which […] could very well be perceived by other subjects, and is for that very reason intrinsically intersubjective (Zahavi 2001:155).

This analysis would hold even for natural objects – for example, if I perceived a tree in front of me rather than a chair. For cultural artefacts like chairs there is an extra layer of embodied intersubjectivity, as it were, on top of them, constituted by their *affordances* – the possibilities for action that they invite, inscribed on structures of body memory 'contain references to other persons' (*ibid*:154) – those who have made them, or could use them in similar ways that I would.

To summarize, we have in this section outlined the following phenomenological structures of embodied intersubjectivity: *Leibkörper* duality, emotion perception and bodily resonance, intercorporeal and incorporative body memory, body schema and body image, intersubjective object perception and (cultural) affordances. In relation to the goals of this article, we should first emphasize that all of these fuse embodiment and intersubjectivity in one way or another. They are thus not private 'mental representation' and deserve to be called intercorporeal. Secondly, we will see in what follows how such structures make up basic layers of meaning that precede, make possible, and are eventually sedimented upon by the more abstract and objectified meanings of language.

3. EMBODIED INTERSUBJECTIVITY IN SEMIOTIC DEVELOPMENT

A phenomenological approach to intersubjectivity, and specifically embodied intersubjectivity, is productive for developmental psychology as it replaces the older cognitivist notion of 'theory of mind" with what has been called 'the shared mind' (Zlatev, Racine, Sinha, & Itkonen 2008). One particular model within this general approach is the Mimesis Hierarchy (Zlatev 2013), which distinguishes between five stages or levels of children's semiotic (i.e. sense-making) development. In line with the concept of sedimentation, each stage is to be viewed as a layer that is sedimented upon earlier ones (Stern 2000). The first three layers are essentially pre-linguistic, and make up the foundation for the emergence of language, with its representational, normative and systematic character (Zlatev 2007). They can be summarized as follows, with reference to the structures of embodied intersubjectivity introduced in the previous section.

3.1 Proto-mimesis

While there is growing evidence for minimal selfhood from birth (Rochat 2011; Zahavi 2014), the child does not in the first months of life always differentiate between self and caregiver (Werner & Kaplan 1963; Stern 2000; McCune 2008). For example, Reddy (2003:401) characterises young infants as having 'a more immersed, less detached focus on the other". That the *body schema*, albeit in an underdeveloped form, is already active at birth is evidenced by the phenomenon of neonatal mirroring (Meltzoff & Moore 1983; Suddendorf, Oostenbroek, Nielsen, & Slaughter 2013). However, this is distinct from true imitation, which requires volitional control of the body (Piaget 1962). At this early stage, the child's embodied intersubjectivity is foremost realized through processes of *bodily resonance*, reflected in 'emotional contagion" (spontaneously picking up the feelings of close others) and mutual attention (prolonged bouts of looking into the eyes of caregivers). The infant's *body memory* is of the *intercorporeal* kind, realized in more or less automatic turn-taking exchanges known as 'proto-conversations' (Trevarthen 1979; Gratier et al. 2015) and other interactional formats like 'peekaboo' (Bruner 1983).

3.2 Dyadic mimesis

By 9 months of age infants have considerably expanded body schemas, and emerging *body-images*, with increased capacity for self-movement, volitional control of the body and a more distinct sense of self (Stern 2000). In addition, by this age many of the earlier, apparently automatic, interactions like turn-taking show evidence of volitional control (Hilbrink, Gattis, & Levinson 2015). It is characteristic that around this age, the first pointing gestures and (true) imitations emerge (Tomasello 1999), possibly driven by the need to maintain intersubjective closeness with caregivers that are now more clearly perceived as 'others' (McCune 2008). Imitation itself can be seen as developing through three steps. First there is sensory-motor imitation, in which what is imitated is in the here and now. Somewhat later, the child becomes capable of deferred imitation (Mandler 2004), where there is temporal delay between observation and performance, but without any internal model or representation to guide this. Finally, there is what Piaget calls 'representative imitation' described as follows:

> [T]he interior image precedes the exterior gesture, which is thus a copy of an internal model that guarantees the connection between the real, but absent model, and the imitative reproduction of it (Piaget 1962:279).

