Experience and concept attainment: some critical remarks[*]

ANNA PAPAFRAGOU

Abstract

The aim of this paper is to reconsider certain assumptions about conceptual structure which have become influential in recent Cognitive Science and which are associated in particular with the Cognitive Linguistics research agenda. I will outline three areas within the Cognitive Linguistics theory of concepts which seem to create some difficulties in their present formulation: the 'embodied cognition' idea, the function of imagery and the role of metaphor in the structure of concepts.

1 Introduction

The aim of this paper is to describe and evaluate certain aspects of a theory of concepts which have recently become influential in many areas of Cognitive Science. I will be concentrating on a collection of claims which are known as 'experiential realism'. Experiential realism, as a view of natural language meaning, is standardly presented as an alternative to an 'objectivist', God's eye view of meaning and concepts, according to which word meaning can be adequately formulated in terms of a set of jointly necessary and sufficient conditions (see Lakoff, 1987a, 1987b, 1993; Sweetser, 1990; Langacker, 1987, 1991; Gibbs, 1994; and references therein). In contrast to this view, an experiential theory of concepts views them as embodied constructs, which derive their meaning not through their correspondence to objects in external reality but through their link to meaning-conducive human conceptualising capacities and psychological functions. The experientialist position has recently featured prominently in research within the Cognitive

---

Linguistics framework. Adopting an explicitly internalist perspective on conceptual structure and linguistically communicated meaning, current Cognitive Linguistics has inspired a large and diverse research program and has developed an approach to concepts, polysemy and word meaning within a more general account of human cognition.

What I would like to do in the following pages is abstract away from particular empirical results of the theory and focus on certain basic theoretical tenets which, I believe, require some further consideration and clarification. My purpose will be to indicate some conceptual difficulties in the experientialist theory of cognition, to explore ways in which solutions to these difficulties could be constructed and ultimately to open up possibilities for further discussion and research.

Two remarks are in order at this point. First, it is not the case that the theory of concepts I will present is adopted solely by Cognitive Linguists. Indeed, some of the assumptions I will be concerned with, such as the meaning of natural language items and the pervasiveness of polysemy, are espoused by researchers who are not themselves committed to the Cognitive Linguistics agenda[1] - and, in this respect, the discussion in the paper connects to broader debates in Cognitive Science. Inversely, it is not the case that the framework I will present is taken up in its entirety by all researchers within Cognitive Linguistics: there is far less theoretical homogeneity within this program than my discussion recognises. For reasons of space, I will have to concentrate on some versions of the theory rather than others, although I hope to maintain a level of generality which is shared by various researchers in the field.

I propose to proceed as follows. I will start with an overview of the Cognitive Linguistics approach to issues of conceptual structure and word meaning, paying specific attention to the commitment to experientialist tenets. I will then present some problems for this account, focusing specifically on three major areas: the Conceptual Embodiment thesis, the function of imagery and the role of metaphor in the structure of concepts.

---

[1] Cf. the growing grammaticalisation literature; e.g. Traugott & Heine (1991); Heine, Claudi & Hünnemeyer (1991); Hopper & Traugott (1993); Bybee, Perkins & Pagliuca (1994); Bybee & Fleischman (1995).

2 Cognitive Linguistics and theory of concepts

2.1 The structure of concepts

The Cognitive Linguistics approach to word meaning is based on two fundamental theses - what I will call the Cognitive Penetrability and Conceptual Embodiment theses.[2] According to Cognitive Penetrability, linguistic competence is not autonomous from the type of human knowledge which may broadly be termed encyclopedic; as a result, no distinction is drawn between the semantic content of a linguistic item (or construction) and the bits of world knowledge associated with it (Haiman, 1980; Lakoff, 1987a; Johnson, 1987; Sweetser, 1990). According to Conceptual Embodiment, the properties of certain concepts are a consequence of the nature of human biological capacities and the experience of functioning in a certain physical or social environment. This idea is meant to contradict the view that concepts exist independently of the bodily nature of any thinking beings and independently of their experience (Lakoff, 1987a: 12; Johnson, 1987).

The Cognitive Penetrability and Conceptual Embodiment tenets jointly entail the following methodological strategy in Cognitive Linguistics: in order to describe and explain what it is to grasp the meaning of a linguistic item, one has to construct a complex web of relations and properties within which this particular meaning will be firmly placed. An idea of what is involved in specifying the meanings of words (and complex expressions) is given by Lakoff's Idealised Cognitive Models (ICMs - see Lakoff, 1987a: 282ff.). According to Lakoff, ICMs are the products of human conceptualising capacities and correspond to the main conceptual structures available to humans for making sense of their experience. What is more, they offer the background against which any given word is defined. To take just one example: to understand what *waiter* means, one has to grasp the whole ICM representing a restaurant. According to Lakoff (1987a: 286), such an ICM consists typically of a "scenario", i.e. an initial state, a sequence of events, and a final state, which jointly represent what usually happens when one goes to a restaurant. It is only against this wider ICM that the meaning of the word *waiter* can be understood. Other cases of concepts defined on the basis of ICMs of the "scenario" subtype are BUYER, which is characterised relative to a commercial exchange scenario, and SECOND BASEMAN, which is characterised relative to a baseball game scenario.

In a sense, then, ICMs can be grouped alongside other types of information-bearing mental structures which have made a career in cognitive psychology, such as scripts

---

[2] "Conceptual embodiment" is a term of Lakoff's (1987a: 12).

(Schank & Abelson, 1977), frames (Fillmore & Atkins, 1993), or mental models (Johnson-Laird, 1983). A crucial assumption about ICMs which, as far as I know, sets the above proposal apart from its corollaries in the literature involves the way ICMs are constructed. In Lakoff's view, ICMs are formed from basic-level and image-schematic concepts. Both of these types of concepts are the output of the lowest-level cognitive processing and, as such, form the building blocks of cognition. Basic-level concepts are those members of the hierarchies of conceptual categories which appear to have a privileged status with respect to a variety of tasks such as object naming and recall, category recognition, and language acquisition, as well as properties such as simple linguistic expression, or cultural significance. An example of a basic-level concept is FLOWER in the hierarchy PLANT - FLOWER - TULIP. As for image-schematic concepts, these are defined as abstract non-propositional conceptual structures which are used to shape perception and cognition. Candidates for image-schematic concepts are CONTAINER, SOURCE-PATH-GOAL, LINK, PART-WHOLE, CENTER-PERIPHERY, UP-DOWN, FRONT-BACK, etc. All of these concepts structure our experience of space, and contribute to the construction of ICMs through various combinations and transformations.[3]

These constraints on the formation of ICMs are in accordance with the Conceptual Embodiment thesis; both basic-level and image-schematic concepts are thought to arise from immediate physical experience as a result of the most basic human conceptualising capacities. Conceptual Embodiment places a second constraint on the construction of ICMs: those ICMs which correspond to abstract conceptual domains cannot be formed straightforwardly from the building materials I have mentioned so far. The claim is, then, that abstract concepts are formed on the basis of a metaphoric projection from concrete and experience-based ICMs. This metaphoric mapping among categories retains the basic image-schematic properties of the source ICM. For instance, in order to understand what *love* means, one would have to construct an ICM using the image-schematic structure of an already available, experience-based ICM, which can be more directly understood; for example, the ICM for JOURNEY can yield the metaphorical projection LOVE IS A JOURNEY which will give structure to the target concept (Lakoff & Johnson, 1980; Lakoff, 1990). As a consequence, lovers will be taken to correspond to travellers, the relationship will correspond to the vehicle, their common goals to their common destinations on the journey, difficulties in their relationship to impediments to travel, etc.

---

[3] Apart from the construction of ICMs, Lakoff (1987a) raises the possibility of using basic-level concepts together with the structuring devices of image-schemas to construct full-blown taxonomies containing superordinate and subordinate categories. This point is not relevant to my discussion and I will not consider it in what follows.

The existence of such a mapping is manifested in linguistic expressions such as *Our relationship has hit a dead-end street, Look how far we've come, We may have to go our separate ways, Our relationship is off the track,* and so on (Lakoff, 1990: 206).

There are various types of Idealised Cognitive Models in Lakoff's (1987a) system, and each of them is responsible for generating a series of prototype effects. Since my main concern is not with prototypicality, I will have nothing to say about this aspect of Lakoff's analysis. Instead I will illustrate how the basic tenets of the theory work by giving an analysis of systematic word meaning multiplicity, otherwise known as polysemy.

2.2 Polysemy

It is sometimes observed that natural language items often have more than one linguistically encoded meaning; moreover, it is felt that there are frequent cases when the encoded meanings are somehow related to each other, unlike classic lexical ambiguities of the *bank*-type. Lakoff (1987a: 416) mentions Fillmore's example of the adjective *long*, which can have both a temporal and a spatial sense, the latter being more central or prototypical. Another example is the preposition *up* in its two uses in *I'm feeling up today* and *The rocket went up*; again, Lakoff takes the spatial sense to be more central of the two senses.

Lakoff rejects the idea of a common abstract meaning underlying all the uses of the above lexical items for three reasons. First, on his view, a unitary meaning approach would yield very counterintuitive core meanings for most words, in the unlikely case that such abstract meanings could be formulated at all (see also Gibbs, 1994). Second, the various meanings a given item may convey are sometimes characterised by family resemblance, rather than by the fact that they all share an underlying semantic component (cf. the familiar Wittgensteinian example of *game*). Finally, the core meaning approach would be incapable of accounting for the typicality ratings associated with the individual concepts.

