



## Beyond Concepts: Unicepts, Language, and Natural Information

Millikan, Ruth Garrett, Oxford: Oxford University Press, 2017, pp. iv + 240, £25.00 (hardback).

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To cite this article: Paul Griffiths (2019): Beyond Concepts: Unicepts, Language, and Natural Information, Australasian Journal of Philosophy, DOI: [10.1080/00048402.2019.1618885](https://doi.org/10.1080/00048402.2019.1618885)

To link to this article: <https://doi.org/10.1080/00048402.2019.1618885>



Published online: 23 Jun 2019.



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## BOOK REVIEW

Millikan, Ruth Garrett, *Beyond Concepts: Unicepts, Language, and Natural Information*, Oxford: Oxford University Press, 2017, pp. iv + 240, £25.00 (hardback).

Millikan's 'sprawling topic ... is Kant's *how is knowledge possible?* but viewed from a contemporary naturalistic standpoint' [3]. Knowledge is possible because there is a world to be known, mechanisms for tracking aspects of reality, and utterances that are differentially replicated.

Millikan invented 'unicept' because 'what I was trying to talk about, and what seemed to have been misunderstood by others in such diverse and inventive ways, hardly resembled classical concepts at all' [43n1]. A *unicept* is the property of one cognitive agent. Unicepts are not shared, even by agents who successfully communicate. Unicepts are founded on 'unitrackers', postulated mental mechanisms that track aspects of the world, allowing agents to reidentify the same thing on different occasions and under different circumstances. Millikan has previously described concepts as 'abilities'. Unicepts and unitrackers *support* abilities but are themselves mental machinery, implemented in the brain in some unspecified manner. Unicepts are the elements of thoughts, either 'factive unicepts', which combine together into intentional attitudes, or 'affording unicepts' which help to produce intentional action. The content of a unicept is the aspect of reality which it is the Proper function of its unitracker to track, a form of direct realism. There is no room here for Fregean senses, modes of presentation, or intensions, and Millikan is at pains to show that unitrackers and unicepts are not these under other names.

Part I opens with a seductive, but ultimately elusive, answer to the question of how the world is such that it can be known. Imagine a hypergraph in which every physical object is plotted, and where each dimension corresponds to a property. Rather than being smoothly spread through this space, objects will be clustered—protons with protons, lyrebirds with lyrebirds, and gothic cathedrals with gothic cathedrals. Clusters that occur because of some cause of resemblance, rather than by chance, are 'real kinds'. Some real kinds, like protons, are 'eternal': the cluster is required by laws of nature. Others, like lyrebirds and gothic cathedrals, are 'historical': there is a contingent cause of their clustering. Finally, Millikan points out that an individual is very like a historical kind. Individuals, such as the lyrebird that I heard last month, have properties that persist through time. If I have a good unitracker for this bird, I can reidentify the lyrebird that I hear in August as that heard in June—'the Kalianna Ridge Lyrebird'.

The world can be known, Millikan suggests, because it contains 'limited variety'—real kinds and individuals that can be reidentified. Each thing can be reidentified by using numerous subsets of properties (I thought of these as operational definitions). My unitracker for lyrebirds might be quite different from yours. Moreover, the world is not neat. The various sub-species of rosella are not well demarcated, so an Adelaide birder will have a different unitracker for *Playcerus elegans flaveolus* than a Sydney birder does. Nevertheless, both have a unicept that refers directly to that real kind.

It is hard to know how much weight to put on the hyperspace analogy—or how much it can bear. Millikan introduces it as ‘a roughly put observation ... an “intuition pump”’ [12]. It is hard to imagine a similarity (distance) metric for the whole range of properties she expresses as dimensions [13n2]. Nevertheless, she relies on this mental picture throughout the book. Intuitions about low-dimensional spaces are an unreliable guide to the properties of high-dimensional spaces, so it is an open question whether an actual hyperspace adequate to express everything that Millikan needs would have the clumps, peaks, and ridges to which she alludes, or an appropriate similarity relation.

The theory of reference offered in chapter 5 is essentially that of Millikan’s *Language, Thought and Other Biological Categories* [1984]. The reference of a unicept is that aspect of reality which it is the Proper function of the associated unitracker to track. Associated with each unitracker is a success condition, something about the world that must be the case if the unitracker is to perform its function in the way that it performed it in the past and that caused the persistence of that unitracker. A unitracker malfunctions, and the corresponding unicept misrepresents, when they occur in the absence of this success condition.

