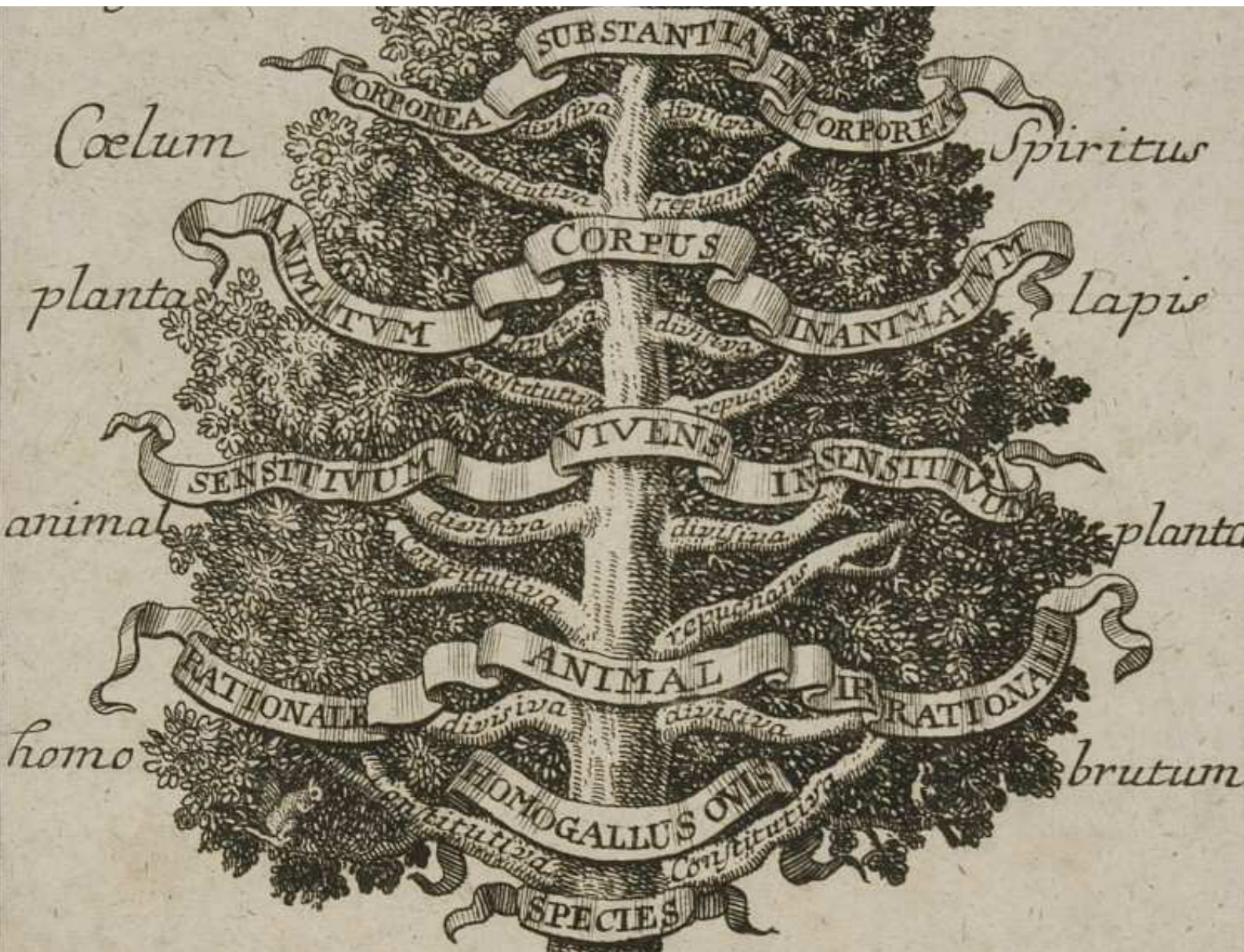


SFB 991

DFG Deutsche
Forschungsgemeinschaft

Heinrich Heine

HEINRICH HEINE
UNIVERSITÄT DÜSSELDORF



Workshop: Concepts and categorization in linguistics, cognitive science and philosophy

Invited speakers:

Hans-Johann Glock, Zürich

Matthias Kaufmann, Halle-Wittenberg

Edouard Machery, Pittsburgh

Albert Newen, Bochum

Date: May 15 - 16, 2013

Start: 9:30 a.m.

Location: ULB, Building 24.41

Organization: Lars Inderelst,
David Hommen, Tanja Osswald

Program committee

Prof. Dr. Christoph Kann
(Institute of philosophy - HHU)

Jun.-Prof. Dr. Wiebke Petersen
(Institute of information and language – HHU)

Organizing committee

Lars Inderelst
(SFB 991 – Project A05)

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Concept and categorization in linguistics, cognitive science and philosophy

International workshop at the HHU Düsseldorf

The study of concepts lies at the intersection of various scientific disciplines, both formal and empiric. Linguistics deals with concepts as basic semantic units of natural (or ideal) languages, aiming to uncover their logical constitution and structural relationships within a given linguistic system.

Cognitive science is interested in concepts insofar as they are the constituents of thought – e.g. some kind of mental entities (or objects) – which are used in an explanation of such diverse psychological phenomena like categorization, inference, memory, learning, and decision-making.

In philosophy the challenge imposed by concepts consists, among other things, in linking a theory of intentional content with a theory of knowledge (e.g. Peacocke's challenging question: "How can our conception of truth in one area be reconciled with the means by which we think we come to know truth about that area?") and thereby establishing a relationship between reference, knowledge and reality, putting the notion of "concept" in the broader area of epistemological and metaphysical issues.

In recent research – for instance in the development and discussion of Minsky's and Barsalou's frame-theory –, linguists, cognitive scientists and philosophers have collaborated more and more to contribute to a unified understanding of concepts and conceptual categorization. As welcome as this interdisciplinary programme is, however, the joint venture suffers (so far) from the fact that it is generally left unclear how exactly the different studies on concepts and categorization undertaken in the participating sciences relate to each other.

What do linguists, cognitive scientists and philosophers mean by the notion of 'concept'? Is there some sort of core-theory of concepts and conceptual categorization underlying linguistic, psychological and philosophical research? If not, how and why do the specific theories differ?

