

The Reference of Natural Kind Terms, de LUIS FERNÁNDEZ MORENO, FRANKFURT AM MAIN, PETER LANG EDITION, 2016, 375 pp.

After writing *The Reference of Proper Names* in 2006, Luis Fernández Moreno offers us now a new book to complete the topic of the reference of our basic and more elemental expressions, such as proper names and general terms. Like in his 2006 book, where he exhaustively studied the reference of proper names, in this one he focusses on the reference of a particular sort of general terms, namely natural kind terms. Or more specifically, natural substance terms, such as “water” or “gold”, as shown by his focus on the analysis of the natural kind term “water”, to which he dedicates an important part of chapter 8. The framework of the book is the debate between descriptivist and causal theories about the reference of natural kind terms. After a very careful and documented analysis of the main arguments and objections proposed by both theories, the author concludes that “the antagonism between causal and descriptivist reference theories on such sort of terms is not as great as is usually assumed” [p. 9]. Thus, he defends a descriptive-causal theory as the most appropriate way to handle the reference of natural kind terms, whose main details are presented throughout the book. Having established the main aim of the book, it becomes clear why it is the first monograph and the fifth title of the series “Studies in Philosophy of Language and Linguistics”, edited by Piotr Stalmaszczyk. For the book addresses one of the most important problems in the study of philosophy of language – and philosophy in general – that is, how language hooks onto the world. Or, in more technical words, the problem of the reference of our expressions to the objects or entities of the world and, as in the case of this book, the reference of natural kind terms to natural substances.

The structure of the book is well-designed to fulfil the aims of the author and the thesis defended. As the author recognizes, most contemporary philosophers of language are defenders of causal theories of the reference of natural kind terms, Kripke and Putnam being their main advocates. Therefore, the author dedicates a large part of the book, specifically chapters 4 and 5, to present their theories. Before that, in chapters 1 and 2, the author presents Locke’s theory of natural kind terms and Mill’s theory of general and natural kind terms, respectively, since Putnam’s causal theory of reference criticizes Locke’s semantic theory, and Kripke’s is directed against Mill’s theory of natural kind terms (considered by Kripke as a representative descriptivist theory of natural kind

terms). In my opinion, this was a good decision, because the author describes and summarizes in a few pages the most important ideas of these philosophers regarding the semantics of natural kind terms, thereby going against the commonly held view that analytical philosophy does not consider a historical perspective. More importantly, in chapter 6, entitled “Locke and Putnam on the Reference of Natural Kind Terms”, the author tries to update Locke’s semantic theory on natural substances or natural kind terms to ascertain whether Locke’s theory can incorporate two of the most representative elements of Putnam’s externalist causal theory about the reference of natural kind terms. These are the contribution of society, where the division of linguistic labor and the role of experts play an important role, and the contribution of the environment, where the underlying properties shared by the samples belonging to a given kind have to be taken into account. Fernández Moreno’s answers are positive in relation to the first external element, and negative with respect to the second, but he proposes an indirect way of considering how in Locke’s semantics the contribution of the environment can play a role, namely through the dependence of the Lockean nominal essence on the real essence. In order to understand this conclusion, the author thoroughly analyses four of Locke’s arguments against what he calls the “thesis of the priority of the real essence”. This thesis states that the reference of substance terms is determined by the real essence, contrary to what characterizes Locke’s semantics (i.e., that the reference of a substance term is determined by the properties that conform the nominal essence). Fernández Moreno considers that these Lockean arguments are not conclusive, and since the dependence of nominal essences on real essences in Locke’s theory is very strong and equivalent to logical consequence, then “real essences would have *ontological priority* over nominal essences when it comes to determining the reference of substance terms” [p. 194]. Given the author’s explanations, it is easy to see the indirect way proposed by him to make room in Locke’s semantics for the contribution of the environment in the determination of the reference of natural kind terms, as proposed by Putnam. For, the underlying properties –in Putnam’s terminology– would correspond to the real essence, which is the ground of the properties that constitute the nominal essence.

In chapter 2, Fernández Moreno presents Mill’s theory of general and natural kind terms, and argues that Kripke’s rejection of Mill’s theory of natural kind terms is not accurate, because Kripke assimilates these two different theories, and “Kripke’s objections against Mill’s theory of general terms do not apply to Mill’s theory of natural kind terms” [p. 342]. None-

theless, in the author's opinion, Kripke's erroneous interpretation could be motivated by inconsistencies on Mill's part. Kripke characterizes Mill's theory of natural kind terms as a descriptivist theory, where the connotation of a term is defined by a conjunction of properties, which in turn give the necessary and sufficient conditions to determine the denotation of the word. However, according to Fernández Moreno, this characterization applies only to general terms and the ordinary connotation of natural kind terms, but not to the "special and technical" connotation of natural kind terms, which in Mill's terminology would coincide with his notion of a "scientific definition". In line with Mill's descriptivist theory of natural kind terms, Kripke also rejects the descriptivist theory of natural kind terms that, in his opinion, was defended by Frege and Russell. Fernández Moreno develops the theories of these philosophers in chapter 3, seeking "to elucidate whether Kripke's *interpretation* of those theories and of what they have in common is acceptable as well as to establish the *similarities* and *differences* of those theories with regard to Mill's theory" [p. 56].