Lakoff concludes that a more satisfying way of dealing with this multiplicity of interconnected senses (polysemy) is to view lexical items as constituting natural categories of senses: thus, "some senses of a word may be more representative than other senses" (1987a: 417). The senses of a polysemous word may be related by various means, the most basic probably being conceptual metaphor.[4] The senses of *up*, for instance, are linked

---

[4] Other types of polysemy involve mappings within a single ICM: *window* may refer to an opening, a glass-filled frame, or the glass itself.

through a metaphorical mapping from the spatial ICM to the emotion ICM; it is the source ICM which structures the sense which is considered to be prototypical.

To take another example from Johnson (1987): a common source of systematic polysemy comes from the employment of the CONTAINER image-schema. This schema consists of a boundary distinguishing an interior from an exterior, thereby allegedly defining the basic distinction between the concepts IN and OUT. The immediate grasp of this schema comes from kinaesthetic bodily experience, since we experience our own bodies as containers; this image-schema is subsequently employed in metaphoric projections of the kinaesthetic into other (occasionally non-concrete) domains of experience, so that events, states and abstract entities are interpreted as spatially bounded entities. The result, says Johnson, is manifested in the systematic polysemy of various spatial prepositions, as the following examples demonstrate (ibid. p. 34ff.; cf. also Lindner, 1981; Brugman, 1988):

(1)   Tell me your story again, but leave out the minor details.
      (STORY EVENT AS CONTAINER)
(2)   I give up, I'm getting out of the race. (RACE EVENT AS CONTAINER)
(3)   Whenever I'm in trouble, she always bails me out.
      (STATE AS A CONTAINER)
(4)   Don't you dare back out of our agreement. (AGREEMENT AS CONTAINER)

Likewise, it is argued that abstract reasoning is understood in terms of the CONTAINER schema: for instance, class inclusion and other set-theoretic relations are assumed to be conceptualised in terms of manipulation of the CONTAINER schema.

The synchronic arguments supporting a polysemy-based account of (much of) lexical meaning are normally seen as part of a triplet, including also diachronic and developmental claims (Sweetser, 1990). More specifically, it is argued that those senses which are synchronically considered to be more basic/typical are often also the ones which appear first in both the ontogenetic and the phylogenetic development of language. To mention just a couple of standard examples: It seems a robust cross-linguistic fact that temporal expressions grew out of spatial ones (cf. the English *be going to*, the French *venir de*, etc.; Fleischman, 1990; Bybee, Perkins & Pagliuca, 1994; Traugott, 1989); this seems to parallel the synchronic polysemy of items such as the adjective *long*, mentioned above, in which the spatial sense is felt to be somehow more "basic" than the temporal sense. Similarly, Sweetser (1990) has made a case for treating the English modal verbs as synchronically polysemous between root and epistemic senses. She postulates a

metaphoric projection of kinaesthetic (force) image-schemas from the concrete, real-world domain which structures the root senses to the abstract, mental domain which structures the epistemic senses; furthermore, she adduces psycholinguistic and diachronic evidence which, in her view, lends further support to the priority of the root over the epistemic domain. More generally, the unidirectionality of semantic change from more concrete to more abstract meanings has been claimed within Cognitive Linguistics to offer some cognitive motivation to historical variation, thereby facilitating a unified view of both synchronic processes in the lexicon (e.g. metaphorical mappings) and successive stages of lexical competence.

There are, in my view, certain issues arising from the theory of concept formation and comprehension just sketched which merit further discussion. I will start with some questions concerning the central thesis of Conceptual Embodiment, and then move on to more specific objections. Although I will have to be very selective throughout, I believe that what I leave out does not affect my arguments or distort the overall picture of the theory.

3 The Conceptual Embodiment thesis

3.0 The view that linguistic meaning is 'grounded' in bodily movement and experience is best summarised by Johnson's (1987) metaphor 'the body in the mind'. Quick reminder: Conceptual Embodiment stems from the assumption that the fundamental innate conceptual resources available to humans consist of the ability to form image-schemas and basic-level categories (the capacity to form ICMs and to project metonymically/metaphorically from concrete to abstract concepts largely relies on these resources). In this section I am going to concentrate on broad background objections to this proposal, leaving more specific questions about mental imagery and metaphor for the sections to follow.

3.1 Experience and concept formation

An immediate difficulty with almost all formulations of the Conceptual Embodiment thesis comes from the vague metalanguage which is used to substantiate it. Let me take a concrete example: Lakoff & Johnson (1980:177), after acknowledging that there are some things which are directly understood via our immediate experience in our environment, go

on to point out:

> Many aspects of our experience cannot be clearly delineated in terms of the naturally emergent dimensions of our experience. This is typically the case for human emotions, abstract concepts, mental activity... Though most of these can be *experienced* directly, none of these can be fully comprehended on their own terms. Instead, we must understand them in terms of other entities and experiences, typically other *kinds* of entities and experiences. [emphasis in the original]

And elsewhere (p. 59):

> Perhaps the most important thing to stress about grounding [of concepts] is the distinction between an experience and the way we conceptualize it. We are not claiming that physical experience is in any way more basic than other kinds of experience, whether emotional, mental, cultural, or whatever. [...] Rather, what we are claiming about grounding is that we typically conceptualize the nonphysical *in terms of* the physical - that is, we conceptualize the less clearly delineated in terms of the more clearly delineated. [emphasis in the original]

I think that, in order to fully grasp what Conceptual Embodiment amounts to, one needs to be a lot clearer about what is meant by the following: (a) experiencing vs. understanding; (b) concrete/experiential vs. abstract concept; (c) representational difficulty/complexity. Some clarification is especially called for when claims of such breadth are made: "[metaphoric concepts] structure not just our language but our thoughts, attitudes, and actions" (Lakoff & Johnson, 1980: 39). A first approximation to what is meant by the previous passages is this: some concepts (such as emotion concepts, abstract concepts, and the like) are more difficult to grasp than, say, concepts for concrete objects; therefore, only the latter, but not the former, can be directly represented. This interpretation entails that, say, the concept CONTAINER is easier to grasp than the concept LOVE, a prediction that seems acceptable to Cognitive Linguists but rather counterintuitive to me. A second interpretation, which is favoured by Lakoff himself (p.c., cited in Murphy, 1996: 190), is that, rather than some concepts being "difficult", it is the nature of the experience which disallows direct representation. When the experience is poorly structured (as is the case with emotions, for instance), another experiential domain will be used to (metaphorically) provide structure for it. It is not clear how the notion of structure applies to experience -

rather than to concepts used to represent experience; in what follows, I will continue to refer to structure of concepts and build on the first interpretation (with its possible construals).

In an attempt to clarify the metalanguage, one might plausibly suggest that the only innate conceptual resources allowed by the Conceptual Embodiment doctrine are strictly sense-based. This is an idea already encouraged by the primacy of basic-level concepts in Lakoff's (1987a) account of concept acquisition; it also seems to accord with the following passages describing the formation of the concepts MORE and PURPOSE through image-schemas and metaphor (Lakoff & Turner, 1989: 83):

> [I]n our everyday experience we constantly encounter cases where an increase in substance (e.g., pouring more water in a glass) increases the height of the substance (e.g., the level of the water in the glass). This provides us with a strong experiential basis for the basic metaphor MORE IS UP.

> PURPOSES ARE DESTINATIONS has almost as strong a grounding in everyday experience. Regularly, throughout each day, the achievement of certain purposes requires going to a certain location, as in going to get a glass of water... [We] regularly experience the source and target domain together...

What these descriptions urge, then, is that the acquisition of all non-sensory concepts proceeds through inductive generalisation from experience (i.e. perceptual evidence). Although not put in these terms in the Cognitive Linguistics literature, this should be crucially involved in both the formation of image-schematic and basic-level concepts and in the metaphoric/metonymic projection from the concrete to the abstract domain. In a sense, both 'basic' and abstract (i.e. non-sensory) concepts are acquired through learning, in particular through repeated associations in the environment.

If this picture looks increasingly familiar, this is not surprising: what we have ended up with is, I think, a version of the Empiricist account of concepts. According to the Empiricist story, humans possess a primitive conceptual basis which is much smaller than the set of concepts which are lexicalised in natural language; it consists (roughly) of sensory concepts, which are the output of the receptive mechanisms of the organism across the range of inputs that it responds to. Primitive concepts lack any internal structure. In order for a fuller conceptual apparatus to be developed, the organism has to submit the range of primitive concepts to a combinatorial mechanism; the latter is responsible for the construction of all complex concepts. Since this account is supposed to

exhaust the concepts potentially available to the human organism, the 'Empiricist maxim' follows: nothing is in the mind except what is first in the senses. As to the precise process of concept acquisition, most Empiricist accounts agree that it amounts to concept learning through hypothesis formation and evaluation, and thus involves the mechanisms of inductive logic (for a fuller account see Fodor, 1981: 264ff.).