General information**Conference Site**

Location: Universität Düsseldorf campus, ULB building 24.41, lecture hall

Conference website

<http://www.sfb991.uni-duesseldorf.de/concepts-and-categorization/>

Website of the Research Center

<http://www.sfb991.uni-duesseldorf.de/>

Copies

If you need to make copies of handouts, please contact our staff or members of the organizing committee.

Internet

W-LAN is widely available on the university campus. If you bring your own notebook, you can get a free access code.

Important telephone numbers

Deutsche Bahn (German Railways)	+49 180 5 99 66 33
Rheinbahn (local public transport)	+49 1803 50 40 30
Flughafen Düsseldorf International (airport)	+49 211 42 10
Taxi	+49 211 333 33 <i>and</i> +49 211 194 10

Emergency

Police	110
Fire/Ambulance	112

Warming-up

Location: dreiRaum

14.05.2013 – 7:00 p.m.

Address: Volksgartenstraße 15
40227 Düsseldorf

Tel.: +49 (0) 211 - 17 80 60 94

Conference-Dinner

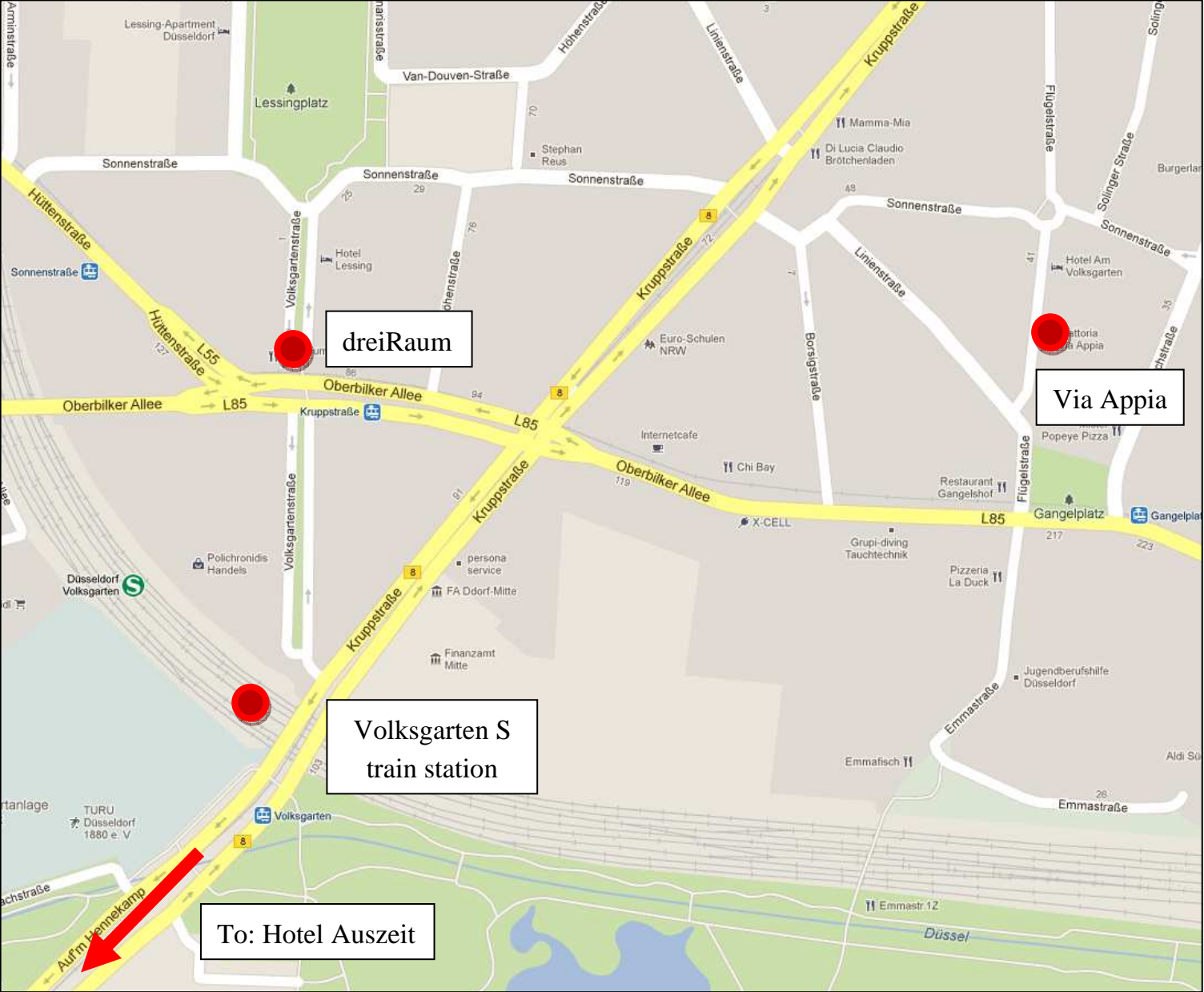
Location: Via Appia

15.05.2013 – 7:00 p.m.

