

**THOUGHT, LANGUAGE, AND
ONTOLOGY:**
Essays in Memory of Hector-Neri Castañeda

Edited by

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Thought, Language, and Ontology / Chapter 1

Thought, Language, and Ontology / Preface

Thought, Language, and Ontology: An Introduction

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1 *De Re*

Hector-Neri Castañeda, the Mahlon Powell Professor of Philosophy at Indiana University, died on September 7, 1991, at the age of 66, after a year-long illness. In his lengthy and intense philosophical career, Castañeda deeply influenced analytic philosophy. In the last part of his life, he was also committed to spreading his views beyond the circle of analytic philosophy and to bridging the gap between analytic and so-called continental philosophy, convinced as he was of the overall unity of good philosophical theorizing. The importance and influence of his work is witnessed by three *Festschriften* dedicated to him, which included critical examinations of his theories by leading philosophers, along with Castañeda's replies (Tomberlin 1983, 1986; Jacobi & Pape 1980).

Castañeda's humanity and devotion to philosophy is evidenced in his fascinating autobiography, contained in Tomberlin 1986. He was also the founding editor of *Noûs*, one of the world's best philosophical journals, now published by Blackwell Publishers.

From the beginning, *Noûs* emphasized the analytic tradition in philosophy, but has always been open to all kinds of serious philosophy, as its Latin motto witnessed: *Nihil philosophicum a nobis alienum putamus*.

In his impressive collection of works, Castañeda developed a unique and original world view that nicely blends influences from Plato, Leibniz, Kant, Frege, Meinong, and Russell, as well as his teacher Wilfrid Sellars, among others. While constructing this world view, Castañeda made contributions to the fields of history of philosophy, philosophical method, ontology, philosophy of language, ethics, theory of action, and deontic logic. These contributions have often constituted milestones of philosophical thought quite independent of the more general framework in which Castañeda placed them. They cannot thus be ignored by serious students in any of these fields, regardless of one's general philosophical orientation. Among his lasting contributions to philosophy are:

1. *The theory of indicators and quasi-indicators*, grounded in conceptual and linguistic data that had not hitherto been noted by philosophers of language (cf. Castañeda 1967). Starting from such data, Castañeda was able to launch an attack on deep metaphysical issues, such as the Cartesian *cogito* and the relation between the phenomenal and the noumenal world, from an entirely new and fresh perspective (cf. "De Dicto: My Philosophical Search", in Tomberlin 1986).
2. *Guise theory*, a theory of mind, language, and their connection with reality, which provides a unified account of a vast collection of data, such as Frege's paradox of reference and Meinongian puzzles about non-existent objects. Castañeda 1989a presents his ontological theories in a systematic and unified perspective and contains his major papers on guise theory.
3. *The theory of practitions*, which accounts simply and elegantly for all the paradoxes of deontic logic and for related issues in meta-ethics and the philosophy of mind and action. Castañeda 1974b and 1975b are his most comprehensive treatments of these topics.

No serious scholar in the cognitive sciences, especially philosophy, linguistics, or artificial intelligence (AI), can now neglect the important themes raised by these theories. Indeed, they have been widely discussed not only in the philosophical community but in AI as well.

Castañeda's work has been disseminated not only through his written works but also through his indefatigable pursuit of philosophical conversations and correspondence and his passionate teaching activity. Castañeda interpreted each of his courses as somehow ranging over all aspects of philosophy, not only on the specific topic of the course. For example, in his ethics classes, Castañeda typically taught the logical background necessary for a deeper understanding of ethical theories and led the students to fully grasp the connection between ethical theories and the deepest problems

in metaphysics, logic, and the philosophy of language. But, above all, in commenting on other philosophers' theories and in proposing his own, Castañeda demonstrated to his students the most rigorous philosophical methodology, the bulk of which was to always ground theories on a careful scrutiny of vast collections of data.

Indeed, it was not only philosophical methodology but more generally scientific methodology that Castañeda was able to pass on to his students. Castañeda in fact did not see philosophy as an isolated discipline but as part of the general quest for truth and as such a part of the scientific enterprise as a whole. It is thus not merely a coincidence that many students of Castañeda have blended their philosophical activity with research in AI and computer science.

The present volume collects 15 papers, most of them commissioned especially for this volume. The distinguishing feature of the present collection is that all of its authors have been students of Castañeda; most of them were his Ph.D. students. Thus, this volume presents the "second generation" as it were (and, in at least one case, the third generation!). In addition, there are appendices containing updates to previously published bibliographies of Castañeda's writings, a report on Castañeda's *Nachlass*, a survey of Castañeda's influence on artificial intelligence, and an "academic family tree" of Castañeda's doctoral students, grandstudents, and great-grandstudents.

