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Anna M. Borghi  
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# Words as Social Tools: An Embodied View on Abstract Concepts



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*From Anna*

*To Lola, Luca and Francesco, with all my love, phantasy and energy. To my parents, Vanna and Gigi, with gratitude*

*From Ferdinand*

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# Chapter 1

## The Problem of Definition

*There is no abstract art. You must always start with something. Afterward you can remove all traces of reality.*

Picasso

*I hardly need to abstract things, for each object is unreal enough already, so unreal that I can only make it real by means of painting.*

Max Beckmann

### 1.1 Abstract Concepts and Word Meanings: How to Define Them?

This book is about abstract concepts and abstract word meanings. Humans have the amazing ability to distinguish objects and entities, forming categories—categories of preys and predators, of artefacts and living beings, of animals and plants. Concepts can be seen as the cognitive side of categories (Barsalou et al. 2003), a sort of “mental glue” that links our past with our current experiences in the world (Murphy 2002). Concepts are grounded in our sensory and motor system, that is they reactivate previous experiences with their referents, helping us to act in the environment in which we are immersed (Barsalou 1999; Borghi 2005; Gallese and Lakoff 2005). For example, possessing a concept of “ball” helps us predicting what to do when we see a novel ball. Once formed, many concepts are then typically associated with names. In this book we will equate concepts with word meanings. This might seem problematic. Word meanings are typically less broad and more constrained than the corresponding concepts, since language contributes in rendering the boundaries between categories more tight (Cangelosi and Parisi 1998; Cangelosi and Harnad 2000); in addition, there exist concepts without a clear linguistic counterpart. In this sense, even other animals besides humans can possess concepts. At the same time, however, it is possible that humans ability to categorize is influenced from the start by the important fact that we are a linguistic species. Furthermore, the influence of language is so pervasive and literature on human concepts is so influenced by studies on language that in most cases it is not possible to distinguish between concepts and word meanings. For these reasons, we will use the term “concepts” and the term “words” to refer to both concepts and word meanings, unless otherwise specified.

This book deals with the marvelous capacity humans have to form not only concrete but also abstract concepts, as well as to use abstract word meanings. As the quotes at the beginning of the chapter suggest, defining abstract concepts—as abstract art—is not an easy matter, and it is a controversial one. With abstract

concepts and word meanings we refer to concepts mediated by words as “freedom” and “truth”. To clarify: we do not intend to claim that words are abstract. All words are material and perceivable—for example, they can be heard, pronounced or read. When we use the term “abstract words”, in keeping with the literature, we refer to the fact that their meaning is abstract. There exist indeed words the referents of which are not material, perceivable, concrete objects and entities, as “balls” and “cats”. Their referents are instead mental states, events, conditions, as “thought”, “justice”, “totalitarianism”. This book will deal with them. Notice that not all abstract concepts are abstract in the same way but that there might be different degrees of abstractness. As argued by Larry Barsalou (2003), concepts become increasingly abstract (e.g., from “pen” to “truth”) as they become more detached from physical entities, and more associated with mental states.

Below we list the main characteristics that, in our view, characterize abstract concepts.

*Different grounding* Abstract concepts are not grounded in physical entities and in concrete, single objects, as concrete concepts. This does not imply at all that abstract concepts are not grounded or that their referents are not material, since they might be grounded in situations, events, mental states, and in complex relations between objects etc. Notice however that there is always a continuum between abstract and concrete concepts. Very concrete concepts have abstract aspects and vice versa. Consider for example the notion of “penny”: it refers to a concrete, manipulable element, but it has some abstract properties, as the possibility to be exchanged, the value it is attached to it, etc. Furthermore, words that refer to concrete concepts can also have a metaphorical meaning, beyond the literal one. For example, we can speak of a mental “journey”.

*Complexity* Abstract concepts are more complex than concrete ones. As argued by Larry Barsalou: “abstract concepts often capture complex configurations of physical and mental events” (Barsalou 2003, p. 1185), i.e. they evoke spatial, temporal and causal relations. This definition relies on data showing that abstract concepts evoke properties and relations more than objects and events (e.g., Wiemer-Hastings and Xu 2005).

*Meaning variability* Abstract concepts meaning is highly changeable compared to the meaning of concrete words. It is much easier to gain consensus on what “bottle” means and evoke, than on what “truth” means and evoke. In addition, an abstract concept such as “truth” is more exposed to the different experiences compared to a concept such as “bottle”. This does not mean that “bottle” is a stable concept while truth is not, since both concepts are continuously updated and filled by new experiences with the category members. However, the meaning of abstract concepts is more variable and less stable, both across subjects and within the same subject.