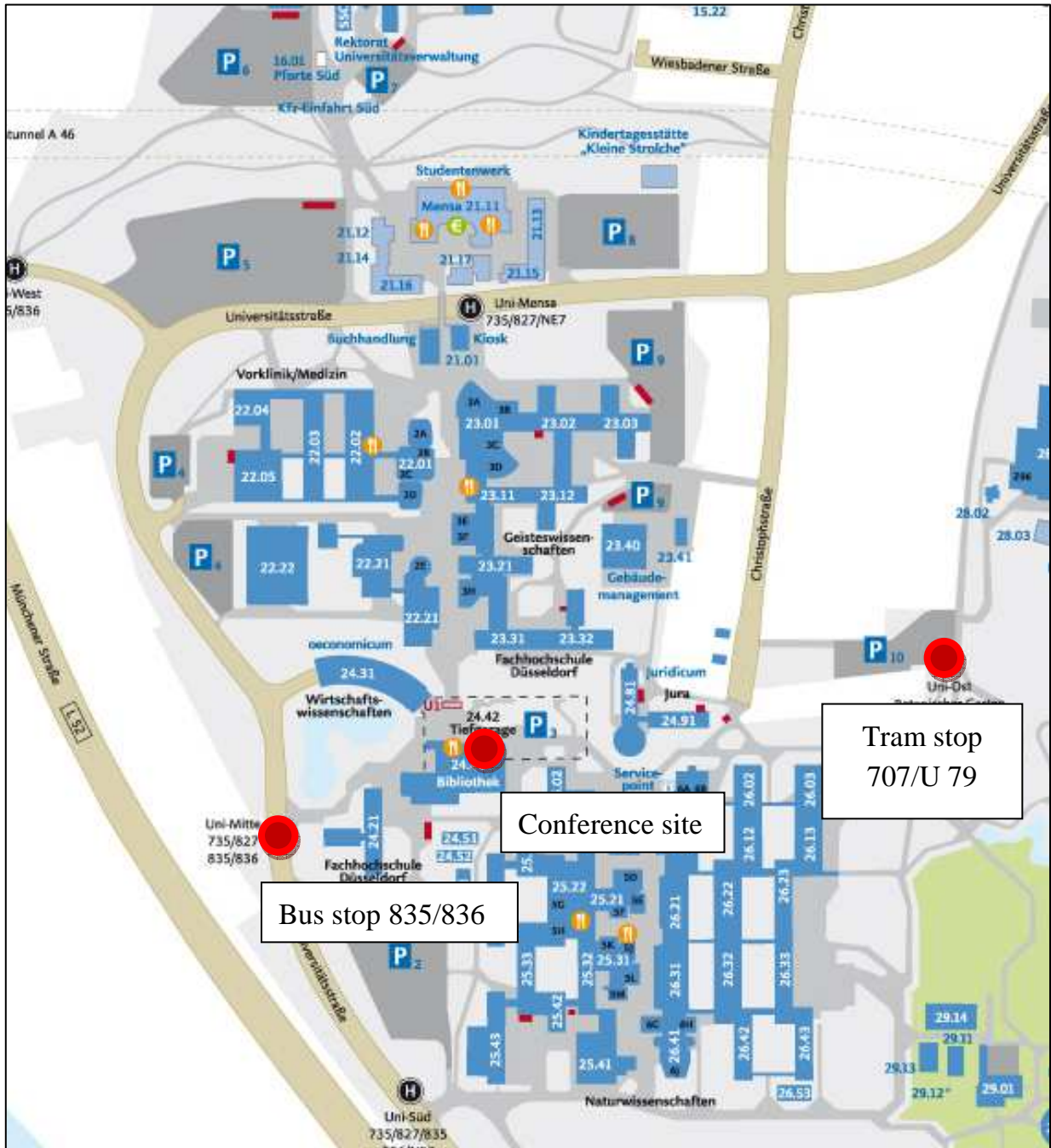
Address: Flügelstraße 54
40227 Düsseldorf

Tel.: +49 (0) 211 - 775926

MAP 1: Warming-up and conference dinner



MAP 2: University campus



Schedule

15.05.2013	
9:30-10:00	REGISTRATION
10:00-11:00	Hans-Johann Glock Concepts: what they are and what they are good for
11:00-11:15	<i>Coffee break</i>
11:15-12:00	Elisabetta Lalumera 'Concept' is polysemous, not ambiguous. A commonsense proposal.
12:00-13:00	LUNCH BREAK
13:00-13:45	Norman Hammel A defense of concept pragmatism and a note on shareability
13:45-14:30	Tim Seuchter The Role of Action for Concepts
14:30-14:45	<i>Coffee break</i>
14:45-15:30	Yacin Hamami What is a Geometric Concept?
15:30-15:45	<i>Coffee break</i>
15:45-16:45	Christoph Kann Categorization and pre-categorization
16:45-17:00	<i>Coffee break</i>
17:00-18:00	Edouard Machery Doing without concepts?
19:00	<i>Conference Dinner</i>

16.05.2013	
10:00-11:00	Matthias Kaufmann Remarks on the History and Very Idea of the Concept of Concept
11:00-11:15	<i>Coffee break</i>
11:15-12:00	Lucia Oliveri Why we need concepts? Leibniz and Locke on concepts.
12:00-13:00	LUNCH BREAK
13:00-13:45	Stefan Hartmann /Michael Pleyer From Construal to Construction: The Role of Conceptual Categories in Derivational Morphology
13:45-14:30	Jan Henning Schulze The Linda problem: A case study in different conceptualizations of “Concept” in linguistics and psychology
14:30-14:45	<i>Coffee break</i>
14:45-15:30	Kevin Reuter Confusions about Central Concepts in the Cognitive Sciences
15:30-15:45	<i>Coffee break</i>
15:45-16:45	Albert Newen The individuation of concepts and their explanatory role

TALKS

Concepts: what they are and what they are good for

HANS-JOHANN GLOCK

The paper argues that the term ‘concept’ and its cognates have an established use that is fruitful in a variety of disciplines ranging from logic to the history of ideas. Moreover, a reasonably unified account of that established use of can be provided by a cognitivist approach. Such an approach starts out from the role the ascription of concepts plays in characterizing certain cognitive operations and abilities, yet without treating concepts as symbolic representations or particulars in the minds of individuals, and without simply identifying concepts with abilities. In particular, it explores the idea that concepts are rules or principles of classification and inference. At the end I argue that a cognitivist account can deal not just with the role of concepts in cognition, but also with the idea that they are components of propositions.

What is a Geometric Concept?

YACIN HAMAMI

Introduction and Motivations. Geometric concepts are studied in various fields such as philosophy [13, 15], logic [1, 14] and cognitive science [3, 10]. Recent advances on understanding geometric reasoning in elementary Euclidean geometry from an interdisciplinary perspective [7, 8] have made it pressing to come up with a unified theoretical framework for investigating geometric concepts.

The Visual-Inferential Challenge. One of the main challenges in providing such a framework is to account for both the visual and inferential dimensions of geometric concepts. The visual dimension of a geometric concept is manifest whenever a particular instantiation of the concept is realized in the world or in thought. This dimension is central in particular to the use of geometric concepts in categorization. The inferential dimension of a geometric concept is manifest whenever the concept is considered as an object of a deductive theory of geometry, such as the one of Euclid [4]. This dimension is central when one is not interested in particular instantiations of geometric concept, but rather in determining general properties of these concepts through geometric reasoning.