This volume is intended to express our gratitude to Castañeda for the teaching that we received. But, above all, it is meant to express our conviction that the work of Castañeda has been a force for philosophical progress. We believe that his work must continue to be explored and that his philosophical methodology must continue to be applied in an effort to further illuminate all the issues that he so deeply investigated. We hope that this volume will contribute to this endeavor.

2 *De Dicto*

2.1 Guise Theory and Other Ontological Frameworks

Castañeda was fond of saying that he was dogmatic as regards method, but pluralistic as regards theories. By this, he meant above all: first, that honest theoretical construction cannot ultimately dispense with a painstaking confrontation with all the available data; and, second, that data do not entail a particular theoretical approach, so that typically there is more than one theory that successfully complies with the available data and is worth pursuing.

He often illustrated this point with the problem, arising from Frege's paradox of reference, of substitutivity failure in belief contexts. By carefully examining this datum (cf. Orilia's chapter in this volume), Castañeda showed that it can be taken to suggest at least four different theoretical options (Castañeda 1980c, 1984, 1989d):

(T1) Deny the general validity of Leibniz's identity law.

(T2) Deny that belief contexts are always property-ascribing.

- (T3) Deny that singular terms have the same meaning and reference whether or not they occur in belief contexts.
- (T4) Deny that the “is” of sentences such as “The morning star is the evening star” always expresses strict identity.

Frege’s theory of sense and reference is one possible development of option (T3), whereas guise theory is one possible development of (T4). From his pluralistic vantage point, Castañeda urged that all these options be pursued, but he appeared to lament that (T1) and (T2), despite their popularity, had not yet been embedded in rich and comprehensive ontologies comparable to Frege’s theory or to his own guise theory.

Michael McKinsey’s chapter, “The Grammar of Belief”, makes an important contribution in this direction by removing a hurdle left over by Quine in his espousing (T2). Quine took (T2) to imply the implausible conclusion that quantification into belief contexts is meaningless. After providing a rich array of data that run counter to this conclusion, McKinsey nevertheless salvages option (T2) by blocking Quine’s implication. In particular, McKinsey rejects Quine’s implicit requirement that every instance $C(\alpha)$ ¹ of a context C need be property-ascribing for the context to be property-ascribing (p. 21). This leaves the possibility of a successful theory based on option (T2) unscathed. According to McKinsey, this possibility however has not yet been fully realized (p. 23).

Despite this, Castañeda’s guise-theoretical way of pursuing option (T4) has not gained much favor. Part of the reason may be guise theory’s anti-actualist stance, which arises from its allowing for quantifiers ranging over a sort of non-existent object, namely, non-existent guises. **James Tomberlin**’s chapter, “Actualism and Quantification”, can thus be seen as providing some indirect support for guise theory or for some other form of Meinongianism, since it presents some difficult challenges for the actualist.

Be this as it may, it must be admitted that, in the current philosophical debate, guise theory has served—with rare exceptions (cf. Orilia 1986)—as a critical target, rather than as a framework worth adopting. In this role, guise theory has nonetheless had an important function, for in the need to confront its array of subtle distinctions grounded in a rich collection of data, many ontologists of different orientations have been forced to sharpen and enrich their views in order to dispense with guises (see, e.g., Landini 1986 and the papers dealing with guise theory in Tomberlin 1983 and 1986, and Jacobi & Pape 1990).

As we shall see, some chapters in this collection witness this tendency. For example, **Francesco Orilia**’s chapter, “Guise Theory, Property Theory, and Castañeda’s Philosophical Methodology”, shows that a fifth theoretical option can be gleaned from Frege’s paradox, namely,

- (T5) The “is” of “The morning star is the evening star” expresses a relation that occurs in predicate position, even at the level of logical form.

¹“Let us say that an *instance* $C(\alpha)$ of a context C is property-ascribing just in case there is a property P expressed by C such that $C(\alpha)$ is true if and only if the referent of α has P ” (McKinsey’s chapter, p. 21).

Orilia then shows how this option can lead to a theoretical development based on a type-free property theory that embeds some features of guise theory without an ontological commitment to guises.