The first two steps correspond to *incorporative memory* in which, to repeat, the child 'does not represent the past, but re-enacts it through the body's present performance' (Fuchs 2012:11). In the third step, however, around the middle of the second year of life, the child is able to actively imagine a non-present action or event, thus moving from re-enactment to *imagination*. Such action-imitations, developing from intercorporeality, through incorporation to imagination have been called *mimetic schemas*, defined (in their most elaborated forms) as 'dynamic, concrete and preverbal representations, involving the body image, accessible to consciousness and pre-reflectively shared in a community' (Zlatev 2005:334). These can naturally be considered as structures of embodied intersubjectivity, as acknowledged by commentators:

> With respect to the phenomenology of body memory … this approach is particularly promising as it allows one to highlight the role not only of habitual, but also of intercorporeal and incorporative body memory in the process of meaning formation (Summa 2012:38).

At the same time, mimetic schemas must be distinguished from lexical concepts, which in the case of action verbs like *hit, run* and *throw* involve not just body-based schematizations, but structured inventories of normative meanings.

3.3 Triadic mimesis

The earlier stage was named 'dyadic' despite the presence of objects in the communicative interaction, e.g. desired ones in so-called imperative pointing, or imitated actions with objects (e.g. in feeding), since only from about 14 months, do child, other and object become fully integrated in a 'referential triangle'. This is reflected in declarative pointing gestures (*look at that!*) and gaze oscillations between object and addressee that mark full joint attention, implying an intersubjective form of 'third-order mentality' (*I see that you see that I see*) (Zlatev 2008). This is a clear manifestation of intersubjective object perception, in which (to remind) external objects gain their fully transcendent status only when they can be the potential focus of joint attention. Furthermore, it is only with triadic mimesis, possibly a uniquely human capacity (Zlatev 2008) that Gricean intentional communication can take place: intending both to communicate something to an audience, and for the audience to

recognize this intention. This implies an embodied second-order intention, enacted through bodily actions like gaze, smile, raised eye-brows, or holding of the gestures reply (Zlatev et al. 2013)

3.4 Proto-language and language
While the first words typically appear at the beginning of the second year of life, these are restricted to specific contexts and function more like indexical schemas that are associated with – rather than as symbols that *stand for* – emotional states and external events (Bates et al. 1979). In contrast, around their second birthday most children display a marked increase in the number and variety of their words. This is often described in the developmental literature as a 'vocabulary spurt'. It is possible to relate this to the emergence of *reflective consciousness* (Zelazo 2004) and the symbolic insight that 'things have names' and that these names are common, i.e. conventional (Zlatev 2013). Still, this level of intersubjectivity would have been impossible without the layers of embodied intersubjectivity laid down in the preceding states, and in particular those related to joint attention and imitation-derived representations (mimetic schemas). From this point on, language co-develops and interacts with the use of other semiotic resources, such as gestures (McNeill 2005) and pictures (DeLoache 2004), gradually increasing in structural complexity (Tomasello 1999). This makes the distinction between 'proto-language' and language proper in ontogeny a gradual one, in line with theories of language acquisition that propose that what children learn are *constructions*, slowly increasing in complexity and abstractness (Goldberg 2006; Tomasello 2009).

In sum, the Mimesis Hierarchy outlined in this section, as well as other layer-based models of semiotic development (Stern 2000), can serve as empirical explications of the two main theoretical claims of this article. First, that there are cognitive-semiotic capacities that are more basic than language, and hence necessary prerequisites for its emergence and second, that these are essentially the structures of embodied intersubjectivity that have been 'unearthed' in phenomenological investigations, as summarized in the previous section. At the same time, the discussion has hopefully helped to move the notion of sedimentation beyond the level of metaphor. Each layer of the mimesis hierarchy has a 'horizontal" structure, in which the various capacities discussed in each sub-section form a coherent pattern. At the same time, there is a clear 'vertical' structure, where earlier layers are sedimented upon by those following them, eventually forming the 'ground' for the normative and systematic intersubjectivity of language**.**

In the next section, we will see how this plays out with respect to one type of semantic phenomenon: the use of conventionalized expressions of motion to describe situations lacking motion, or what we refer to as 'non-actual motion sentences".

4. NON-ACTUAL MOTION SENTENCES, SEDIMENTED UPON EMBODIED INTERSUBJECTIVITY

In earlier work on the 'figurative" use of motion expressions such as those in (1) and (2), repeated here for convenience, we tried to show the value of phenomenological analysis for understanding the possible pre-linguistic motivations for cross-linguistic semantic patterns (Blomberg & Zlatev 2014) and argued for a dialectical relationship between linguistic conventions and conscious experience (Zlatev et al. 2012).

(1) The road *runs through* the dessert.
(2) He was *uplifted* by her smile.