Aim and Plan. The aim of this talk is to evaluate different views on geometric concepts with respect to their capacity to meet the visual-inferential challenge. The talk will be divid-

ed into two parts. In the first part, we will come back to two central accounts of geometric concepts proposed in philosophy (Kant [11]) and logic (Hilbert [9]), and we will argue that both of them can only account for one dimension of geometric concepts. In the second part, we will evaluate the potential of Barsalou's theory of perceptual symbol systems [2] to meet the visual-inferential challenge.

Part I: Geometric Concepts in Philosophy and Logic. Probably the two most important accounts of geometric concepts in the history of philosophy and logic are the ones provided by

Kant [11] and Hilbert [9]. For Kant, the notion of geometric concept is intimately connected with the notion of schemata. Simply put, the schema of a geometric concept can be seen as a rule or procedure that allows a construction of the concept in pure intuition. Any output of such a construction procedure constitutes then an image of the concept. A geometric concept being for Kant completely determined by its schema, it then appears clearly that this view perfectly captures the visual dimension of geometric concepts. However, it is much less clear how Kant accounts for the inferential dimension of geometric concepts, i.e., how schemata can be the object of geometrical reasoning, as noted in [5, 6, 12]. For Hilbert, a geometric concept is completely determined by its logical relations to other geometric concepts. In his *Foundations of Geometry* [9], these logical relations are encoded by different groups of axioms. Under this conception, geometric reasoning becomes a mere game of syntactic manipulation of the axioms according to syntactic rules of deduction. It then appears clearly that the Hilbertian conception provides a direct account of the inferential dimension of geometric concepts. However, the Hilbertian conception cannot account for the visual dimension of geometric concepts. This feature is indeed essential to what Hilbert was aiming at, i.e., to study the properties of axioms of geometry independently of their natural (visual, spatial) geometric interpretation.

Part II: Meeting the Challenge. In Barsalou's theory of perceptual symbol systems [2], a concept is defined via the notion of simulator that can produce limitless simulations in the perceptual system. In the case of geometric concepts, these simulations can take the form of visually imagining a particular instantiation of the concept. Interestingly, the notions of simulator and simulation bear a very strong similarity with the Kantian notions of schema and image. Thus, the visual dimension of geometric concept is perfectly accounted for in Barsalou's theory. Besides, Barsalou's theory also explains how concepts understood as simulators can support inferences. However, we will argue in this talk that, even though Barsalou's description of inferences is adapted to common sense reasoning, it fails to account for geometric reasoning due to an incapacity to assure the generality of the reasoning. Nevertheless, this does not mean that Barsalou's theory cannot be adapted to solve this problem. We will then propose that, by importing ideas from the logical system Eu for formalizing geometric reasoning with diagrams [14, 15], one might overcome this limitation. The solution will consist in providing a checking process that can make sure that a given property of a simulation holds for any possible simulations produced by a simulator.

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A Defence of Concept Pragmatism and a Note on Shareability

NORMAN R. HAMMEL

Good evidence to ascribe possession of a concept C to a subject s is what s is able to do. Traditionally, s 's behavior is caused by s 's beliefs and desires. Mental states, in turn, have structured contents which constrain and determine inferential relations between these states. The contents of mental states – and following the language of thought tradition the physical states themselves – are syntactically structured. They have concepts as their constituents. To possess a concept in this tradition is to token possible components or a single possible component, i.e. words in Mentalese, of thoughts, i.e. sentences in Mentalese. Fodor emphasizes that concepts are mental particulars which function as constituents of thoughts. An account of concept possession, then, just pops out of his conception of what a concept is. I want to discuss a recent argument Fodor brought forth against an alternative position and try to show that this alternative, concept pragmatism, is a viable theory not just of concept possession, but on what concepts are. This I will argue on mainly but not exclusively empirical grounds. I will confine myself to empirical concepts and the few metaphysical points I have to offer only apply to this kind of concepts.

His book LOT2 is Fodor's most recent attempt to prove concept pragmatism to be deficient. A pragmatist position about concept possession claims that to have a concept C is to have

the ability or disposition to discriminate things that are F – a property somehow correlated (is referred to by; is expressed by etc.) with C – from things which are not F. The argument Fodor develops against concept pragmatism draws on considerations of rule following. It is obvious that to possess a concept cannot mean to always apply it correctly. However, to possess it is to know when it should be applied. The pragmatist's failure, Fodor claims, is to cash out the difference between following a rule and behaving or acting in accordance with a rule in purely behavioristic terms. This, of course, is too weak. On the contrary, Fodor's criterium of following a rule R is to have the intention to follow R.

I want to argue that, pace Fodor, concept pragmatism neither declined nor fell. There are three points (two of them negative, one positive) to be raised against his reasoning:

(1) Fodor's suggestion to solve the rule following problem is circular. Wittgenstein struggled to account for the correctness or incorrectness of moves in a language game without presupposing the understanding of a rule. But to intend to follow a rule R requires to understand it, i.e. to understand that R consists in p and to have the desire to make p true. And that, in turn, makes any explanation in these terms circular. Analogously, for s to possess a concept C would be to intend to apply C correctly which presupposes that s already possesses C. Thus, we have reached a dead end.

(2) A methodological solipsist like Fodor might be suspicious about any contextual analysis of mental capacities, but it is plain wrong to say that pragmatists give an analysis of concept possession in purely behavioral terms of dispositions or abilities without accounting for the necessary normative context – be it a speaker's community (as in Wittgenstein, Sellars or Brandom) or a creature's evolutionary and learning history (as in Millikan and, again, in Sellars) – in which an ability is actualized and which makes an actualization of an ability A a correct or an incorrect one.

(3) One might, on empirical ground, conceive of the possession of empirical concepts as having certain abilities. To take a step further, we could even try to say that empirical concepts are abilities. To take this step is to face plausible demands of what it is to be a concept in ability talk. One of these would be a concept's shareability. Note that, by definition, concepts treated as mental particulars cannot be shared. A second even harder question would be to allow for concepts being constituents of mental states and/or their contents in an ability account of concepts. My bet would be on a third person perspective and an analysis of holodoxastic ascriptions as Hanjo Glock proposes. But I will not further delve into this second issue here.