Millikan’s version of the ‘etiological’ or ‘selected effect’ approach to function has some distinctive features that are often overlooked. Her primary concern is with the differential replication of utterances in the history of a language. This is easy to overlook because her examples often feature representations whose success conditions derive from natural selection. The success conditions of utterances in a public language, however, do not derive from natural selection acting on organisms, but from the differential replication of utterances themselves.

Another often-overlooked feature is that Millikan’s ‘Normal’ conditions (big ‘N’) are very different from familiar biological conceptions of normal (small ‘n’) environment, such as the ‘environment of evolutionary adaptedness’ (EEA) or the ecological niche. The normal environment in which an adaptation functions is the environment in which it evolved. It includes both benign and hostile patches, and an adaptation in this environment will sometimes perform its adaptive function and sometimes not. For example, the normal environment in which a rabbit decides whether to feed or flee contains both predators and false alarms. The rabbit’s brain has been shaped by the probability of each condition and the costs and benefits of each action in the normal environment. In the normal environment, the rabbit will produce Type I errors—running away when there is no predator. But the Normal (big ‘N’) conditions for a trait to perform its Proper function are conditions under which it actually does perform that function, and moreover does so in the way that led to past selection of that trait (using Millikan’s language, it performs its function in accordance with a Normal explanation). The Normal conditions for a rabbit to decide to run away include the actual presence of a predator, since it is only under that condition that running away will increase that rabbit’s fitness. Only when a predator is present does the detection mechanism perform its Proper function in accordance with a Normal explanation.

This points to a significant and largely unexplored problem for Millikan’s approach. The idea of the Normal assumes that if a trait has evolved through natural selection, then there is a reasonably unified causal explanation in which properties of the trait interact with the environment to explain its success. But this cannot be assumed. In both conventional population genetics and more abstract approaches such as adaptive dynamics the idea that the trait(s) that exist at equilibrium do so because of consistent

ways in which they interacted with the environment and that caused them to outcompete alternative traits is highly problematic (for philosophical treatments of this conundrum, see Birch [2016] and Okasha [2018]). One reason to defend this idea, or some approximation to it, is that organisms appear to be well-adapted to the environments in which we find them. However, in the current state of theory, there is no reason to assume that a population dynamics of utterances in public language will have this feature, since we find it hard to obtain in our best current models. Simply put, if success conditions are defined as Millikan defines them, then it is an open question whether utterances have success conditions.

In Part II, Millikan introduces the other core concept of the book—‘infosign’. An infosign is a complete sign of a state of affairs. It is the basic unit of communication. Reusable meaningful components of linguistic infosigns derive from complete infosigns and not the other way around. Infosigns carry ‘natural information’ about the states of affairs that they signify. Natural information is simply correlational information. A central part of Millikan’s project is to minimise the difference between infosigns in general and intentional infosigns, such as linguistic utterances: ‘coming to knowledge of the world through language is but one more way of coming to knowledge of the world through infosigns’ [155]. She does this by reducing the intentionality of an infosign to a particular way in which a correlation can become established. An infosign family is a ‘reproductively established family’ of signs—a lineage of sign tokens linked by an ancestor-descendant relation. An intentional infosign is a member of an infosign family where that family exists because the correlation between sign and signified has been established through successful coordination between senders and receivers. The idea here is familiar from recent work on the evolution of signalling [Skrms 2010]. Unlike Gricean natural signs, conventional signs correlate with a particular state of affairs because producing the sign in a way that sustains that correlation is an equilibrium that emerges in repeated interactions between a sender and a receiver.

The idea of a convention of language is replaced in Millikan’s work by the Proper function of a sign. An intentional sign is false when it is used in a way that does not let it perform its Proper function, which is equivalent to its being used in violation of the convention that emerged in the signalling game. A Normal (big ‘N’) utterance must be produced when the state of affairs that it signifies obtains, and must be produced in accordance with the Normal explanation of how signs in this family facilitated successful communication. Thus, Normal utterances are guaranteed to be reliable indicators of the state of affairs which it is their function to indicate. We learn about the world through language because utterances carry natural information about the world.

The philosopher, says Millikan [9], must work

partly behind and partly before science. Where current evidence from science is available, it should be used conscientiously. [However] ... one job of philosophy is still the classical one of suggesting and arguing for new ways of thinking about things.

In several respects, Millikan’s suggestions are well ahead of science, and even ahead of the established sciences from which she takes inspiration. They are intriguing, radically naturalistic proposals that many will regard as riding roughshod over the phenomenon to be explained, but others as a fine start in transforming our understanding of what the phenomena of thought and language actually are.

I have benefited greatly from reading this book with a group of colleagues from the Universities of Sydney and Wollongong.

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<https://doi.org/10.1080/00048402.2019.1618885>