However, we did not make it fully clear that the relevant pre-linguistic motivations and experiences are not a matter of private mental processes, but in fact, of the structures of embodied intersubjectivity that have been analysed so far in this article. This is precisely what we proceed to do here, summarizing first a study of sentences such as (1), and then another study of 'motion-emotion metaphors" such as that in (2) across different languages. In both cases, we argue that semantic sedimentation (upon embodied intersubjectivity) offers a more adequate analysis than customary models in cognitive linguistics.

4.1 Sedimentation vs. mental simulation
Sentences with motion expressions that denote situations lacking motion (i.e. non-actual motion (NAM) sentences) are common in the world's languages. For example, (3) can be translated more or less directly (though see below) into Swedish (4), Bulgarian (5) and Thai (6), using corresponding NAM-sentences.

(3)		The road goes into the forest.			
(4)	Väg-en	går	in	i	skog-en
	road-DEF	*go.PRES*	*in*	*in*	*forest-DEF*
(5)	Pāt-yat	na-vliza	v	gora-ta	
	road-DEF	*IMPF-enter*	*in*	*forest-DEF*	
(6)	Thanŏn	khâw	pay	nay	phaa
	road	*enter*	*go*	*in*	*forest*

It is noteworthy that Thomas Hobbes proposed that such expressions should be banned from philosophy, as they are one of the factors behind 'absurd conclusions":

> The first cause of absurd conclusions I ascribe to the want of method. […] The sixth, the use of metaphors, tropes and other rhetorical figures, instead of words proper. For though it be lawful to say, for example, in common speech*, the way goeth, or leadeth hither, or thither; the proverb says this or that*, whereas ways cannot go, nor proverbs speak; yet in reckoning, and seeking of truth, such speeches are not to be admitted. (Leviathan Part 1, Chapter 5)

But why do we use such expressions spontaneously in everyday speech, most often without attempting to be the least 'poetical'? Cognitive linguists have offered a multitude of related explanations, involving notions such as *conceptual metaphor* (Lakoff & Johnson 1980), *fictive motion* (Talmy 2000), *subjective motion* (Langacker, 2006), and most recently, *mental simulation* (Matlock 2010). The common denominator of these, in fact rather different, theoretical constructs is the proposition that the meanings of sentences and other linguistic expressions are not situations or any other worldly entities, but rather one or another kind of mental representations. As expressed in one of these accounts, to (use and) understand sentences such as these, (speakers and) hearers need to form dynamic underlying mental images, or representations:

> [I]n understanding an FM [fictive, or non-actual motion]-sentence, people re-activate and simulate aspects of the protagonist's motion, including speed, distance, and the terrain across which the movement occurred. In doing so, they construct *a dynamic representation that mirrors the actual motion of the protagonist*. (Richardson & Matlock, 2007:238, our emphasis)

But there are multiple problems with equating such hypothetical mental processes with the meanings of sentences like (1-6). First of all, while some people, on some occasions may indeed carry out such imaginings (or if that implies too much conscious awareness: 'simulations') these have the wrong kind of ontological status to serve as linguistic meanings. Mental images, static or dynamic, are private while linguistic meanings are public, conforming to super-individual norms or conventions, and the two should not be conflated (Itkonen 2016).

This may sound like a purely philosophical argument, but its validity can also be demonstrated on linguistic grounds. If the same kind of mental process makes up the meaning of NAM-sentences across languages, then these should be practically synonymous. But that was not the case even with (3-6). As the carful reader may have noted, (3) in English and (4) in Swedish used the verbs *go* and *går*, which in terms of motion event typology would be classified as expressing Manner and possibly Deixis (in contrast to *come*). On the other hand, the motion verb used in the Bulgarian example (5) expresses the category Path and the Thai sentence (6) combines Path and Deixis in a serial verb expression. In other words, the 'same' meaning is rendered according to language-specific conventions, resulting in sentences that are not fully synonymous. The point can be made even clearer by looking at the well-known example (7), used by Talmy to show that 'fictive motion' sentences are not limited to cases where the grammatical subject denotes objects that may serve as routes for travel.

 (7)   The mountain range goes from Mexico to Canada.   (Talmy 2000:104)

However, this sentence cannot be directly translated to Bulgarian and Thai, where the closest corresponding motion verbs *varvi* and *dqqn* ('walk') would imply a fairy-tale scenario where the mountain range has gained legs. The Swedish example (8) is a possible (and occurring in actual use) sentence, but it could be a translation loan from English, and a preliminary corpus search shows few cases of motion verbs with figures like *bergskedja* ('mountain range').