Finally, I want to tackle the question of shareability: If to possess a concept C is to have an ability, how can subjects share a concept? Since an ability is foremost an individual's disposition to do certain things in certain circumstances, it is not straight forward to say that abilities can be shared. In (2) above I indicated a necessary context to make sure pragmatism is not constricted to dispositional vocabulary to distinguish between following a rule and behaving according to a rule. I want to argue that subject's shared phylo- or ontogenetic histories are exactly the theoretical resource we need to make sense of a concept being shared.

From Construal to Construction: The Role of Conceptual Categories in Derivational Morphology

STEFAN HARTMANN / MICHAEL PLEYER

The notions of construal and conceptualization lie at the heart of many cognitively oriented theories of language (e.g. Langacker 1987, 1991, 2008; Croft 2012). Complementary frameworks such as Cognitive Linguistics (e.g. Evans & Green 2006), Mental Spaces Theory (e.g. Fauconnier 1994), Frame Semantics (e.g. Busse 2010), and Construction Grammar (e.g. Goldberg 2006) have developed sophisticated analytical tools that allow valuable insights as to the cognitive foundations of language. Importantly, categorization as “one of the most basic human activities” (Croft & Cruse 2004: 74) has been identified as a major driving force behind the capability to conceptualize objects, states, and events in various ways and from different perspectives (cf. e.g. Taylor 2003).

While construal operations in language have been studied extensively with regard to semantics, it is only recently that morphology has come to the centre of attention in a number of Cognitive-Linguistic and constructionist analyses (e.g. Janda 2007; Onysko & Michel 2010; Booij 2010). This paper contributes to these recent efforts by exploring the role of categorization and concept-formation in derivational morphology. More specifically, we discuss the insights to be gained from investigations into the acquisition and diachronic change of word-formation patterns. Corpus-based studies of highly productive derivational patterns such as agentive *-er* in English and German (cf. e.g. Meibauer 1995; Panther & Thornburg 2001; Scherer 2005) or German nominalization in the suffix *-ung* (Demske 2000, 2002; Hartmann 2012) clearly indicate that word-formation patterns carry conceptual content, which is subject to categorization shifts both in ontogenetic and in diachronic development: For example, children tend to over-generalize the agentive *-er* pattern, yielding forms such as *opener* ‘person who opens [e.g. a door]’ (cf. Clark 2009: 271). In diachrony, there is a high degree of dynamicity regarding the constraints on the respective word-formation patterns: On the one hand, new construal options emerge by means of lexicalization and subsequent reanalysis (cf. Scherer 2006); on the other hand, hitherto common construal options can come out of use.

It is shown that the dynamicity of the concepts prompted by the word-formation patterns under discussion can be accounted for in terms of basic principles of human cognition. We propose a typology of construal operations in language and cognition, which in turn underlie the formation of concepts. This framework provides a valuable basis for the interpretation of our corpus data from both child corpora and diachronic corpora of written language. Given the hypothesis that word-formation patterns carry image-schematic content (e.g. Ungerer 2007), i.e. that they evoke a limited set of conceptualizations, some of which are more

prototypical than others, processes of word-formation change are best described as changes in the availability of construal options, accompanied by shifts in prototypicality. These shifts also become apparent at the level of lexical categorization. Given the hypothesis that the distinction between word classes is a matter of degree (e.g. Ross 1972, 1973; Sasse 2001), it is not too strong a claim that products of word-class changing morphological processes can be “between” categories. The drive towards accommodating the lexical-categorial status of word-formation products at the semantic-conceptual level can be singled out as another factor in the development of word-formation devices both in ontogeny and in diachrony.

All in all, the construal approach proposed in this paper provides a valuable heuristic tool allowing for a comprehensive account of word-formation in a usage-based perspective, taking into account the cognitive factors influencing the language system as well as its intrinsically diachronic nature (cf. Frank & Gontier 2010: 48). Moreover, our corpus analyses clearly demonstrate the viability of interdisciplinary approaches integrating findings from various fields such as corpus linguistics, historical linguistics, research on language acquisition, and cognitive science (cf. Pleyer & Zettersten 2012). However, the scope of this approach, which elucidates the cognitive underpinnings of linguistic constructions, is by no means limited to derivational morphology, but it is also applicable to a broader set of linguistic phenomena such as inflectional and syntactic patterns. Emphasizing the “primacy of semantics in linguistic analysis” (Geeraerts 1997: 8), this approach can also be seen as a further step towards an integrated account of linguistic structure, meaning, and use.

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Categorization and pre-categorization

CHRISTOPH KANN

Descriptive metaphysics in the well known sense of P. Strawson's *Individuals* aims to lay bare the fundamental and most general structure of our thinking of the world. In his outline of descriptive metaphysics, Strawson focuses on the role of spatial and temporal particulars. Cognitive psychologists like M. Minsky and L.W. Barsalou assume that each perceptual experience activates some structures we have acquired in the course of previous experience. These structures, organized patterns or frames represent not only material objects, but also stereotyped situations, events or processes. The acquisition as well as the use of frames or of schemes on the one hand depends on culturally relative categorization mechanisms quite different to Strawson's view which rests on spatiotemporal particulars. On the other hand, this view seems tacitly involved when frame theory analyses objects of different types likewise into bearers, attributes and values.

Both approaches share the general presupposition that categorization mechanisms enable us to break up the whole range of our perceptual experience into meaningful and more manageable components. If reidentifying situations or events rests on reidentifying the objects

involved in them, there are good reasons to assume that categorization in the sense of cognitive psychology presupposes pre-categorization of spatiotemporal particulars.

Remarks on the History and Very Idea of the Concept of Concept

MATTHIAS KAUFMANN

Referring to some of the important steps in the history of the discussion on the idea of a concept the paper tries to show that a concept should neither be seen as a special kind of thing, nor as a representation of extramental reality, but rather as a capacity of understanding from the individual point of view, as a social rule from a public perspective.

'Concept' is polysemous, not ambiguous. A commonsense proposal.