I think that this convergence of views between Cognitive Linguistics and the Empiricist theory of concepts is far from accidental; for instance, almost any account of concept acquisition which assumes a set of basic, primitive concepts is bound to consider sensory concepts as plausible candidates for that set. The problem with such accounts is that they have to face the well-known objections to inductive theories of learning, objections which have been raised most forcefully by both Chomsky and Fodor and have served as motivation for strong (albeit very different) innateness theses (for an overview, see Piatelli-Palmarini, 1980; 1995).

I will just consider (a version of) what I take to be Fodor's strongest argument against the idea of concept learning (Fodor, 1975; 1981) and show that it applies straightforwardly to the Conceptual Embodiment thesis. Consider PURPOSE, an abstract concept which, on the Cognitive Linguistics story, should be attained through projection from the image-schematic concept of DESTINATION (itself acquired at a yet more fundamental, sensori-motor level, and thus 'directly'). In order for an individual to acquire the concept PURPOSE, s/he must form the hypothesis "A PURPOSE IS A DESTINATION OF X SORT" (where the last qualification is supposed to capture extra conceptual material added after the projection of the image-schema of DESTINATION - the exact way of representing the projection is of no particular importance here). *But the hypothesis that is meant to lead to the attainment of a concept already includes that concept*; hence the concept of PURPOSE should be available to the organism before the process of hypothesis formation (let alone evaluation) has even begun. Fodor's conclusion is that experience cannot lead to the acquisition of concepts which did not already exist in some form or other in the individual's cognitive device - in my view, the above demonstrates at least that there has to be a strong innate predisposition for the formation of certain concepts rather than others - including abstract concepts, which cannot rely for their acquisition on cross-domain projection from concrete concepts.[5]

---

[5] The same argument applies to many different aspects of so-called concept learning. For instance, Lakoff (1987a) believes that basic-level concepts (e.g. DOG) can give rise, through the (unspecified) working of our conceptualising capacities, to subordinate and superordinate concepts (SPANIEL and ANIMAL respectively). This would involve entertaining hypotheses of the sort: "A SPANIEL IS A DOG OF X SORT", which again explicitly involve the concept-to-be-learned and, therefore, presuppose its availability.

It appears that the formula "A PURPOSE IS A DESTINATION OF X SORT" cannot do duty as an inductive hypothesis for concept learning because its first part (the concept PURPOSE) is problematic; I now want to claim that its second part is problematic as well, to the extent that it relies on the idea of concept decomposition. Notice that an important assumption of the Empiricist story was that all non-sensory concepts can be decomposed into sensory concepts plus some logical syntax. A version of this idea appears in Lakoff's (1987a) account of conceptual structure: for instance, a concept such as PURPOSE decomposes into an image-schema (DESTINATION) plus some extra conceptual material. This is precisely what the qualification "OF X SORT" was meant to capture in the representation of the concept above. However, the view that concepts decompose exhaustively, i.e. that they can be defined on the basis of necessary and sufficient conditions, has been consistently shown in the past to be misguided (see Fodor, 1981: 284ff.). In our example, a fuller specification of the content of PURPOSE would involve spelling out the content of the qualification "OF X SORT" attached to the concept of DESTINATION. Now any further specification should be something which, added to DESTINATION, would yield PURPOSE; what is more, it should be *external* to DESTINATION and distinct from it. It turns out, though, that no such specification can be adequately formulated; hence, the decompositionalist program collapses. Worse, as Fodor, Fodor and Garrett (1975) have shown, it is *logically impossible* to give any such specification: the property sought (let's call it the property X) has to satisfy two conditions: a) it should be logically independent of the property of being a container, and b) it should be such that SOMETHING IS X and SOMETHING IS A DESTINATION jointly entail SOMETHING IS A PURPOSE. It is easy to see that no such property X can be supplied.

I have given a rather strong formulation of the familiar 'poverty of the stimulus' argument, which presents a problem for classical Empiricist accounts of concepts and, I have claimed, contemporary theories based on Conceptual Embodiment: the only *structures* explicitly assumed to be innate by this thesis are image-schemas, which by definition grossly underspecify all subsequently formed concepts; however, it is very difficult to supplement these basic structuring blocks with some machinery which would flesh them out into full conceptual entries.[6] At this stage, I anticipate an objection:

> Your analysis notwithstanding, one might point out, it is simply misleading to

---

[6] Indeed, image-schemas are meant to precede (and structure/direct) perception. This is the only step towards acknowledging specific innate conceptual resources that Cognitive Linguistics is prepared to take (and even that is not free of problems, as I argue in the section on imagery).

interpret the Conceptual Embodiment thesis as a reintroduction of Empiricism. For one thing, to link Cognitive Linguistics with a revival of decomposition is surprising, given that the theory is offered as an alternative to both the classical view of concepts, on which concepts can be adequately defined, and to the corresponding 'checklist' theories of word meaning (Lakoff, 1987a; Sweetser, 1990; Gibbs, 1994). Lakoff himself (1987a: 164) argues against what he calls "empiricist objectivist cognition", whose position he summarises thus:

"We acquire our concepts, that is, the symbol systems that we use in thought, through accurate sense perceptions in such a way that they correspond systematically to entities and categories in the world";
his own views represent an experientialist-nativist position, on which "at least some concepts are inborn and [...] those concepts mean what they do because we are the kinds of beings that we are, rather than because they correspond to some external reality" (ibid. p.165).

Also, the picture of concept attainment you have presented may not be accurate. In your PURPOSE argument, it is conceivable that one does not have to locate the exact properties which have to come in and flesh out the DESTINATION image-schema to the full-blown concept PURPOSE: it suffices to say that conceptual attribute manipulation of some type takes place before the full concept comes into being. After all, the formation of the abstract concept involves a metaphoric projection across different domains: it is to be expected that some properties will be carried over from one domain (that of physical experience) to the other (that of abstract, non-experiential experience).

This objection won't do, though. Firstly, it is true that Lakoff (1987a) explicitly distinguishes his theory from the empiricist position that language is a 'mirror' of external reality (i.e. that objective correspondences exist between natural language categories and classes of objects in the world), and limits the scope of Cognitive Linguistics to cognition-internal categories and phenomena. Nevertheless, even within the realm of internalist, individualistic theories of cognition, there is room for a variety of stances from the more empiricist to the ardently nativist, depending on the exact sort and extent of 'hard-wired' conceptual resources attributed to the organism. My claim has been that the Conceptual Embodiment thesis lies at the empiricist end of the innateness spectrum, for the only conceptual resources it recognises are experience-led/sensory. The limitations of this approach become obvious if one compares the innate conceptual apparatus warranted by Conceptual Embodiment with that adopted by other contemporary theories - a mater I will

return to after dealing with the next point.

Secondly, and more importantly, we cannot be content with claims with such breadth and boldness as the Conceptual Embodiment thesis unless it shows how the precise dependencies it postulates among concepts are realised. Since concept attainment offers a solid test-bed for such dependencies, to invoke "conceptual manipulation of some sort" in order to salvage the predictions of the thesis is question-begging. To illustrate: Conceptual Embodiment does not simply claim that one can infer properties of purposes from properties of destinations, or that having the concept PURPOSE somehow cognitively presupposes having the concept DESTINATION - rather, it makes the stronger claim that, using DESTINATION as an image-schematic blueprint, humans construct via their conceptualising capacities the concept PURPOSE. One may indeed attempt to answer the question of how novel concepts get filled in (given that image-schemas underdetermine the output of concept formation) in terms of inter-domain transfer of properties; then, however, the problem is pushed from the level of single *concepts* to the level of conceptual *domains.* Moreover, since the abstract/concrete domain distinction is not explicated, it is not obvious that it solves the problem of furnishing the missing attributes of abstract concepts.

In support of Cognitive Linguistics, one might point out that the theory postulates specific *abilities* which are obviously meant to deal with hypothesis formation and evaluation (such as the "conceptualising capacities" which are responsible for developing image-schematic and basic-level concepts, as well as for constructing ICMs, and complex or abstract categories). This suggestion, though, does not offer any actual help so long as conceptualising capacities do not actually correspond to innate *concepts* (or conceptual formats): powerful though they may be, these processing abilities *in principle* operate on impoverished representational resources (:image-schemas). It is interesting to note that most current psychological research seems to support a more radical innateness position. On this view, conceptual knowledge is highly domain-specific, i.e. it is organised in terms of evolved, complex conceptual networks which are acquired at different times and in different ways but with a consistency across subjects which militates in favour of strong innate pre-programming (for an overview, see Bloom, 1993; 1995; cf. also Keil, 1989; Carey, 1991; Carey & Gelman, 1991; Hirschfeld & Gelman, 1994; Sperber, Premack & Premack, 1995). Core areas which appear strongly underwritten by innateness are psychology, geometry, physics and number (Spelke, 1995): concepts in these areas are claimed to be part of the organism's initial knowledge which surfaces as early as infancy. None of these developmental facts squares very well with the constraints placed by

Conceptual Embodiment.[7]

     To sum up so far: it seems that the Conceptual Embodiment thesis yields a somehow impoverished basis for conceptual development. In the remainder of this section, I would like to point out that the thesis occasionally falls short on predictive power.