(8)   Bergs-kedja-n   gå-r   från Baskien till Katalonien.
           Mountain-range-DEF   go-PRS   from Basque to Catalonia
           http://www.toppenipyreneerna.se/vandringsleder-i-pyreneerna.html

Other languages like Yucatec Maya have specific constraints with respect to the use of NAM-sentences, in line with their typological characteristics (Bohnemeyer 2010). In short, while it is meaningful to search for experiential motivations that may *partially* explain such expressions, these motivations need to be clearly distinguished from the corresponding conventional semantics.

Second, it would be at best premature to look for a *single* experiential motivation as explanatory psychological mechanism. We may wonder with respect to the quotation from Richardson and Matlock (2007) given above: what is it that serves as the 'protagonist' and what exactly is being (consciously or unconsciously) simulated? Any one of the following could be the case: one's own imaginary self-motion along a path; the motion of some external imaginary entity (e.g. a car); the extended figure itself 'as-if' moving; the observer's visual attention along the path, and possibly others. Clearly these correspond to different kinds of experiences. Based on a meta-analysis of how this issue was addressed in some of the most representative studies of non-actual motion in the cognitive linguistic literature, Blomberg & Zlatev (2014) distinguished between three experiential factors, serving as possible pre-linguistic motivations for the use of NAM-sentences:

(a) the enactive, action-oriented nature of perception. This is mostly plausible for expressions concerning figures that afford motion, as in examples (3-6);
(b) the correlational nature of intentionality, where every intentional object is linked to one or more intentional acts.[iv] This may be reflected in examples that involve 'visual scanning', as in (7-8);
(c) the imagination of counter-factual scenarios. This is closest to a truly metaphorical 'as if" reading of a NAM-sentence, as in (9).

(9) Insanity runs in my family... It practically *gallops*!
                    (Brandt 2009:573, cited from *Arsenic and Old Lace*)

As reflected by this classification, some non-actual motion sentences can be tentatively attributed to one or the other of these three motivations. However, there is nothing to restrict the combination of several different motivations such as (a-c), leading us to the conclusion that the phenomenon of NAM-sentence use cannot be explained by a single factor.
        Third, and especially relevant for the present discussion, while most cognitive linguists locate meaning in the individual mind, using terms like 'mental representation' with few reservations, the sedimented upon experiential structures listed above are strictly speaking, neither individual nor representational. Why is that so? With respect to (a) affordances of both natural and cultural objects, like the 'sittability" of chairs, and the 'walkability' of paths, are per definition *perceptual* features in ecological psychology (Gibson 1979). In the case of (b), figures that do not afford self-motion like mountain ranges, the intentional act of 'scanning" their length is still mostly perceptual, or quasi-perceptual (as reflected in the terminology used). The least perceptual is (c), but as suggested in the discussion of incorporative memory and mimetic schemas in Sections 2 and 3, the kind of re-enactment involved in imagination is not to be thought of as a form of pictorial representation, but as dynamic and sketchy *re-presentation* (Thompson 2007).
        Furthermore, we should consider (a-c) as fundamentally intersubjective rather than private. With respect to (a) the affordances of paths and highways are the affordances of cultural artefacts, which are not just 'mine" but inherently point to other embodied subjects. As nicely expressed by Möttönen (2016:160):

> From a phenomenological point of view affordances are publically distributed, i.e. taught and learned, patterns of interaction that are accompanied not only by perspectival experiences, but also by the consciousness of the public nature and sharedness of these experiences.[v]

With respect to (b), as perceiving any three-dimensional object, and not just cultural artefacts, implies the implicit awareness of other perspectives and possible co-perceivers, we may say that in 'scanning' an elongated figure like a fence we are implicitly aware that others could do likewise, or perhaps differently. Scanning is thus something like a perceptual affordance. Finally, as (c) will involve re-enactments of culturally salient actions like walking, running and crawling corresponding to mimetic schemas, their mimetic origins will guarantee a degree or pre-reflective sharing.
        An application, and to some degree validation of this reasoning is provided in an experimental study by Blomberg (2015). Native language speakers of Swedish, French and Thai were presented pictures such as those shown in Figure 1 and asked to describe what was presented in spontaneous sentence-length utterances. Half of the pictures represented figures that afforded self-motion, and half showed figures that do not. Moreover, the same objects were displayed either from a first-person perspective, or third-person perspective. The

reasoning was that if only self-motion affordance (or 'simulation') had an impact on the use of NAM-sentences, then perspective would not matter. On the other hand, if 'scanning' were the strongest underlying motivation, then figures shown from the side would evoke more NAM-sentences, irrespective of motion-affordance. The results showed that all categories of pictures elicited NAM-sentences on the scale 40% for all three languages, significantly more than control pictures of non-extend figures like houses and trees. Furthermore, again for all three languages, pictures like that shown in Figure 1, elicited more NAM-sentences than the other cases, indicating an interaction between the factors affordance and perspective.