A type-free property theory such as the one assumed in Orilia's chapter can be seen as involving an ontological commitment to the denoting concepts of Bertrand Russell's *Principles of Mathematics* (1983) (cf. Landini 1986). **Gregory Landini's** chapter, "Russell's Intensional Logic of Propositions: A Resurrection of Logicism?", tries to reconstruct Russell's attempt—in the period between *Principles* and *Principia Mathematica* (Whitehead & Russell 1910)—to avoid the logical and semantic paradoxes and dispense with denoting concepts by relying on a logico-ontological framework centered on (i) propositions as basic entities and (ii) the primitive notion of a proposition resulting from another one by substitution of some of the latter's constituents. Russell ultimately despaired that this approach could work, since it appeared to generate its own paradoxes. Landini proposes to eschew them by not allowing for general propositions. On the other hand, Landini assumes the existence of propositions with an infinite number of constituents, and formulates a number of logical principles governing them. Landini's chapter can thus be seen as an attempt to dispense with both guises and denoting concepts.

As we shall now see, guise theory can also be a critical target in the theory of perception. Two main strands can be distinguished in current accounts of the logical structure of experience. According to the *act-object* perspective, experience involves a relation between a subject and (private) objects of experience such as sense-data. According to the *adverbialist* standpoint, experiencing is a matter of a subject's having certain properties (e.g., seeing) that can be of different types (e.g., the type seeing-a-green-ball vs. the type seeing-a-red-tomato). In his 1977 paper on guise theory and perception, Castañeda espouses a version of the act-object approach in which he identifies the objects of experience with *perceptual guises* that we encounter in perceptual fields. The latter are conceived of as propositional in nature. According to this propositional view, we do not simply experience objects and properties, but objects qua having properties, i.e., propositions or states of affairs.

In contrast to Castañeda's guise-theoretical act-object standpoint, **Michael Pendlebury's** chapter, "In Defence of the Adverbial Theory of Experience", presents a version of adverbialism. Pendlebury, however, sides with Castañeda in accepting the propositional view. This allows Pendlebury to answer the *many-property objection* to adverbialism, according to which the adverbialist would be unable to distinguish between

(1) Bill has an experience of a pink circle

and

(2) Bill has an experience of pink and an experience of a circle.

In his espousing adverbialism, Pendlebury's chapter can be seen as yet another attempt to dispense with guises.

Guise theory is not only a critical target, however. For example, Rapaport (1985 and forthcoming) has pointed out its importance in AI. Another quite different and unexpected use for guise theory emerges from **Lawrence Powers**'s chapter, "Existentialist Themes", which deals with the methodological issue of how an analytic philosopher should approach existentialism. Powers shows how one can easily get trapped in nonsense by using locutions of the form "x qua (as, insofar as) y", and suggests that this is at the root of the baffling nature of existentialist writings. In fact, Powers argues, existentialists typically resort to qua-locutions in their attempts to describe the experiences behind the most fundamental ontological categories, thereby attempting to answer a challenge launched by Hume. For example, Powers submits, Heidegger's ontological analyses are proposed from the point of view of the world qua disclosed to *Dasein*, where, in turn, "Dasein" stands for something like "each person as considered from his own private point of view, insofar as the world is disclosed to him".

Now, in 1975a and 1989d, Castañeda presents as one of the virtues of guise theory its providing a theoretical foundation precisely for the use of locutions of the form x qua y. He proposes that they stand for guises. For example, Reagan qua actor and Reagan qua president are two consubstantiated, but not identical, guises. Hence, e.g., the former might be a constituent of a proposition with a certain causally-explanatory role, without the latter being such. To the extent that guise theory succeeds in elucidating the meaning of qua-locutions,² it then contributes, in turn, to rescuing existentialism from meaninglessness, a charge to be easily found in analytical quarters.

In developing guise theory, ordinary objects and our thinking of them were Castañeda's central concern. He was, however, also intrigued by the ontology of actions and events, and suggested that guise theory could be extended to encompass it (cf. Castañeda 1979), although, unfortunately, he never further developed this. **Kathleen Gill**'s chapter, "On the Metaphysical Distinction between Processes and Events", provides a rich sample of data to be taken into account by any ontological theory of events. It focuses on Alexander Mourelatos's (1978) influential (cf. Casati & Varzi 1996, §V) proposal of a three-part classification of occurrences, as including events, processes, and states. Mourelatos's account is based on linguistic data, in particular, data that suggest a subcategorization of occurrence-referring expressions analogous to the mass-noun/count-noun distinction. Gill admits (p. 149) that Mourelatos's linguistic data cry out for an explanation, but she contends that they are only part of the story. She relies on Castañeda 1980a to point out that there are, in our individuation of occurrences, "layers of conventionality" (p. 149) reflecting *both* features of human interests and needs *and*, more generally, experience on the one hand and actual characteristics of the non-human world on the other hand. This should give rise, Gill appears to suggest, to a much more complicated picture within which the event-process distinction as viewed independently of such conventions can hardly find a place.

²According to Powers, however, guise theory does not fully achieve this, for it is itself trapped in nonsensical talk. We think contra Powers that there is no reason to consider guise theory meaningless, whatever its relationships with truth and falsehood are.