3.2 Predictions and predictive power

In the above paragraphs I argued that the Conceptual Embodiment thesis is intended to cover actual dependencies between concepts which direct the process of concept formation. One would then expect the theory to be able to make specific predictions in at least two areas: language acquisition, and language-related deficits. To take language acquisition first, the Conceptual Embodiment thesis entails that specific classes of concepts will appear earlier than others almost by definition: image-schematic and basic-level concepts are bound to be acquired early in development, whereas abstract concepts will appear later. As a result, the thesis postulates precise dependencies across concepts/conceptual classes. Take, for instance, the kinaesthetic image-schema of SOURCE-PATH-GOAL. According to Lakoff (1988), this schema is used in the comprehension of primary, experience-based concepts such as DESTINATION (this is a specialisation of the GOAL concept for exclusively spatial end points). At a later stage, the concept of DESTINATION will be used as a basis for acquisition of the concept of PURPOSE (see the passage from Lakoff & Johnson, 1980 above). The theory thus predicts a developmental sequence from the concept of DESTINATION to that of PURPOSE. Similarly, on the level of developmental and/or language deficits, one would expect 'natural' classes of concepts to be similarly affected; for instance, an inability to use figurative language (manifested, among others, in autistic subjects) should coincide with an inability to handle concepts which involve metaphoric or metonymic projections - in fact, by definition, all abstract concepts. The question now arises whether these predictions are borne out.

     As far as I know, not much attention has been devoted to the Conceptual Embodiment thesis within psycholinguistic research (and, in fact, as I mentioned above, a lot of current

---

[7] The conditions of the Conceptual Embodiment are not always applied equally forcefully in accounting for specific data. Consider the concept PURPOSE again: on anybody's account, INTENTION is a crucial element of PURPOSE. This is captured in the Cognitive Linguistic account through the image-schema of DESTINATION, since the latter is not purely perceptual but tacitly involves appeal to intention. In this way, a non-sensory, abstract (hence presumably "not clearly delineated") category is presupposed in the analysis.

writings on conceptual and linguistic development propose much richer candidates for innate status). Of course, the assumption that basic-level concepts appear early in development does have considerable empirical backing but this assumption was established independently of Cognitive Linguistics and is not theory-specific. When one examines certain theory-bound predictions, such as the precedence of JOURNEY and DESTINATION over LOVE and PURPOSE respectively, then things become less straightforward; I chose these two examples because it seems to me that they stipulate particularly unlikely dependencies. More robust examples come from emotion concepts, which are again claimed to be impossible to grasp directly (Lakoff, 1987a; Lakoff & Johnson, 1980); the concept of ANGER is thus standardly analysed as PRESSURE IN A CLOSED CONTAINER, a metaphor which underlies expressions such as the following:

(5)   a.   He flipped his lid.
       b.   The pressure built until he exploded.
       c.   He couldn't hold in his anger anymore.

However, as Ortony (1988) has shown, anger and other emotions are experienced by children much earlier and much more extensively than the domains supposedly used to structure them. Since the Conceptual Embodiment thesis urges precisely the experiential basis of thought, one would expect the concepts for emotions to be represented/grasped directly via our emotional experiences, rather than in terms of more 'concrete' concepts.[8] What is more, as reported in Wellman (1990), there is some evidence that children can already reason about emotions around the age of three or four. This implies that whatever metaphorical or other mappings are necessary in order for these concepts to be acquired should have taken place before that age. Although this is obviously an empirical issue, it is highly improbable that children that young have at their disposal complex concepts such as PRESSURE IN A CLOSED CONTAINER, and even more so that the development of such concepts is necessary in order for simple concepts like ANGER to be acquired. In any case, the onus of proof seems to rest with the view that emotion (and, generally, abstract) concepts are relatively difficult to represent, and this is not an issue which can be settled by definition.

Similar comments can be made for cases of cognitive and/or linguistic deficits. If the acquisition of a variety of concepts crucially rests on repeated environmental associations

---

[8] See also the extensive discussion in Murphy (1996).

(Lakoff & Johnson, 1980), then inability to form such associations should heavily restrict the final output of the human conceptualising capacities. Evidence from blind children suggests otherwise. As Landau & Gleitman (1985) report, in order to capture the ability of congenitally blind children to deploy a rich system of concepts (and word meanings), one should posit a rich innate conceptual endowment, which goes well beyond what Cognitive Linguistics and the Conceptual Embodiment thesis provide; the two researchers, placing themselves within a larger tradition of investigators, describe the candidates for innateness as "categories which are remote from sensation" (p.178). Similarly, children suffering from autism have manifest deficiencies with figurative language, for instance, creative metaphor (Baron-Cohen, Tager-Flusberg & Cohen, 1993; Happé, 1994). To my knowledge, though, there is no evidence to suggest that this feature is coupled with an inability to handle abstract notions such as temporal or emotion concepts (TIME, LOVE, etc.) - although, on the Conceptual Embodiment thesis, the derivation of abstract concepts crucially involves metaphorical mappings from the concrete, experiential level.[9]

There is a final objection which I want to raise to the Cognitive Linguistics approach. The Conceptual Embodiment thesis seems to rely by definition upon a distinction between the mental and the physical/experiential; in other words, it tacitly assumes a rather traditional mind/body distinction, and expects meaning in natural language to be generated by the conceptualising capacities of the mind, albeit grounded in the operations of the body. The difficulty with the mind/body distinction is, of course, that it is barely intelligible, let alone scientifically respectable (at least from a naturalistic perspective; see Chomsky, 1993; Warner & Szubka, 1994). More specifically: although in general discussion Lakoff (1987a) argues that "the information-processing system of the body is a joint body-mind system, not factorable into purely mental and purely bodily functions (...)" (p. 351) and Johnson (1987) talks about the "body-in-the-mind", in the course of particular analyses a mind/body dualism creeps back in. Take kinaesthetic image-schemas: Lakoff

---

[9] It is sometimes pointed out that the aim of the Conceptual Embodiment thesis is not prediction but rather motivation, i.e. a (post hoc) explanation of the directionality of mappings in figurative expressions, polysemy, and so on (Lakoff, 1987a; Lehrer, 1990). In fact, not all adherents of experientialism consistently limit the predictive power of the theory. To mention just one example, in her analysis of the English modals, Sweetser (1990) is happy to find that the meanings she takes to be basic (the root meanings of obligation, permission, etc.) are acquired earlier by children than the derived, epistemic meanings (possibility or necessity based on evidence); here, the directionality of the mapping from the concrete (root) to the abstract, mental (epistemic) world is taken seriously and is used to correlate synchronic polysemy to acquisitional facts. This is precisely the sort of empirically testable predictions which could positively supplement the Conceptual Embodiment thesis (although for a reanalysis of the acquisitional data from modality, see Papafragou, 1998/forth.).

(1987a) seems to introduce them as a case *par excellence* of something *bodily* (hence the term "kinaesthetic") which is, nevertheless, instrumental in shaping *mental* constructs (i.e. concepts). The very notion of "embodiment" presupposes the existence of something coherently called "the body" (as opposed to what? presumably "the mind"). Similarly, quite a few other Cognitive Linguistics writings build systematically on the physical-mental (or concrete-abstract, or external-internal) distinction (see Lakoff & Johnson, 1980; Sweetser, 1990). Consequently, it appears that - claims to the contrary notwithstanding - what the Conceptual Embodiment thesis sets out to show is that the boundary between the physical/bodily and the mental is transcended through a variety of processes and mappings, rather than that such a boundary does not exist in the first place.

Let me summarise what I have done in this section. I have initially argued that there are a number of vaguenesses in the theoretical foundations of the Conceptual Embodiment thesis. I have proposed one plausible way of clarifying the metalanguage, as a result of which the experientialist position leaves open certain questions about concept attainment. Finally, I have suggested that the theoretical framework occasionally fails to generate the right predictions. In the two sections to follow, I will build on the discussion of Conceptual Embodiment in order to illustrate some problems vis-à-vis imagery and metaphor.

4 Imagery

4.1 Introduction

My arguments in what follows concentrate on the Cognitive Linguistics notion of image-schemas and their role in the formation and exploitation of the mental lexicon; they are applicable, however, to other holistic models of the lexicon which attribute a pivotal role in structuring concepts to perceptual blueprints (see Barsalou, 1993; Jackendoff, 1996).

To recapitulate: image-schemas, in Lakoff's (1987a) original model, are abstract preconceptual structures which organise perception and more advanced (:detailed) kinds of mental imagery (see p. 444ff.). They are specifically distinguished from two types of detailed mental images which are recognised within Cognitive Linguistics: context-bound specific conscious effortful rich images, and conventional images. The first type has already been the subject of a number of studies in cognitive psychology, most notably by Shepard, Kosslyn and their co-workers (Lakoff cites the work of Shepard & Cooper, 1982; Kosslyn, 1980; 1983): such studies have posited the existence of a mode of mental representation which is distinct from the propositional mode familiar from algebraic

models of the computational mind. The thrust of such research has concentrated on subjects' performance in a number of experimental tasks that (arguably) involve the formation and manipulation of mental images: e.g. scanning, rotation, etc. Lakoff's characterisation of the mode of presentation of this imagistic information captures the fact that the pictures formed were related to a specific object the experimenters presented to the subjects (context-bound/specific), they were set up and handled through conscious and concentrated effort (conscious & effortful), and included a considerable amount of representational detail (rich).