Figure 1. The stimulus picture described in Swedish (10), French (11) and Thai (12), showing a figure that affords self-motion from a first-person perspective, of the type that elicited most NAM-sentences in all three groups.

Moreover, the elicited NAM-sentences consistently followed language-specific conventions for expressing *actual* motion, but in comparison to these, featured more abstract descriptions, avoiding the use of manner-of-motion expression. In the Swedish group, the two predominantly used verbs were *gå* ('go') and *leda* ('lead'), both of which are quite generic, in examples such as (10). The French speakers used predominantly Path-verbs such as *sortir* ('exit'), as shown in (11). The Thai speakers used serial-verb constructions, but tended to omit the Manner-verb in the series, using only a Path-verb together with a Deictic verb, as in (12). These descriptions were given in response to the image shown in Figure 1.

(10)   en   väg   gå-r   ut ur   en   tunnel.
           DET.INDF   *road*   *go-PRS*   *out from*   *DET.INDF*   *tunnel*
           'A road goes out of a tunnel.'

(11)   une   route   qui   sort   un   tunnel.
           DET. INDF.F   *road*   *COMP.REL* *exit.3SG.PRS* *DET.INDF.M*   *tunnel*
           'a road that exits a tunnel.'

(12)   Mii   thanŏn   òok   maa   chaàk   phukhăo.
           COP   *road*   *exit*   *come*   *from*   *mountain*
           'There is a road (that) comes out of a mountain.'

4.2 Sedimentation vs. conceptual metaphor
In another study, we compared non-actual motion sentences denoting affective states or processes of consciousness, i.e. emotions, such as the more or less parallel but not synonymous examples from English (13), Swedish (14) and Mandarin Chinese (15). It is

possible to analyse such examples in terms of *motion-emotion metaphors*, i.e. as 'mappings' between the domains of MOTION and EMOTION (Zlatev et al. 2012).

(13) My spirit soared.
(14) Mitt   humör steg.
      my   mood rise.PST
      'My mood got better.'
(15) Wo   de qingxu gaozhang.
      I   GEN spirits rise
      'I am getting excited.'

The reason behind the caution expressed above, is that is rather controversial how to define the notion of metaphor. One current debate concerns the fundamental level on which metaphors exist. For many cognitive linguists, this is the level of so-called *conceptual metaphors*, defined as 'a cross-domain mapping of structure from a source domain to a target domain, where the two domains are regarded as different in kind' (Johnson 2010:407). Others have proposed that we should privilege language use, and focus on recurrent discourse metaphors such as *our European home,* intermediary in their conventionality between novel metaphors relying on analogical reasoning and literalized expressions (Zinken 2007). Or perhaps metaphors should be studied even on the most specific, contextual level, so that

> rather than conceiving of metaphors as discrete units they should be regarded as a process of meaning construal in which new metaphoric expressions dynamically emerge, are elaborated, and are selectively activated over the course of a conversations (Kolter et al. 2012:221).

It should be noted that it is what is 'most basic' that is contested, as there is a degree of consensus that the levels of (universal) bodily experiences and cognitive processes, (conventionalized) cultural practices, and situated language use are not exclusive but rather complementary, in accordance with the *Integral Linguistics* of Eugenio Coseriu.[vi]

   The second debate concerns the balance between universality and language/culture specificity of key metaphors, such as that relating the domain of time and space. As may be expected, the stance taken in this debate correlates with that taken in the previous one: if metaphors, and especially so-called primary metaphors (Grady 1997) such as AFFECTION IS WARMTH 'are acquired unconsciously through our bodily engagement with our environment' (Johnson 2010:410) a considerable degree of universality may be expected. If, on the other hand, metaphors are essentially discursive constructs, cultural specificity follows almost by definition. Thus, while proponents of the universalist stance may accept a degree of cultural variation (Kövecses 2000), e.g. 'social constructions are given bodily basis and bodily motivation is given social-cultural substance' (*ibid*:14), the controversy will persist as long as the deeper, definitional disagreement does.