ELISABETTA LALUMERA

This is a hard time for the notion of concept, as at least three different lines of argument point to the conclusion that it is explanatory idle. According to the first one, inaugurated by Edouard Machery (2005), what psychologists call 'concepts' are in fact a heterogeneous set of knowledge representations, which fall short of being a natural kind. The second line of argument is favoured by researchers working within the embodied cognition framework, such as Lawrence Barsalou and Linda Smith. They identify concepts as stable representations in long-term memory, argue that no such representations are involved in high cognition, typically categorization, and conclude that 'concept' is not a useful term for new research programs in psychology. This paper is about the third form of scepticism about concepts, which has its origin in the interdisciplinary nature of 'concept', a technical term for both psychology and philosophy. The thought, already developed by Georges Rey in 2005, is that 'concept' is just ambiguous between a cognitive meaning and a philosophical, or metaphysical meaning.

Here is a sketch of the argument. A metaphysical concept (MC for short) of a category P is whatever determines the class whose only members are the Ps (all the Ps, and nothing but Ps). It is a function, namely, an abstract object. MC_{cat}, for example, is a function, and its extension are all and only cats. On the other hand, Cognitive concepts (CCs) are features of a human being's cognitive system. In Machery's terms (detached from his own eliminativist conclusion), they are the bodies of knowledge employed by default in cognitive tasks such as categorization, lexical understanding, reasoning, imagination and problem-solving. CC_{cat}, for example, is a body of knowledge, or a mental representation. In general, a CC's application class (however rich CC may be), does not match a MC's extension. MC_{cat} contains all and only cats. My CC_{cat}'s application class would plausibly contain some non-cats which I take to be cats, and not contain many cats that I cannot (in many senses of "can")

categorize as such. Now - the argument goes - for two notions to be variants of the same one, there has to be some definite relation between their extensions. For example, the notion of husband and the notion of wife are variants of the same notion, that is, spouse, in that they instantiate the following formal relations, which I call 'Harmony' following a recent suggestion by Diego Marconi (2012):

N_1, N_2 are in harmony with each other iff their extensions are necessarily isomorphic, i.e. iff there is a 1-1 function f such that $\text{Nec}(\forall x)(N_1x \leftrightarrow N_2(fx))$.

According to this definition, husband and wife, occupation as a process and occupation as a state are pairs of notions in harmony. Harmony, among its virtues, formally describes what polysemy is with respect to ambiguity. There is a reasonable isomorphism between the set of wives and the set of husbands, even if they are obviously not the same set. The set of wives is a set of women and the set of husbands is a set of men. But for every wife there is a husband and for every husband there is a wife, according to the marrying. Now, what would a reasonable isomorphism be between the set of cognitive concepts and the set of metaphysical concepts be? Sceptics about concepts claim that there is none - no harmony - and therefore 'concept' is definitely ambiguous.

Here my aim is to contend this claim. I accept the harmony requirement as a test for deciding whether "concept" is viciously ambiguous or rather polysemic. I propose, in short, that there is an isomorphism between the extensions of the two notions if we accept that metaphysical concepts can be partially grasped, and we assume the moderate anti-realist claim that there are no ungraspable metaphysical concepts. On this view, metaphysical concepts can act as normative standards for cognitive concepts, and every cognitive concept is a partial grasping of a metaphysical concept. (Peacocke 1992). The criteria for partial and complete grasping are to be individuated (various philosophical theories of concepts are available). Of course, it is still to be decided who takes the job of describing metaphysical concepts – is it the job of philosophy or of the special sciences? Plausibly, I'd suggest, it depends on the domain. Logicians are perfectly at ease in fixing the normative standards for our cognitive representations of connectives, or modus ponens. It is debatable whether politicians, social sciences or philosophers should fix the standards for contested concepts such as good or democracy (Gallie 1956).

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Doing without concepts?

EDOUARD MACHERY

In *Doing without Concepts* (OUP, 2009), I argued that concepts were bodies of knowledge used by default in higher cognition, that the class of concepts was not a natural kind, that hybrid theories of concepts were mistaken, and that the notion of concept prevented progress in psychology and should be eliminated. These claims have been hotly debated and criticized. In this lecture, I will review the key ideas developed in *Doing without Concepts* and examine the strongest objections.

The individuation of concepts and their explanatory role

ALBERT NEWEN

What can be the explanatory role of concepts? The notion of *concept* can play a double role if it is used in a fruitful way. Concepts can be used to explain and predict the behavior of a cognitive system and they can be used to inform about the cognitive organisation of this system, i.e. how the information that the system has in a conceptual format is connected with other informations of the system. If we use concepts for this purpose it is a convincing strategy to develop an epistemic theory of concepts: Having some epistemic capacities is a necessary condition of having a concept. It is the aim of this paper to clarify which epistemic capacities these are and how they relate to more basic and more advanced capacities. I distinguish three different types of mental representations: “non-conceptual representations”, “conceptual representations” (or: concepts) and “propositional representation” as an enhanced sort of conceptual capacity that enables a cognitive system to construct, possess and play with permanent beliefs. Conceptual representations are more abstract than simple discriminatory abilities and more basic than linguistic structures of a natural language. I suggest that *conceptual* representations gradually emerge with three features: (1) the capacity to identify and re-identify objects and properties, (2) the (relative) independence from stimuli, and (3) an adequate level of abstraction involved in the classification (a classification that is not only based on simple stimulus generalization which is characteristic for nonconceptual representations). This perspective allows us to account for perception-based concepts. It will be shown that we in addition to perception-based concepts have to account for theory-based concepts as well. This perspective of concepts can also account for the fact that (at least some) linguistic concepts have been shown to be rooted in our sensorimotor abilities. It is the aim of the talk to develop a view that integrates the embodiment view of concepts with a development of concepts from perception-based to theory-based concepts.

Why we need concepts? Leibniz and Locke on concepts.

LUCIA OLIVERI

At the end of the 17th Century John Locke gives a fundamental contribution to semantic with his *Essays on Human Understanding*. Some years later, Leibniz begins a virtual dialog with him based on a different way to understand ideas and concepts. Leibniz's aim is to "save" the possibility of general knowledge and of its sharing among rational beings by affirming the necessity of concepts and avoiding simultaneously any form of psychologism or the problem of a "private language". The aim of this paper is to show that in III book of his *New Essays*, particularly in the paragraphs dedicated to the debate over species and classifications, Leibniz developed a theory of knowledge based on concepts and ideas as the ground of social knowledge. Of course concepts are social and historical products, but they are shared by a society, because they are grounded in ours ways of thinking and not only vice versa.