Conventional images are mental images which are rich but not effortful: they are constructed automatically and unconsciously. They also lack the properties of specificity and context-boundedness: one can, upon request, bring to mind the image of a ball without that object being present in the immediate physical environment. One might argue that, among other things, conventional images are the means of representing knowledge of prototypes for a given category, i.e. typical members of categories, social stereotypes and the like, which demonstrably play an important role in object classification and goodness-of-example judgements. On Lakoff's view, images of prototypes are conventional since they appear to be pretty much the same across the members of a given community. By the same line of reasoning, conventional images are involved in representation of the meaning of so-called "imageable idioms" (ibid. p. 447), such as *to keep someone at arm's length*, *to spill the beans*, and so on (see also Gibbs & O'Brien, 1990).

Image schemas resemble conventional images, but are neither rich nor specific. Their function is to structure rich mental images and perception. According to Lakoff (ibid. p. 453-5), our ability to judge whether a given sentence (say, *The plane is flying over the hill*) fits a (perceived or imaginary) scene (here, a scene of a plane flying over the hill) depends on the closeness of fit between (a) the image schemas associated with lexical items in the sentence, and (b) the image schemas that structure the perception/imagination in which the scene appears. In the example mentioned, for instance, the image schema structuring the preposition *over* should correspond to the image schema structuring the perceptual/imagistic representation of the spatial position of the plane.[10]

I have two sorts of worries about the notion of image schemas. The first has to do with the solutions these schemas urge with respect to purely linguistic issues such as word meaning and compositionality. The second concerns the relationship of image schemas to

---

[10] I have mainly concentrated on Lakoff's ideas about image schemas; other researchers working in this area are Talmy (1988), Langacker (1987, 1991), Lindner (1981), Fauconnier (1985, 1997), etc. - see also the papers in Fauconnier & Sweetser (1996) and Nuyts & Peterson (1997).

perception. I will discuss them in that order.

4.2 Linguistic considerations

Several of the questions which arise in the mental imagery domain (both of the Cognitive Linguistics and of more standard varieties within cognitive psychology) connect to the fact that the current state of the art has not yet reached a satisfactory level of precision. Most discussions complain about the lack of terminological clarity (cf. Sterelny, 1990; Block, 1990); moreover, several researchers have pointed out the difficulty of restating issues or problems traditionally dealt with in propositional terms within an imagistic framework. The first range of difficulties I will consider stems from the apparent incompatibility of image schemas with well-founded requirements on semantic representations (which present no problems for propositional representations): if image schemas are assumed to structure meaning-bearing items such as words or sentences, then they should obey such requirements. The problem is that, at least as I interpret them, image schemas are incapable of doing so.

Consider a word like *container*. Since there is a CONTAINER image-schema, it makes sense to think that the meaning of the word is given by that image schema (or, in the weak case, that the image schema gives rise to various instantiations of the concept CONTAINER within a single ICM, depending on extra features the schema takes on - for size, shape, colour, etc.). Now what about the complex expression *cheap container*? Compositionality requires that the complex concept CHEAP CONTAINER be reconstructible from its constituent concepts plus regular combinatorial possibilities for concepts. The question that arises now is: how can an image-schematic component of meaning combine with a non-imagistic one in the formation of complex concepts? Assuming that CHEAP is not structured by an image-schema, but is a regular building block of propositional structures, how can it combine with CONTAINER to yield a coherent representation? Furthermore, what *is* the form that the ultimate representation will assume? Is CHEAP CONTAINER going to be a propositional or a pictorial concept? I am not particularly concerned with the accuracy of the specific example: maybe there is a way around that. My point is rather more general: to the extent that there are aspects of propositional structure for which an imagistic account has not yet been formulated (and is not forthcoming), it is difficult to see how some well-established requirements on semantic representations can be satisfied by 'mixed' structures. The problem will become clearer in the ensuing discussion, where I will consider the division of labour between pictorial and

propositional modes of representation: suffice it to say for the moment that certain phenomena such as quantification, tense, and so on do not lend themselves very easily to an image-schematic treatment, whereas they can be dealt with straightforwardly by existing propositional models. To the extent that some areas are recalcitrant to a reanalysis in imagistic terms, the trouble with compositionality will persist.

As a matter of fact, problems of semantic composition appear not only on the sentence level but on the word level as well. Consider again the concept PURPOSE. I have previously concentrated on the difficulties of offering a plausible decompositionalist analysis for the concept; now I want to turn to another aspect of the process of breaking down the concept into its parts. One of these parts is the image schema for DESTINATION; what about the conceptual material which is assumed to flesh out the concept PURPOSE? If it is not of pictorial format itself, it is difficult to see how it would coherently combine with the image schema to yield the full-fledged concept of PURPOSE. If it is of pictorial format, then we are back to the problems of compositionality on the sentence level.[11]

Compositionality is not the only reason why image-schematic representations might fail to do duty as semantic representations. Another reason has to do with the fact that image schemas, like all pictures, are bound to be characterised by a considerable degree of indeterminacy. This is admitted in Lakoff's original (1987a) formulation, which stresses the *schematic* nature of what he takes to be basic structuring devices in cognition and perception. The issue now is: how does one know what a given schema is a schema *of*? Presumably a U-like image schema could be meant to represent a container, but it could equally well represent a diverted path, a hole or a hill viewed upside-down. In most psychological accounts of imagery it is acknowledged that similarity between the object of representation and its mental image is too simple a criterion to constrain what a mental image is an image of (Block, 1981); in other words, images have to be entertained under a description, i.e. as images *of* an object. This solution does not apply to image schemas,

---

[11] Consider a parallel: on one interpretation, prototypes are mental images of representative members of a category (Lakoff groups them under conventional images). However, prototypes cannot easily function as word meanings because it is unclear how they could conform to the compositionality requirement (as Lakoff himself has argued - see Lakoff, 1987b; Fodor & Lepore, 1996). Although no connection is usually made between the imagistic nature of prototypes and the failure to obey compositionality, the two properties might be connected. If true, this would be a situation similar to image-schemas: in both cases traditional properties of propositional representations would be hard to translate into representations containing imagistic structural elements.

however; they are not products of the intentions of a thinking agent who can indeed view them as images of something. According to Lakoff, image schemas are preconceptual, non-intentional structures, so it is not entirely clear how they manage to refer. Given their abstractness and the fact that they radically underdetermine fuller concepts (and percepts), one might be tempted to think that a device should exist for interpreting these schematic constructions as blueprints for this or that concept (or percept). This line of reasoning, though, would lead one to acknowledge the existence of a homunculus inside the human organism, whose task it is to 'interpret' image schemas and flesh them out into fully developed concepts.[12] The idea of a homunculus, of course, hardly makes sense in cognitive psychology (see the contributions in Block, 1981; Lycan, 1990). Still, it is hard to see how else to conceive of the way image schemas are meant to function.[13]

Lakoff's proposals themselves occasionally seem to rely on the existence of a homunculus. At one point, he maintains that image schemas do not always appear in the form of individual dot-matrix images; motion, for instance, would come out as a property of a sequence of such images, without occurring in any individual image (1987a: 455-6). Another example is the image schema involved in grasping what is meant by *over* in *Sam lives over the hill*, which represents "an understood path that goes over the hill"; according to Lakoff, "[s]uch an understanding may be part of what is perceived or imagined, but it is not in a dot-matrix representation [as more standard work on imagery would have it]" (ibid. p.456). In both cases something like a homunculus is needed, firstly to superpose an image schema for motion and secondly to ensure that the image schema for movement along the path, although not explicitly represented, is somehow activated and contributes to the comprehension of the utterance. If one wants to avoid the idea of a homunculus at all costs, I can see no other solution than to admit that image schemas can function in more than one way: (a) as basic structural elements of imagistic representations (as I have so far assumed them to be); and (b) as properties/functional roles of an imagistic representation, which are not recoverable just by looking at the representation (see the *over* case); (c) as

---

[12] Alternatively, one might construct a causal account, in which an image schema would be mobilised en route from the sensory input to the conceptual representation; on this account, indeterminacy would arise 'in context' for the concept-assigning device. However, this is not an account Lakoff would endorse, since he does not seem to consider image schemas to be distinct enough from concepts. (I am indebted to Deirdre Wilson for comments on this point).

[13] I have already discussed the problems caused by the underdetermination of full concepts by image schemas for 'concept acquisition' and I won't repeat the point.

relations/functions which organise a series of imagistic representations and are not recoverable just by looking at individual members of the series (see the motion case). Notice that, in this tripartite definition of image schemas, part (a) defines them as representations/elements thereof, while parts (b)-(c) define them as functions. There is an element of inconsistency here, I think, or at least a point that needs clarification. I am only concerned with linguistic implications in this section; thus, suffice it to point out that, since image schemas have, among other things, a semantic role to play (in structuring word meanings), one needs to be a lot clearer as to what precisely these amount to before they can be employed in a theory of meaning.[14]

4.3 Image schemas and perception

The connection between mental imagery and perception, visual perception in particular, is well-established in all versions of pictorialism in cognitive psychology (see Kosslyn, Pinker, Smith & Schwartz, 1981; Schwartz, 1981, and the overviews in Block, 1990; Sterelny, 1990). What sets the Cognitive Linguistics tradition apart is the claim that image schemas, apart from being basic building blocks of concepts, are also innately available as constraints on the sorts of *percepts* we construct. So, the claim goes, image schemas are preconceptual elements, which contribute to the construction of parallel (or at least compatible) structures in perception and cognition. It is precisely due to this role of image schemas that the possibility exists for linguistic descriptions to match (to a greater or lesser degree) a perceived or imagined scene.