   In these debates it is not hard to see conceptual problems that may be at least partially resolved with the help of the notions of embodied intersubjectivity and meaning sedimentation. To begin with, many suggested 'primary metaphors' clearly involve intercorporeal experience. This is hardly surprising as they are hypothesised to be 'acquired by children simply because of the nature of the bodily experience (in perception and bodily movement) for the kinds of the structured environments they inhabit' (Johnson 2010:410).

   In the paradigmatic example of AFFECTION IS WARMTH, these 'environments" are crucially interpersonal. Such 'correlations" (between affection and

warmth, etc.) correspond to felt, reciprocal qualities in the *Leibkörper* of infant and mother, i.e. to intercorporeal body memory.

However, is it really appropriate to analyse such structures, emerging through bodily interaction and involving (in most cases) emotion, as 'cross-domain mappings"? As suggested in Section 2, unlike the way they are usually represented in cognitive semantics (Kövecses 2000), emotions hardly constitute an 'abstract target domain", and even less so one that is 'different in kind" (see Johnson's definition above) from their bodily expressions. Rather, following Fuchs's analysis, the internal and external sides of emotion are intimately connected through *bodily resonance*, allowing them to be perceived directly, without the need for inference or simulation. Of course, emotions can be *conceptualized* in many different ways, in different cultures and languages, e.g. as 'forces" or 'fluids", but these are secondary, language-mediated, and indisputably metaphorical constructions. If it is the pre-conceptual, and (largely) universal bodily roots of metaphors that concern us, then an analysis in terms of 'cross-domain mappings' would seem to be placing the cart before the horse.

Studying the 'mapping' between the 'domains' of motion and emotion in more or less related languages confirms this theoretical conclusion. On the basis of native speaker intuitions and corpus-analysis, we performed an exhaustive search for conventionalized expression-types (i.e. constructions) in English, Swedish, Bulgarian and Thai where a motion verb is used to denote a state of affect/emotion, without any perceived motion, as in *my heart dropped*. 115 such metaphors (on the intermediary level of conventional metaphor types, see above) were identified and compared. As expected, the findings showed considerable cross-language differences, especially between Thai and the three European languages, but also significant similarities, shown in Table 1. The first two rows reflect a familiar 'primary metaphor' in which upward motion is correlated with positive affect/emotion and downward motion with negative emotion. At the same time, this is expressed differently in the different languages, with e.g. Thai requiring a compound in which the word *caj* ('heart-mind') needs to be added to the verb to make this an expression of emotion rather than purely motion expression. This supports the crucial distinction between the level of conventional linguistic expressions and the level of pre-linguistic motivations. What may the latter be in this case? As pointed out early by Lakoff & Johnson (1980) one likely motivation for this EMOTION IS MOTION 'primary metaphor' is that positive/negative emotion corresponds to higher/lower bodily posture. In such cases, this would be yet another reflection of *Leibkörper* duality, with felt qualities being 'worn on the sleeve' of the living body, since *Leib* and *Körper* are not to be treated as two distinct domains. To remind, emotions have both an affective, felt *Leib* component, and an emotive, shown *Körper* component, which is key for them to be shared.

In other cases, especially when the motion verb expresses motion through a liquid (one typically 'sinks down' (*sjunker ner*) into a depression in Swedish), a cross-domain analogy may be a more appropriate analysis. There is, in other words, nothing to guarantee that the 'overlap" of metaphors across unrelated languages is to be explained by the same mechanism.

Metaphor type	English	Swedish	Bulgarian	Thai
MOVE UP → POSITIVE	*F is rising*	*F stiger* ('rise')	*C po-vdiga F* ('raise')	*F chuu-caj* ('raise-heart')
MOVE DOWN → NEGATIVE	*F drops*	*F sjunker* ('sink')	*F pada* ('fall')	*F tòk-caj* ('fall-heart')
STIR → BAD FEELING	*C stirs F*	*C upprör F* ('stir up')	C ubàrkva F ('stir' > confuse)	*C kuan-caj F* ('stir-heart')
SHAKE → VERY BAD FEELING	*C shakes F*	*C (om)skakar F* ('shake')	*C raz-tàrsva* ('shake')	*F sàtɯan-caj* ('shake-heart')
BREAK UP → VERY VERY BAD FEELING	*C shatters F*	*C krossar F* ('shatter')	*C raz-biva F* ('shatter')	*F caj-sàl* ('heart-shatter')

Table 1. Common metaphors and metaphor-schemas across the four languages in the study (C = Cause, F = Figure).