So far we have introduced those that, in our opinion, are the main characteristics of abstract concepts and words. In the next paragraphs we will further deal with the problem of definition, trying to elucidate which concepts can be classified

as abstract in our view. First, we will distinguish between superordinate concepts and abstract concepts, clarifying that this book does not focus on abstraction but rather on abstractness. A major part of the chapter is dedicated to the analysis of how psycholinguistic studies have addressed the problem of defining abstract concepts and words: we will describe the criteria that have been proposed to identify abstract words, and then we will discuss whether emotional terms can be considered as abstract or not. Finally we will discuss whether the distinction between concrete and abstract concepts can be considered as a dichotomy, as a continuum or whether more fine-grained analyses of the different kinds of abstract concepts are necessary.

## 1.2 Abstraction and Abstractness

A first question that might rise is the following: Would words as “animal” or as “artifact” be considered as abstract ones? Animals and artifacts might come in a great variety—foxes, robins and penguins do not have much in common, and neither do chairs and screwdrivers. In addition, the superordinate term “animal” is certainly more abstract than the basic term “dog”, since it refers to a collection of rather diverse exemplars. But even the subordinate term “cocker” can be considered as partially abstract, since it abstracts and extracts some common characteristics from the experience of different cockers.

The definition we proposed might appear only as a negative one. It seems that we clarify what abstract concepts are NOT, not what they are. For these reasons, in order to answer to the question above and to provide a positive definition it is important to distinguish between abstraction and abstractness.

Abstraction is the process by means of which “knowledge of a specific category has been abstracted out of the buzzing and blooming confusion of experience” by forming a summative representation of that experience (Barsalou 2003: 389). This form of abstraction is at the core of every form of categorization, since it regards both concrete concepts, i.e. concepts endowed with perceivable referents, and abstract concepts. While forming each category, indeed, we somehow “abstract” from single instances and specific experiences. Even a subordinate-level category, such as “cocker”, abstracts from single instances of dogs, and obviously superordinate level categories such as “animal” abstract more than concrete ones.

Abstractness is sometimes conflated with abstraction. However, we intend to keep abstraction and abstractness separate as much as possible, and this book will focus on the last one. An example will clarify the reasons of this choice. Concepts as “animal” and “furniture” (on top of the abstraction hierarchy) are more abstract than “dog” and “chair”, but their category members are all concrete instances. Concepts as “freedom” and “phantasy”, instead, are not abstract because they are on top on a conceptual hierarchy, but because their referent/s are not concrete objects or entities: they are not visible, manipulable or perceivable through any of our senses. This does not imply that they are not grounded in our sensorimotor

system. Take for example the concept of “phantasy”: it is grounded since it refers to a sparse collection of elements, as it evokes situations, events, and it likely elicits internal introspective states. A further difference that might exist between concepts on top of an abstraction hierarchy, such as “animal” or “vehicle”, and abstract ones such as “freedom”, concerns quantification: we can easily count animals and vehicles, while the amount of freedom or of truth might vary. This distinction based on the easiness of quantification is difficult to operationalize, and further research is needed in order to verify to what extent it applies to all subsets of abstract concepts (numbers, for example, are a kind of abstract concepts that can obviously be taken as quantifiable, even if they belong to a different symbolic system. However, we will see that numbers represent a special kind of abstract concepts).

One of the main reasons why we intend to focus on abstractness rather than on abstraction is a theoretical one. Explaining abstract concepts and words (abstractness) constitutes a major challenge for embodied and grounded theories of cognition (EGC) (Barsalou 1999, 2003, 2008; Borghi and Pecher 2011, 2012; Borghi and Caruana (in press); Gallese and Lakoff 2005; Myachykov et al. 2013). EGC theories assume that our bodily characteristics constrain our cognitive processes, from perception and action to processes traditionally considered as ‘high level’ processes such as language and thought. Many scientists nowadays recognize that these theories are rather powerful in explaining conceptual representation, as the burst of recent evidence on activation of perception and action while processing concrete concepts and words has shown. However, the number of skeptics is rather consistent when abstract concepts, such as “truth”, “phantasy” and “justice”, come into play. One of the aims of this book is to propose a theory of abstract concepts and words in keeping with an embodied and grounded perspective of cognition.

### *1.2.1 Abstractness and the Glue of Language*

In this book we will propose and defend the view that, the more concepts increase in abstractness, the more they need some sort of glue that keeps the different category members together (Murphy 2002). This glue in our view is relevant for all concepts, but it becomes highly important for concepts on top of the abstraction hierarchy, as superordinate terms (e.g., “plants”), and it is particularly crucial for abstract concepts (e.g., “thought”). This also raises the question of whether abstract concepts have a prototypical and a hierarchical structure like concrete concepts (animal-dog-cocker). Probably they do not, because they are more a concept than a category with prototypical examples and superordinate and subordinate members.

Let us consider first concepts that do differ in abstraction but not in degree of abstractness, as subordinate and superordinate terms (e.g., “siamese cat”, “animal”). The glue that keeps together different members of superordinate categories can be given by the presence of a common context where different category members can be found. Murphy and Wisniewski (1989) have demonstrated that