   The claim that perception is structured by image schemas is not always presented with equal consistency. For instance, the theory seems to lapse into circularity when it is argued that "image schemas are a reflection of our sensory and general spatial experience" (Lakoff, 1987a: 443): if they *reflect* such experience, how can they simultaneously shape it? Furthermore, it is argued that image schemas structure not only vision but also other types of perception; so apart from vision-oriented image schemas, there are olfactory, kinaesthetic, gustatory image schemas, and so on. The nature of all these other types of image-schematic structures is, however, rather obscure (as conceded by Lakoff himself).

---

[14] Suppose we grant that (the meanings of) at least some concepts are imagistic representations: it would still be hard to see how the same line of reasoning could be applied to (the meanings of) sentences. Take *Sam lives over the hill* again: if we maintain that the thought the utterance explicitly expresses is an image (as Lakoff's writings seem to suggest), this will reintroduce the problem of the indeterminacy of pictures with greater force.

Take an auditory image schema: we cannot easily see what sort of information it would contain, and how it would structure either auditory input or auditory (non-propositional) mental 'images'. It is probably no coincidence that there is very little in the literature on 'rich' non-visual mental images themselves, although their existence is often acknowledged (Schwartz, 1981).

When we get to kinaesthetic (movement-based) image schemas, things become even less clear. Consider the domain of force-dynamic image schemas, which includes COMPULSION, BLOCKAGE, COUNTERFORCE, DIVERSION, REMOVAL OF RESTRAINT, ENABLEMENT, ATTRACTION and so on (Johnson, 1987: 45-47; cf. Talmy, 1988; Sweetser, 1990), and is activated in the comprehension of the following examples:

(6) a. The enemy forced us to retreat.
   b. Something is blocking my view.
   c. There was pressure from both parties.
   d. We had to go around the mountain.
   e. Children are allowed in the exhibition.
   f. You can leave now.
   g. I find your wife very attractive.

Now the claim is that such image schemas structure not only fuller concepts like the ones involved in the utterances in (6), but also perception - and this is where unclarity sneaks in: according to Lakoff, these schemas structure not kinaesthetic perception (as one would expect) but "bodily movement" itself. There are all sorts of objections to this suggestion, the most obvious being that it subsumes two very different things, let's say movement patterns and cognitive patterns, under a single source. The type of (innate) preconceptual structure which can impinge on anything from concepts to perceptual input and bodily movement is a very mixed bag indeed.

To illustrate just how mixed it is, I want to go back to the more straightforward, vision-related image schemas. Since image schemas structure both percepts and concepts, and can provide the metric for closeness-of-fit judgements between visual and linguistic (conceptual) representations, I assume that visual/perceptual input and conceptual structure are isomorphic to a considerable extent (enough so that commonalities in image-schematic structure can be detected); this result is also supported by the Cognitive Penetrability thesis, on which there is no specialised linguistic faculty with its own proprietary data-base. Now any arguments against such an isomorphism would

automatically question the validity of image schemas as bridges between language and vision. I will discuss one simple argument for the difference between the output of the perceptual transducers and the conceptual representations in the 'central systems'. Let's assume (with Fodor, 1983, and most cognitive psychologists) that what I have called the "output of the perceptual transducers " is actually layered and consists of a sequence of transformations of the initial representation of the perceptual stimulus. As far as I understand Lakoff's claim, it amounts to saying that it is the *initial* representation of the stimulus which is shaped by image schemas. So the process of perceiving, for instance, a ball in a basket includes the following sequence: a) an initial image-schematic stimulus representation (in terms of the CONTAINER image schema); b) various stages of transformations, during which the abstract image-schematic structure is filled out; presumably, stage (b) is further processed to yield a full-fledged conceptual representation. The latter would be very similar to the output of the process of comprehending the utterance *The ball is in the basket.* Now, given that the original output of the transducers' and the final conceptual representation are separated by various stages of transformations, it is not immediately clear that any isomorphism - however crude - exists between them. Well, one might say, maybe the isomorphism holds between the *final* output of the perceptual transducers (:the endpoint of transformations) and the full-fledged conceptual representation: that is, maybe image schemas shape the uppermost levels of perceptual processing.[15] This is more plausible, but it follows from nothing in Lakoff's (1987a) work, which seems to favour the stronger view about the role of image schemas in perception. There is another possibility, one could insist: it might be more accurate to view the isomorphism as occurring between the initial, crude form of the visual input, and our *preconceptual* resources, our building blocks for concepts, as it were. This could be seen on one level as a truism, since what our concepts look like has to be - to some degree - determined by constraints imposed initially by low-level perceptual mechanisms; construed as a non-trivial claim, however, this would imply that the *crucial* properties of our cognitive repertoire (image schemas), which have implications for higher-level conceptual capacities (e.g. the employment of abstract categories through image-schematic mappings), are also present in the form of general constraints on low-level visual representations. Although low-level visual representations are better candidates for being structured by underspecified devices such as image schemas than our preconceptual

---

[15] Fodor (1983: 97) suggests that this is the level on which basic-level categories structure the output of the visual systems. Recall that Lakoff (1987a) considers both image-schematic and basic-level categories as constraints on perceptual (and conceptual) representations.

apparatus, the claim that there is exact duplication of structuring devices across these different cognitive areas needs considerable arguing for.[16]

The motivation for image schemas lies in the fact that they are responsible for matching linguistic with non-linguistic (pictorial) representations. As a final argument, I want to point out that image schemas are not the only explanation available for the possibility of detecting closeness-of-fit between representations in different modes. As long as we posit an intermediate level of representation, in which both perceptual and linguistic input are 'translated' into a common format, such comparisons are performed unproblematically. Take the Language of Thought (LOT) hypothesis, the clear opposite of a pictorial representational system: it is easy to see how this hypothesis can handle issues of integration and/or comparison of different sorts of information through the operation of a central interfacing device which gathers information from the sensory modules on the one hand, and the linguistic module on the other. The similarities between the experience of seeing a mountain and the experience of understanding the utterance *I see a mountain* can be explained on the basis of a common underlying conceptual representation in LOT in the absence of any assumptions about the image-schematic structure of either perception or cognition.

5 Metaphor in conceptual structure

5.0 I now want to move on to the assumption that the structure of many concepts is metaphorical. The claims about metaphor can be interpreted in either of two ways, a strong one and a weaker one; I will briefly consider arguments for and against each of them.[17]

5.1 The strong view on metaphor

On the strong interpretation, which is the one favoured by the writings of Lakoff (1987a), Johnson (1987), Lakoff & Johnson (1980), Lakoff & Turner (1989), Gibbs (1994), etc., there is a big class of concepts which have no independent structure; as it is standardly put in the Cognitive Linguistics literature, these concepts "cannot be directly represented".

---

[16] Isomorphism does not necessarily imply exact duplication of structuring devices, of course; still, Lakoff's writings on image schemas seem to encourage this strong construal.

[17] Cf. Murphy (1996), who also detects problems for both versions.

This class includes abstract concepts, emotion concepts, concepts describing mental activity, and so on, which all rely on other, "experiential" concepts to provide them, through a metaphorical mapping, with internal structure (attributes and values).

Consider the metaphor AN ARGUMENT IS A CONTAINER, which is exemplified in the following utterances (Lakoff & Johnson, 1980: 92):

(7)   a.   Your argument doesn't have much content.
      b.   That argument has holes in it.
      c.   Your argument is vacuous.
      d.   I'm tired of your empty arguments.
      e.   You won't find that idea in his argument.
      f.   That conclusion falls out of my argument.
      h.   Your argument won't hold water.
      g.   I still haven't gotten to the core of his argument.

On the strong metaphorical representation thesis, the concept ARGUMENT lacks any content independent of the concept CONTAINER. The latter is an image-schematic concept which, after being metaphorically mapped onto the ARGUMENT concept, gives the latter its structure: an argument is thus understood as something which has content, depth, substance, which contains points, and so on. When we think about (the content of) arguments, we effectively use our knowledge of containers.

The question which arises now is this: If all the entry for ARGUMENT includes is a set of mappings to properties of the concept CONTAINER, then what is there to stop various incorrect mappings from being performed? For instance, within the metaphor offered for (7), I might assume that arguments are solid artefacts, that they are occasionally made of plastic, that they come in various sizes, and so on. Obviously, not all properties of containers will be mapped onto the structure of arguments, but nothing in the theory so far serves to place a principled constraint on the mapping process.[18] Notice that it is misleading to rely on what we already know about arguments to exclude possible mappings: to refrain from attributing to arguments size (a property of containers) on the basis that arguments just *are not* the sort of things which have size is to beg the question. It is precisely the concept-sustaining mapping from CONTAINER to ARGUMENT which is supposed to provide the knowledge of exactly what an argument is.

---

[18] In a similar spirit, Murphy (1996) observes that these metaphorical mappings do not fit the definition of 'pointers', standardly used in theories of mental representation to describe properties of a given concept.