The same goes for the lower three rows. Here we see that in the European languages, and in the case of STIR also for Thai, the basic form of the motion-emotion construction is transitive: C(ause) moves F(igure). All of these are negative, but there is a kind of hierarchy: STIR < SHAKE < SHATTER, so that as the caused motion on the figure/experiencer becomes more violent, the emotion/feeling becomes more negative. In the case of SHAKE, we may again see this as a *Leib-Körper* correlation in experience. For STIR and SHATTER, the motivation is more likely in the similarity/analogy of the felt (inner) sensation and the observed transformations of external objects: with brews being stirred, and fragile things shattered. Even in these latter cases, intercorporeal grounding of the 'source domain" would be guaranteed by the mimetic schemas corresponding to STIR and SHATTER.

4.3 Summary

In this section we presented the theoretical background for and summarized the main findings from two different studies of non-actual motion expressions across a number of different languages. The first study focused on expressions denoting routes and other extended figures using motion verbs (Blomberg 2015). The second one considered expressions that 'mapped between", or more appropriately conflated or blended motion and emotion (Zlatev et al. 2012). Despite the semantic and methodological differences both studies confirmed the distinction between experiential motivations and conventional meanings, and the intersubjective-perceptual, rather than individual-representational character of the first.

In both studies, we saw how certain pre-linguistic experiential structures can help understand why different kinds of non-actual motion sentences are widely spread across languages. They are clearly not 'arbitrary" social constructions. The main point is that these intercorporeal motivations should not be confused with the conventional expressions that sediment upon them. Concerning the definitional debate on metaphor, it is therefore appropriate to question Lakoff and Johnson's (1980) redefinition of metaphor as a 'cognitive rather than linguistic' phenomenon: metaphors are not primarily in the (individual) mind, as they necessarily involve *expression*, in language or in some other semiotic resource (Kolter et al. 2012). Expressions such as those in Table 1 are conventional linguistic constructions that

are sedimented upon with only partially recoverable motivational experiences. In certain contexts these experiences may be 'unearthed' and extended but whether and how this is done is largely indeterminate, due to the fundamentally creative nature of language use.

In accordance with the concept of sedimentation, which we professed to explicate along the way in this article, we can see how the *sedimenting* meanings of language are more abstract and objective, and at the same time presuppose the *sedimented upon* ones, which are more experientially rich, and at least in part recoverable. The fact that the latter are structures of pre-linguistic embodied intersubjectivity, rather than purely private mental processes can help explain both the emergence of linguistic intersubjectivity, and our recurrent claim that the different layers of meaning do not stand in opposition, but in a complementary relationship to one another.

5. CONCLUSIONS

As part of a long-term project aiming to demonstrate the relevance of phenomenology for (cognitive) linguistics (Zlatev 2010; Blomberg & Zlatev 2014), we have in this article attempted to show the value of two central, interrelated concepts: embodied intersubjectivity (intercorporeality) and sedimentation. With respect to the first, we spelled out a number of different intercorporeal structures, emanating at the most fundamental level from the dual nature of the lived-living body itself, as suggested in Section 2. With respect to sedimentation, we showed that meaning is intrinsically *layered* in human experience. In the introduction, we promised to build up to a more explicit definition, which can now be stated as follows.

> Given that X and Y are two semiotic (meaning-bearing) structures, **X is sedimented upon Y**, if and only if
> -   X is more stable and abstract than Y,
> -   Y is more experientially rich than X,
> -   X emerges from a number of temporally preceding acts of Y,
> -   Y is latent, and can be reactivated in specific contexts.

The relationship between the two concepts is that it is precisely the layer (or several ones) of embodied intersubjectivity that is essential for the development of language in ontogenetic semiotic development (as shown in Section 3), as well as serving as the motivating force for the existence of recurrent semantic structures, here illustrated with non-actual motion expressions, in different languages, as argued in Section 4.

There are a number of conceptual and theoretical issues that our proposed analysis can help resolve, or at least elucidate. First, as we stated at the onset, there is a tension between the traditions of 'embodiment' and 'sociocultural situatedness' when it comes to decide what kind of experience lies at the roots of language. With the help of embodied intersubjectivity, we can see that body and sociality are fused from the start, saving us from the need to make a choice one way or the other.