In the *Essays on Human understanding*, Locke suggests that the definitions per genus-differentia of natural kinds are the result of a convention based on human praxis. Therefore, names are purely arbitrary signs for ideas which cannot be the same among speakers. Namely, if we say that ideas are an abstraction of the human mind which catches together similarities between things, then we have to conclude that ideas have no ground in nature, because of their mind-depending. Moreover, since the experiences of the external world done by a subject cannot be the same as the experiences of another one, we have also to conclude that, in using words, people can only suppose to signify the same ideas. Thereby, science is just an human workmanship.

Leibniz thinks that Locke's human workmanship theory leads to something like what nowadays is designed as private language and, in order to avoid this conclusion, he points out that without assuming that people shared rationality or a way of thinking, we cannot have any social meanings or general knowledge at all. For this reason we need a theory of concepts. Leibniz distinguishes between concept and idea. The latter is conceived as modality or possibility, instead of mental contents: the ideas are possible connections of requisites (requisita) based on human capacity of distinction, while concepts are not but the actualizations of ideas. Through this distinction between ideas and concepts, Leibniz is trying to avoid that 1. language is the expression of something in the mind like pre-formed mental contents or imagines; 2. we cannot have the same „idea“ e.g. of gold. The modal level of inborn ideas is the guarantee that something like gold, as we know it, is possible, because we can connect the same notions, when we think about gold – and this does not exclude that different subjects can have different degrees of clearness of this concept in accordance with their experiences. Put it in another way, subjects can have different actual concepts of gold, but they cannot have an idea of gold impossible in accordance with their possible world (e.g. without the propriety of the malleability). Ideas allow us to categorizing in accordance with our capacity of connecting non-contradictorily requisites in forming concepts and to re-present them throughout language. The next step in avoiding Locke's theory is indeed to assume that no actualization of a thought could happen without the use of language or others sorts

of signs: there is no internal or psychological content which precedes its expression throughout words or languages, as well as concepts cannot be thought without their expression through language. Although we assume a language and with it the classifications of a society, we have reason to do that and this represents our being rational.

Leibniz joins the modern way of thinking about concepts according to which concepts are logical categories which enable us to have knowledge. Moreover, it is interesting to analyze a dialog that presents some analogies with the contemporary debate in avoiding the problems which arise in assuming a theory of language based on intentionality.

Confusions about Central Concepts in the Cognitive Sciences

KEVIN REUTER

Not only are the concepts of content and representation two of the most important concepts in the cognitive sciences, they are also usually regarded as tightly related - hence the term 'representational content'. Two possibilities suggest themselves for clarifying this relation:

- (content is represented) X represents content C.
- (content represents) Content C represents Y.

A look into the literature reveals that both possibilities are widely enjoyed. On the one hand, many philosophers argue for (content is represented):

- (i) "one can represent a content doxastically" (Chalmers, 2004, p.4)
 - (ii) "if a mental representation M represents a content C" (Prinz, 2006, 441)
- On the other hand, the claim (content represents) is also strongly endorsed:
- (iii) "the way a given content represents it [world] as being" (Brewer, 2006, p.15)
 - (iv) "intentional content that represents the world" (Martin, 1992, p.745)

This is just a small selection of philosophers who have characterized the relation between representation and content in either of the two ways.¹ It seems obvious that both options cannot be true at the same time, otherwise we would have a case of double representation: X represents content C that itself represents Y - a thesis that indeed no one has ever argued for. In this paper I highlight the confusion surrounding the concepts of content and representation and identify some of the reasons why these terms are used in a contradictory way. It seems that commonsense psychology favours the view that content does not represent something else but is represented by mental states. It is part of our folk-psychological theory to refer to what a thought or a story is about as the content of the thought or the story. E.g. if you think about a unicorn or read a story about a unicorn, then the unicorn is part of the content of the thought or the story. Cognitive scientists often explain the ability of thoughts or stories to be about e.g. unicorns by stating that thoughts and stories represent unicorns.

Thus, from this consideration it would follow that the claim (content is represented) is true. Heck (2007), Hill (2006), Jackson (2006), Lurz (2001) and many other scholars seem to side with Chalmers and Prinz. Bermudez (2003), Macpherson (1998), Schellenberg (2008), Soteriou (2000) among many others seem to agree with Brewer and Martin.

However, several debates in the philosophy of mind and cognitive science run counter to folkpsychological considerations. I analyse three reasons why many philosophers consider the thesis (content represents) to be the preferred link between ‘content’ and ‘representation’.

(1) Several philosophers have pointed out the need to distinguish non-conceptual from conceptual content. Conceptual content is often regarded as content that consists of concepts, in contrast to non-conceptual content which can be entertained by e.g. animals which do not possess any concepts. Whereas the nature of concepts is fiercely debated, no one doubts that people represent the world by using concepts. If content is constituted by concepts, and if concepts represent the world, then it follows that content represents things in the world.

(2) The majority of cognitive scientists takes contents to be part of the mind (content internalism). In explaining how minds could possibly relate to the external world, people argue that minds represent the world in virtue of the content that mental states have. If this is indeed the case, then it is the contents themselves that seem to represent the external world.

(3) A third argument for thinking that content represents state of affairs can be identified within current representationalist theories of perception. Many contemporary representationalists argue that qualitative properties supervene on or are reducible to representational content. If, however, qualitative properties of experiences represent objects in the world, and if they are reducible to properties of content, then we can infer that content represents objects in the world. Given these reasons and my analysis of these reasons I conclude that an already difficult subject matter has recently been made even more complicated by an incautious use of central concepts in the cognitive sciences.

The Linda problem: A case study in different conceptualizations of “Concept” in linguistics and psychology

JAN HENNING SCHULZE

The aim of this paper is to explore and reflect on some aspects of how the conceptualization of “Concept” differs among cognitive linguistics and cognitive psychology and to integrate them into one framework.