The strong view of metaphoric representation has further undesirable consequences. It often turns out that the attributes of the concept used for the grounding have themselves to be metaphorically structured. Consider the metaphor LOVE IS A JOURNEY, which I introduced early in section 1.1; the concept JOURNEY includes the attribute EVENT, which - being an abstract concept itself - needs to be grounded metaphorically (cf. the suggestions in Lakoff, 1993). This entails that, in order to grasp the concept LOVE, one has to entertain a chain of metaphorical groundings, or mappings, for virtually all those attributes of the concept which cannot be 'directly understood' - a strange conclusion, and one which necessitates multiple embedded mappings for the comprehension of relatively simple, everyday concepts such as LOVE. For these reasons, the strong view of metaphoric representation cannot be easily upheld.

5.2 The weak version

There is a weaker construal of the claims about metaphoric representation which, although departing from the original proposals made within Cognitive Linguistics, can be used as a fall-back position. On this weaker view, all concepts are understood directly. However, the content and structure of abstract concepts, emotion concepts, and other selected concepts, is somehow causally influenced by metaphorical mappings to concrete, experiential concepts (Murphy, 1996). In other words, direct understanding for the selected class of concepts can only be incomplete. The entry for ARGUMENT will thus be a skeletal construction, with a lot of slots to be filled in via the mappings to other concepts (e.g. CONTAINER). From the initial entry, one can draw basic inferences, such as that arguments are verbal exchanges between people, or that they involve disagreement, but little else. The main inferential potential for the concept ARGUMENT is provided by its metaphorical connections to other concepts; for instance, the assumption that an argument may contain certain points, while it may remain silent on others, will fall out of the mapping to the CONTAINER concept.

Various questions can be raised for this weaker view of metaphor. Firstly, the idea of a skeletal structure for concepts needs to be more concretely fleshed out before it can yield a respectable alternative to the radical strong view on metaphor. Secondly, since now even abstract concepts have some independent content, what is there to motivate mappings to concrete concepts? This question obviously relates to, and depends for its answer on, the previous issue about the skeletal structure attributed to the selected class of 'impoverished' concepts. Can one tell, just by looking at a specific concept, whether its internal structure

is rich enough so as not to warrant metaphorical mappings to experiential concepts? Here, as well as in the stronger view on metaphor, one seems to presuppose something close to the existence of a homunculus inside the brain, who is going to regulate metaphorical mappings in cases of insufficiently understood concepts (recall that a 'homunculus' problem cropped up also in the discussion in 3.1; there, it concerned the structuring of simple, directly understood experiential concepts from image-schematic blueprints).

The third, and most important problem so far for the weak thesis is the motivation behind the specific metaphorical mappings it postulates. If it is true that certain concepts are structurally impoverished, what determines the precise metaphorical mappings which are to ascribe to them a more substantial structure?[19] Similarly, once a specific mapping is established, what determines the specific attributes of the 'parent' concept which will be carried over to the skeletal one? The latter question is inherited from the stronger view on metaphoric representation, and raises essentially the problem of constraints on metaphorical projections across conceptual domains.

One suggestion that may serve as a constraint on the formation of metaphoric projections is Lakoff's Invariance Principle (Lakoff, 1990; 1993). The Principle states that metaphorical mappings preserve the image-schematic structure of 'parent' concepts, in a way consistent with the inherent structure of target concepts. In the metaphor AN ARGUMENT IS A CONTAINER, the image-schematic structure of the CONTAINER concept (which includes attributes such as INTERIOR, EXTERIOR, BOUNDARY, etc.) will be mapped onto the ARGUMENT concept in a way which will not violate the latter's initial structure. This is not to say that copying takes place; Lakoff intends the Invariance Principle to be seen rather as "a constraint on fixed correspondences" (Lakoff, 1993: 215) or, as I interpret it, as a constraint based on underlying similarities among concepts.

Still, the new Principle leaves many questions unanswered. An immediate difficulty comes from the vagueness surrounding notions such as "fixed correspondences" or "inherent structure" of concepts; even within Cognitive Linguistics, it is acknowledged that such formulations need a lot more clarification (see Brugman, 1990). Worse, some parts of the novel proposal seem to contradict previous views on the metaphoric representation of concepts; for instance, the assumption that the concept for ARGUMENT is to be causally

---

[19] Murphy (1996) suggests that specific metaphorical projections are determined on the basis of feedback from idioms or collocations; for instance, the way people talk about arguments, as exemplified in (7), would prompt the metaphor AN ARGUMENT IS A CONTAINER. I think this reverses the issue, though: what Cognitive Linguistics set out to explain in the first place was the conceptual motivation behind such examples. So, although some causal connection might be projected backwards from idioms, etc. to the conceptual mapping, it is the possibility of forming the mapping that has to be explained beforehand.

influenced by the concept CONTAINER in a way consistent with its inherent structure presupposes that ARGUMENT *is* already inherently structured, and in such a way that that structure can impose constraints on further mappings. This contradicts earlier claims about the skeletal structure of abstract concepts. A final problem which the Invariance Principle does not address is the possibility of having different metaphors for a single concept.

As is often noted in the literature, a single concept may have multiple constitutive metaphorical groundings. In our example, apart from the container metaphor, arguments can also be understood metaphorically in terms of journeys, buildings, or wars, as is shown in (8), (9) and (10) respectively (Lakoff & Johnson, 1980: 90, 98, 4):

(8) a. We have set out to prove that bats are birds.
     b. We have arrived at a disturbing conclusion.
     c. So far, we've seen that current theories will work.
     d. We will proceed in a step-by-step fashion.

(9) a. We've got the framework for a solid argument.
     b. If you don't support your argument with solid facts, the whole thing will collapse.
     c. With the groundwork you've got, you can construct a pretty strong argument.

(10) a. Your claims are indefensible.
     b. He attacked every weak point in my argument.
     c. His criticisms were right on target.
     d. I demolished his argument.

According to the authors, these metaphors represent different ways of thinking about arguments; in different terms, they can be seen as possible sources of inferences from the ARGUMENT concept. The difficulty posed by multiple metaphors is that they give rise to many different, potentially conflicting inferences: with respect to ARGUMENT, the inferences licensed by the causal-structural role of WAR are very different from those licensed by the role of BUILDING. Moreover, if the concept of ARGUMENT is inherently structured in such a way as to share a fixed, image-schematic correspondence with each of the concepts WAR, BUILDING, CONTAINER and JOURNEY, then (a) its inherent structure cannot simply be a skeletal construction with minimal content; and (b) this inherent structure cannot be unique, but should be comprised of various image schemas (which, in its turn, raises the question of how these got there in the first place).

Notice that these problems would not arise if metaphor were not expected to play a causal role in the structure of concepts, but operated on a secondary level as a relation between independently established conceptual entries.

Other considerations might also be worth mentioning here, but I think what has been said so far serves to make the point.[20] If one accepts concept-constitutive metaphors, either as the sole basis or as the richer part of conceptual structure (i.e. either in a strong or a weaker formulation), one has to somehow constrain the mappings both across and within concepts, so that empirically unverified mappings do not occur.

6 Conclusion

I have devoted the main bulk of this paper to a critical evaluation of some aspects of the Cognitive Linguistic theory of concepts, including the Conceptual Embodiment thesis, the importance of imagistic elements in concept formation and the role of metaphor in conceptual structure. I have not attempted to present an alternative proposal or detailed directions in which solutions to the problems I have raised might be sought. My main aim was simply to raise some interesting questions and to point to certain vague and possibly disputable dimensions of current theorising about concepts. I hope that, after having cleared the ground, a more positive discussion of these issues may start.[21]

References

Baron-Cohen, S., Tager-Flusberg, H. & Cohen, D. eds. (1993). *Understanding other minds:*

---

[20] For instance, as Murphy (1996) points out, the Cognitive Linguistics account of metaphor faces circularity of evidence: the only data employed both as initial motivation and as a testbed for predictions are linguistic, and resemble the examples given in this section. A general theory of metaphoric representation should, however, bear on a variety of other empirical domains such as problem-solving, object recognition, memory, and so on, and it would be useful to see some evidence supplied by these domains. Another issue is the level of abstraction at which the various metaphoric mappings are cast. In the ARGUMENT case, the concept of CONTAINER is a bare image-schematic concept, while the concept of WAR is less basic by Cognitive Linguistic criteria (since its attributes need themselves to be metaphorically represented). This problem has been discussed in the context of the Cognitive Linguistics theory of metonymy (Papafragou, 1996), and I will not expand on it further here.

[21] For some positive suggestions, see Papafragou (1998/in prep.).

Perspectives from autism. Oxford: Oxford Medical Publications.

Barsalou, L. (1993). Flexibility, structure, and linguistic vagary in concepts: Manifestations of a compositional system of perceptual symbols. In A. Collins, S. Gathercole, M. Conway and P. Morris (eds.), *Theories of Memory*, 29-89. Hillsdale, NJ: Erlbaum.

Block, N. (1981). Introduction: What is the issue? In Block (ed.), 1-18.

Block, N. (1990). Mental pictures and cognitive science. In Lycan (ed.), 577-607.

Block, N. ed. (1981). *Imagery.* Cambridge, MA & London: The MIT Press.