Later in the book, more recent and current perspectives on the topic of the reference of natural kind terms are taken into account by the author, and chapter 7 is devoted to the contemporary descriptivist theory of reference, which he seems to favor. The chapter begins with some discussion of the descriptivist theories of Searle and Strawson, which represent the prototype of descriptivist theory to which Kripke addressed his principal criticisms. Kripke understands this descriptivist theory as a meaning theory or as a reference theory – a distinction with which the author of the book agrees –, and maintains that the extension of the descriptivist theory to natural kind terms is not adequate in neither of these two ways. Searle's and Strawson's descriptivist theories are usually called "cluster descriptivist theories", because the reference of names or natural kind terms is determined by a cluster of properties or descriptions associated with the terms, not necessarily by all of them but by a sufficient number of them. According to Fernández Moreno, Kripke misinterprets these theories, because he claims that according to them the determination of the reference of names or natural kind terms is a matter only of general or purely qualitative properties. In order to support this objection to Kripke, Fernández Moreno pays attention to the recent contributions made by Jackson to the descriptivist theory, called "causal descriptivism". Thus, Fernández Moreno shows that in Jackson's view there are a great variety of descriptions to account for the reference of natural kind terms (and proper names), amongst them those called by the author of the book "parasitic descriptions", as well as rigidified

descriptions. These are two ways of incorporating the causal perspective of reference into descriptivism. But descriptivists do not rely only on descriptions for the determination of reference. Thus, Fernández Moreno shows in this chapter that in Searle's and Jackson's descriptivist views the contribution of experts is also present in the determination of the reference of natural kind terms.

As the author of the book indicates, a very important task for theories of reference is to provide an account of the nature of the mechanism of reference, i.e., to explain how the reference of expressions is determined. Following Kripke, this task can be divided into two theories, which gives rise to a distinction between a theory of reference fixing, and a theory of reference transmission or reference borrowing. This distinction is relevant and helps to understand and clarify the main thesis held by Fernández Moreno in the book, i.e., the defence of a descriptive-causal perspective in order to explain the reference of natural kind terms. Thus, he states almost at the end of the book: "I claim that reference fixing has to include descriptive elements. However, since the ostensive contact with members of a natural kind involves a causal component, the most plausible ostensive reference fixing theory for natural kind terms is *descriptive-causal*" [p. 347]. In relation with the proposals made by Kripke and Putnam concerning *ostensive* reference fixing, the author maintains that their proposal should also be descriptive-causal. For instance, in Kripke's theory when the reference is fixed ostensively, Kripke assumes that in order to disambiguate the ostension a general term would be needed, such as a categorical term, subsuming, therefore, the ostensive introduction under the descriptive introduction. Hence, and in relation with reference fixing, Fernández Moreno maintains that both descriptivist and causal theories of reference are not so far away. In his own words: "Kripke does not seem to find significant differences between the descriptivist theory and the causal theory concerning the fixing of the reference, since he concedes that there is a sort of case in which the descriptivist theory is *true*, the cases of that type being 'usually initial baptism'" [p. 85]. The author concludes, then, that Kripke's arguments against descriptivism, usually known as the arguments from ignorance and error, have to be addressed not to the fixation of reference but rather to the transmission of reference. But even when Fernández Moreno recognizes that reference borrowing requires causal chains, he also maintains that the "most adequate theory of reference borrowing should be a descriptive-causal theory" [p. 348], because the speakers who borrow a natural kind term have to associate them with at least a categorical term in order to express the type of entity referred to.

Many other interesting topics are dealt with in the book as they are important issues to be handled in relation with reference theories of natural kind terms, whether descriptivist, causal or descriptive-causal — namely, essentialism, theoretical identities, reference change, the semantics of artifactual kind terms, two-dimensionalism, experimental semantics, macroscopic and microscopic properties, the *qua* problem, and so on. In this review, I have chosen to emphasize what, in my opinion, is the most significant contribution of the author to the debate between descriptivist and causal reference theories. Fernández Moreno has managed to offer here a balanced analysis and criticism of the main theories about the reference of natural kind terms and, at the same time, a harmonized view, i. e. the descriptive-causal theory he proposes.

I find his proposal very wise, because he has been able to recognize what is worth and valuable in the two main perspectives that analyze natural kind terms. And given that this book on the reference of natural kind terms is so well written, with exquisite attention to the use of technical concepts and nomenclature, with many remarks and information, and with such great honesty, we expect —following the clue he has given to the readers in the last line of the book— that in the future the author will complete the task of giving a general account of natural kind terms by writing a new book on the meaning of such terms.

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Making and Breaking Mathematical Sense: Histories and Philosophies of Mathematical Practice, by ROI WAGNER, PRINCETON, PRINCETON UNIVERSITY PRESS, 2017, pp. 256.

In this book, Roi Wagner proposes a theoretical framework to analyse mathematical practices that seems close to the one developed by other authors, particularly Ferreirós (2016), but including some ideas from French post-structuralism.