I am going to focus on the cognitive-linguistic and the cognitive-psychological conceptualization of probability, which both seem to contradict each other. I suggest that the concept

of probability needs to be reconstructed on two different levels in order to fully grasp the way we use it in our thinking. This proposal is motivated by dual process theories of mind (e.g. Kahneman 2011, Stanovich 2011). The first reconstruction of a concept covers the level of automatic processing (type 1), while the second reconstruction covers the level of controlled processing (type 2). This dual reconstruction is helpful not only for the concept of “probability” but for any every-day concept.

My case study will be based on a psychological experiment by Tversky and Kahneman (1983) known as the Linda problem, where students received a personality sketch of a fictitious individual named Linda (“single, outspoken and very bright [...] majored in philosophy [...] was deeply concerned with issues of discrimination and social justice [...] participated in anti-nuclear demonstrations.”). The participants were asked to rank a list of occupations either by the degree to which Linda resembles a typical member of that class (first task) or by the degree of probability that Linda is a member of that class (second task). The list contained eight items, three of them being decisive:

- “Linda is active in the feminist movement” (F),
- “Linda is a bank teller” (T),
- “Linda is a bank teller and is active in the feminist movement” (T&F).

While it is ok to say that “feminist bank teller” is more prototypic for Linda (first task) it cannot be more probable than “bank teller” (second task), because if Linda is a “feminist bank teller” she also is a “bank teller”. The conjunction T&F cannot be more probable than T (“conjunction error”). On both tasks, however, about 90% of students ranked T&F higher than T irrespective of the student’s background in statistics and probability. They committed what is called a conjunction error.

Tversky and Kahneman interpreted this finding as an instance of irrationality. The majority gave an incorrect answer without even noticing their conjunction error. From a linguistic perspective, however, participants of the Linda experiment were fully justified to interpret probability in terms of prototypes. If Linda’s personality sketch is at all relevant to the question, then the word “probable” should be interpreted in the sense of “prototypic” rather than “statistically probable”. It’s the psychologists who are misled, not the participants. While linguists are convinced of their solution to the Linda problem, Kahneman still insists on being right because most participants acknowledge their conjunction error as soon as the problem is explained to them.

My solution is based on the observation that people can obviously switch from one conceptualization of probability to the other. This suggests a dual reconstruction of probability: one with a prototype interpretation and the other with a statistical interpretation. The prototype interpretation is rooted in type-1-processing; the statistical interpretation is rooted in type-2-processing. Every-day language is optimized for automatic type-1-processes that run fast,

effortless, and in parallel. Technical language, on the other hand, is optimized for distinctiveness and triggers type-2-processes that run slowly, effortful, and in serial.

Once we start reflecting on a specific concept, we switch into type 2 mode. While every-day thinking is “quick and dirty” and makes use of vague and very complex concepts (type 1), reflective thinking runs in serial and makes use of only one clear-cut and unambiguous aspect of each of these concepts (type 2).

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The Role of Action for Concepts

TIM SEUCHTER

In this paper, an account for role of action in conceptual thought and conceptual development will be introduced. Following the core ideas of the embodied cognition paradigm, at least some cognitive processes have a direct connection to bodily processes (cf. Lakoff and Johnson 1999; Glenberg and Kaschak 2002; Pulvermüller 2005). Actions of subjects, understood as goal directed interactions with objects and the environment clearly constitute an important realm of bodily processes. The main aim is to specify how and in which respects possible (inter-)actions of subjects are reflected in conceptual thought.

The starting point will be considerations following the discussion about affordances (Gibson 1979, Chemero 2011) and causal indexicals (Campbell 1994, 1995). In a nutshell, both conceptions are ways of describing the role of some relevant properties of (objects in) the environment for behavior and cognition. Moreover, both are about objective properties (of objects) that are at the same time related to some physical properties of the subjects in question. Causal indexical thinking, as John Campbell (Campbell 1993, 1994) puts it, is an implicit way of thinking about the environment in terms of what a subject can do with it or how it can possibly interact. It is thinking about environmental conditions in line with tacit knowledge about one’s own abilities. Examples for causal indexical thinking are expressed in terms like “this is a weight I can easily lift” or “this is within reach (for me)” or “this is too hot to handle (for me)”. Campbell argues convincingly that these ways of thinking do not involve the concepts that are used for expressing them linguistically. Even non-linguistic animals or human pre-linguistic infants think in a causal indexical manner. Gibson’s famous term “affordances” (Gibson 1979) is based on very similar considerations. Affordances are relational properties of the environment whose perception and enactment on is grounded in the bodily constitution of the subject. Well known examples for affordances are: surfaces are walk-on-able, a rock is bump-into-able and a chair is sit-on-able. Action-related properties as described by Gibson and Campbell can be conceived of as em-

bodied, at least partly or to some degree, in the sense that they rely on or involve physical aspects and abilities constituted by bodily features of the subject.

Concepts, understood as the building blocks of thought, have to be embodied to at least some degree or in some aspects, if a theory of embodied cognition wants to make a substantial claim. A very plausible candidate for embodied concepts are action-related concepts, expressed by action verbs, such as “grasping” “reaching” or concepts denoting objects that can be acted on. Action verbs refer to possible or actual movements, thus the referent of “grasping” is a grasping movement or the action of grasping. They can be understood as embodied, as they refer to movements and therefore motor processes, even in the absence of actual movements. Object concepts may also refer to actions: Objects, e.g. a hammer, a cup or a hot plate allow for interaction, i.e. subjects normally not only refer to the object or to the object’s physical properties (shape, size color) alone but also what can possibly be done with the object in question. A part of these concepts consequently is what the objects possibly afford, and affordances in turn refer to the bodily constitution of the subjects (among other things such as intentions and context, which will not be discussed here). One aspect of categorizing objects then is the aspect of “what one can do with it”, e.g. hammers are things to put nails in wall with, or hot plates are things better not to touch. Object categorization – conceptualization – relies on the subjects possible (inter-) actions with the object in question; it is this part of an object-concept that is best understood as directly referring to (possible) actions and therefore embodied in the same sense as action-verbs. Thinking of concepts in this way also provides good grounds for a theory of conceptual development in terms of an action-based approach – developing object concepts is to a crucial extend grounded on possible interaction with the objects in question, objects then become categorized in a first instance according to what they afford for the subject.

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