Bloom, P. ed. (1993). *Language acquisition: Core readings.* New York: Harvester.

Bloom, P. (1995). Word meaning. In A. Gernsbacher (ed.), *Handbook of Psycholinguistics.* San Diego: Academic Press.

Brugman, C. (1988). *The story of* over*: Polysemy, semantics, and the structure of the lexicon.* New York: Garland Publishing.

Brugman, C. (1990). What is the Invariance Hypothesis? *Cognitive Linguistics* 1-2:257-266.

Bybee, J. & Fleischman, S. (1995). Modality in grammar and discourse: An introductory essay. In J. Bybee & S. Fleischman, (eds.), *Modality in grammar and discourse*, 1-14. Amsterdam: John Benjamins.

Bybee, J., Perkins, R. & Pagliuca, W. (1994). *The evolution of grammar: Tense, aspect, and modality in the languages of the world.* Chicago and London: The University of Chicago Press.

Carey, S. (1991). Knowledge acquisition: Enrichment or conceptual change? In S. Carey & R. Gelman (eds.), *The epigenesis of mind: Essays on biology and cognition*, 257-291. Hillsdale, NJ: Erlbaum.

Carey, S. & Gelman, R. eds. (1991). *The epigenesis of mind: Essays on biology and cognition.* Hillsdale, NJ: Erlbaum.

Chomsky, N. (1993). *Language and thought.* Wakefield, Rhode Island & London: Moyer Bell.

Fauconnier, G. (1985). *Mental Spaces: Aspects of Meaning Construction in Natural Language.* Cambridge, MA-London: The MIT Press.

Fauconnier, G. (1997). *Mappings in thought and language.* Cambridge: Cambridge University Press.

Fauconnier, G. & Sweetser, E., eds. (1996). *Spaces, worlds, and grammar.* Chicago & London: The University of Chicago Press.

Fillmore, C. & Atkins, B. (1992). Toward a frame-based lexicon: The semantics of RISK and its neighbours. In A. Lehrer & E. Kittay (eds.), *Frames, fields, and contrasts: New essays in semantic and lexical organisation*, 75-102. Hillsdale, NJ: Erlbaum.

Fleischman, S. (1990). *The future in thought and language.* Cambridge: Cambridge University Press.

Fodor, J. (1975). *The language of thought.* Cambridge, MA: Harvard University Press.

Fodor, J. (1981). The present status of the innateness controversy. In *Representations,* 257-316. Brighton: Harvester Press.

Fodor, J.(1983). *The modularity of mind.* Cambridge, Mass. and London: The MIT Press.

Fodor, J., Fodor, J. & Garrett, M. (1975). The psychological unreality of semantic representations. *Linguistic Inquiry* 515-531.

Fodor, J. and E. Lepore (1996). The red herring and the pet fish: why concepts still can't be prototypes. *Cognition* 58: 253-270.

Gibbs, R. (1994). *The poetics of mind.* Cambridge: Cambridge University Press.

Gibbs, R. & O'Brien, J. (1990). Idioms and mental imagery: The metaphorical motivation for idiomatic meaning. *Cognition* 36:35-68.

Haiman, J. (1980). Dictionaries and encyclopedias. *Lingua* 50:329-357.

Happé, F. (1994). *Autism.* London: UCL Press.

Heine, B., Claudi, U. & F. Hünnemeyer, F. (1991). *Grammaticalization: A conceptual framework.* Chicago: University of Chicago Press.

Hirschfeld, L. & Gelman, R. eds. (1994). *Mapping the mind: Domain specificity in cognition and culture.* Cambridge: Cambridge University Press.

Hopper, P. & Traugott, E. (1993). *Grammaticalization.* Cambridge: Cambridge University Press.

Jackendoff, R. (1996). Semantics and cognition. In S. Lappin (ed.), *The handbook of contemporary semantic theory*, 539-359. Oxford: Blackwell.

Johnson, M. (1987). *The body in the mind.* Chicago & London: University of Chicago Press.

Johnson-Laird, P. (1983). *Mental models: towards a cognitive science of language, inference, and consciousness.* Cambridge, MA: Harvard University Press.

Keil, F. (1989). *Concepts, kinds, and cognitive development.* Cambridge, MA & London: The MIT Press.

Kosslyn, S. (1980). *Image and mind.* Cambridge, MA: Harvard University Press.

Kosslyn, S. (1983). *Ghosts in the mind's machine.* New York: W. Norton.

Kosslyn, S., Pinker, S., Smith, G. & Schwartz, S. (1981). On the demystification of mental imagery. In Block (ed.), 131-150.

Lakoff, G. (1987a). *Women, fire, and dangerous things.* Chicago: University of Chicago Press.

Lakoff, G. (1987b). Cognitive models and prototype theory. In U. Neisser (ed.), *Concepts and conceptual development*, 63-100. Cambridge: Cambridge University Press.

Lakoff, G. (1988). Cognitive Semantics. In U. Eco, M. Santambrogio & P. Violi (eds.), *Meaning and mental representations*, 119-154. Bloomington & Indianapolis: Indiana University Press.

Lakoff, G. (1990). The Invariance Hypothesis: Is abstract reason based on image-schemas? *Cognitive Linguistics* 1:39-74.

Lakoff, G. (1993). The contemporary theory of metaphor. In A. Ortony (ed.), *Metaphor and thought*, 2nd ed., 202-251. Cambridge: Cambridge University Press.

Lakoff, G. & Johnson, M. (1980). *Metaphors we live by.* Chicago: University of Chicago Press.

Lakoff, G. & Turner, M. (1989). *More than cool reason: A field guide to poetic metaphor.* Chicago: University of Chicago Press.

Landau, B. & Gleitman, L. (1985). *Language and experience: Evidence from the blind child.* Cambridge, MA & London: Harvard University Press.

Langacker, R. (1987). *Foundations of Cognitive Grammar.* Vol. 1: 'Theoretical Prerequisites'. Stanford: Stanford University Press.

Langacker, R. (1991). *Foundations of Cognitive Grammar.* Vol. 2: 'Descriptive application'. Stanford: Stanford University Press.

Lehrer, A. (1990). Polysemy, conventionality, and the structure of the lexicon. *Cognitive Linguistics* 1-2:207-46.

Lindner, S. (1981). *A lexico-semantic analysis of verb-particle constructions with* Up *and* Out. Ph.D.

dissertation, University of California, San Diego. Available from the Indiana University Linguistics Club.

Lycan, W. ed. (1990). *Mind and cognition: A reader.* Oxford: Blackwell.

Murphy, G. (1996). On metaphoric representation. *Cognition* 60:173-204.

Nuyts, J. & Peterson, E. eds. (1997). *Language and conceptualization.* Cambridge: Cambridge University Press.

Ortony, A. (1988). Are emotion metaphors conceptual or lexical? *Cognition and Emotion* 2: 95-103.

Papafragou, A. (1996). On metonymy. *Lingua* 99: 169-195.

Papafragou, A. (1998/forth.). The acquisition of modality: Implications for theories of semantic representation. To appear in *Mind and Language.*

Papafragou, A. (1998/in prep.). *Modality and the semantics-pragmatics interface.* University of London Ph.D. thesis.

Piatelli-Palmarini, M., ed. (1980), *Language and learning: The debate between Jean Piaget and Noam Chomsky.* London: Routledge.

Piatelli-Palmarini, M. (1995). Ever since language and learning: Afterthoughts on the Piaget-Chomsky debate. In J. Mehler & S. Franck (eds.), *Cognition* on Cognition, 361-392. Cambridge, MA & London: The MIT Press.

Schank, R. & Abelson, R. (1977). *Scripts, plans, goals, and understanding.* Hillsdale, NJ: Erlbaum.

Schwartz, R. (1981). Imagery - there's more to it than meets the eye. In Block (ed.), 109-130.

Shepard, R. & Cooper, L. (1982). *Mental images and their transformations.* Cambridge, MA: Harvard University Press.

Spelke, E. (1995). Initial knowledge: Six suggestions. In J. Mehler & S. Franck (eds.), *Cognition* on Cognition, 433-447. Cambridge, MA & London: The MIT Press.

Sperber, D., Premack, D. & Premack, A. J. eds. (1995). *Causal cognition: A multidisciplinary debate.* Oxford: Clarendon Press.

Sterelny, K. (1990). The imagery debate. In Lycan (ed.), 607-626.

Sweetser, E. (1990). *From etymology to pragmatics.* Cambridge: Cambridge University Press.

Talmy, L. (1988). Force dynamics in language and cognition. *Cognitive Science* 2: 49-100.

Traugott, E. & Heine, B. eds. (1991). *Approaches to grammaticalisation.* Amsterdam: Benjamins, 2 vols.

Traugott, E. (1986). From polysemy to internal semantic reconstruction. In D. Feder, M. Niepokuj, V. Nikiforidou & M. van Clay (eds.), *Proceedings of the 12th Annual Meeting of the BLS*, 539-550.

Traugott, E. (1989). On the rise of epistemic meanings in English: an example of subjectification in semantic change. *Language* 65/1: 31-55.

Warner, R. & Szubka, T. eds. (1994). *The mind-body problem: A guide to the current debate.* Oxford: Blackwell.

Wellman, H. (1990). *The child's theory of mind.* Cambridge, MA & London: The MIT Press.