Second, and related to the above, it has not been clear how the ontology of language can include both 'world 2' mental processes like imagery and 'world 3' social structures like conventions, following the schematic ontology of (Popper 1979; Itkonen 2016). But as we have argued here, some of the central pre-linguistic experiential structures are *not* purely subjective, and even less so 'private' ones. To remind: mimetic schemas involve intercorporeal and incorporative body memory; motion-emotion, and other 'primary' metaphors are to be explained not so much with the help of underlying cross-domain mappings but through bodily resonance and *Leibkörper* duality; non-actual motion is rooted not so much in individual representational cognition, but in perceptual intersubjectivity,

involving affordances and the co-perception of other possibilities of construal. This makes the problem of integrating the 'worlds' much less insuperable and our analysis can help explain the transition from bodily intersubjectivity to linguistic normativity. Conceptually, this involves the proverbial leap from *is* to *should* (Itkonen 2003). One reason that this gap has been seen as unbridgeable is that it has been construed as wider than it needs to be. From our standpoint, the ontology of linguistic meaning is not purely 'world 3', as linguistic conventions are not fully detached from its bodily roots (as witnessed in the conventionalized construals of notion-actual motion expressions). On the other hand, pre-linguistic grounding experiences are not private 'mental images" but intersubjective motivations.

This brings us to the third and final theoretical implication: integrating the 'mental' and the 'social' aspects of language can be carried out by consistently regarding pre-linguistic, intercorporeal processes and structures, such as mimetic schemas, body resonance, body memory and perceptual intersubjectivity as *motivations sedimented upon by temporally secondary linguistic meanings*. The first are experientially rich, pre-predicative, and not fully systematic. The latter are conventional-normative, systematic and predicative. Intercorporeal motivations that underlie non-actual motion sentences may account for degrees of cross-linguistic overlap, without the need to postulate any strong form of universalism (Evans & Levinson 2009; Dor 2015).

To conclude, on at least two different temporal scales, the normativity and systematicity of language can be naturally seen as emerging from, and as sedimented upon structures of embodied intersubjectivity. In ontogenesis, the Mimesis Hierarchy (Zlatev 2013) and other similar approaches (McCune 2008) imply that children's intersubjective and representational capacities develop in layers, thus allowing for a balance between continuity and discontinuity between pre-linguistic meanings and language-mediated representations. Further, and crucially for being able to account for how linguistic meanings are not only shared, but come to embody shared intersubjective perspectives (construals), is the historical time scale of pragmatic language use. It is on this scale that individual acts of reference may become entrenched not just as individual cognitive routines but as socially-sanctioned practices or norms.

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[i] See Sokolowski (2000) for a short and clear introduction to phenomenology.

[ii] This is in line with the use of the concept of *profiling* in Cognitive Grammar (Langacker 1987; Möttonen 2016)

[iii] We should not dichotomize this too much, since human experience allows flexible re-location of consciousness between the intentional object (here analogous to the body image) and the intentional act (analogous to the body schema). This flexible duality is further analogous to the Cognitive Grammar dimension of objective/subjective construal, with the first profiling what is being described, and the latter – the act of describing (cf. Zlatev 2010).

iv '… perception, thought, judgment, fantasy, doubt, expectation, or recollection, all these diverse states of consciousness are characterized by their objective correlate, i.e. the perceived, doubted, expected object. The converse is always true: the intentional object cannot be analyzed properly without a look at its subjective experience, the intentional act.' (Gallagher & Zahavi 2008:113)

v In our original analysis (Blomberg & Zlatev 2014), we predominantly linked the motivation of enactive perception and its related affordances to the bodily capacity for *self-motion*. This may be thought of as a structure of individual intentionality. Still, there is a sense in which it has an intersubjective dimension as well: the 'kinaesthetic horizon' (Zahavi 2003:100) of possible actions is not restricted to my own body but rather something that I implicitly share with all other human beings.

vi Eugenio Coseriu is one of the leading linguists of the 20th century, who remains insufficiently known as most of his publications are in Romance languages and in German, with only a handful in English. Coseriu (1985) is classic, in which he summarises his pluralistic approach to language. In very brief, language can be studied on three levels: universal, historical and individual/situated, and crossed with these, from three different perspectives: as activity (*energia*), competence (*dynamis*) and product (*ergon*). The theory combines structural, functional and phenomenological insights, and can be used to resolve a number of ongoing debates on the 'essential' level/perspective of language (cf. Zlatev 2011).

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