Castañeda 1972a [1974: 25], talks of guises, called *Leibnizian individuals*, resulting from a maximal complete set of properties. They are said to contain the whole history of a possible world and to be able to belong to just one possible world. In spite of these remarks, Castañeda never developed an explicit account of possible worlds. Orilia 1986 and 1989 tried to fill this gap by embedding in guise theory both possible worlds and, more generally, *frames of reference*, viewed as sets of propositions. **Donald Nute's** chapter, "Possible Worlds without Possibilia", proposes an alternative account of possible worlds that steers a middle course between David Lewis (1973) and Saul Kripke (1972). In agreement with Lewis, and as against Kripke, Nute holds that possible worlds are not constructed or simply stipulated by us. They are quite real, albeit abstract in nature, since they are patterns of properties and relations endowed with a "fitting function". Any such function maps a "niche" in the pattern onto an existing individual, where a *niche* is something that would be filled by a concrete individual, were the world in question actual. In taking existing concrete individuals as members of the domain of fitting functions, Nute can then side with Kripke in allowing concrete individuals to be (in a sense) constituents of possible worlds. Counterfactual talk can be explained, according to Nute, simply in terms of his fitting functions, and thus, contra Lewis, no commitment to possibilia is necessary. Finally, Nute sketches a version of relative essentialism that he couples with his account of possible worlds and counterfactuals. It would be interesting to explore the analogies between Nute's niches and Castañeda's Leibnizian individuals, as well as between Nute's relativistic essentialism and the contextual essentialism developed in Orilia 1989 from the point of view of guise theory.

J. Christopher Maloney's chapter, "A Role for Conceptual-Role Semantics", is closely related to some of Castañeda's concerns in the philosophy of mind and language, concerns that relate to the theoretical background of guise theory. In the current debate in these areas, there are two main semantic options, namely *atomism* and *holism*, the latter often characterized in terms of so-called *conceptual-role semantics*. The analytic-synthetic distinction, or rejection thereof, plays a crucial role in characterizing the options in question (cf. Fodor & LePore 1992). Castañeda endorsed a version of semantic holism (cf. 1975b, Ch. 13; 1980b; 1989d). Moreover, in his 1977 presentation of guise theory, he endorsed a version of the analytic-synthetic distinction involving vague boundaries (Castañeda 1977: 324). Maloney views as a disappointing feature of conceptual-role semantics its implicit commitment to the analytic-synthetic distinction (p. 173). This does not lead Maloney to completely abandon conceptual roles, since he does not see atomism and holism as mutually exclusive. Maloney thus hypothesizes a language of thought with a mixed semantics, atomist for most of its terms, but in a sense relying on conceptual roles as far as connectives and quantifiers are concerned. The basic idea is that a certain mentalese expression fills the role of, e.g., conjunction insofar as its uses tend to conform to, though may in practice (occasionally) deviate from, the standard rules of conjunction enshrined in the propositional calculus.

2.2 Indicators and Quasi-Indicators

Castañeda initially viewed quasi-indicators as singular terms that allow us to attribute an indexical reference to other thinking subjects. According to this conception, the proposition expressed by the that-clause of

(3) Tom believes that he himself is happy

is exactly the same proposition expressed by Tom when he indexically refers to himself in uttering

(4) I am happy.

Let us call this the *identity view* of quasi-indicators. Pressed by Robert Merrihew Adams in a private correspondence (Adams & Castañeda 1983), Castañeda later came to adopt what could be called the *depiction view* of quasi-indicators, whereby quasi-indicators simply *depict* others' indexical reference, i.e., come as close as possible to expressing it, without fully succeeding in this. In other words, (4) and the that-clause of (3) express two different, albeit intimately connected, propositions.

Tomis Kapitan's chapter, "On Depicting Indexical Reference", attempts to clarify this notion of depiction, by providing a sophisticated account of the nature of quasi-indicators. According to his proposal, quasi-indicators are anaphors that are best viewed (after the appropriate regimentation) as restricted variables of the form x_o^M linked to an externally occurring singular term s . The subscript is to be understood as occurring externally, whereas the superscript occurs internally. (On the distinction between internal and external occurrences of terms in intensional contexts, roughly corresponding to the *de re/de dicto* distinction, see Castañeda 1980c. For Kapitan's own account of the distinction, see Kapitan's chapter, p. 200.) The subscript o ensures that the variable in question is to be interpreted as having the same referent as s . In turn, the superscript M indicates that the attributee has referred to s by means of a mode of presentation of type M , where " M " ranges over the publicly accessible generic senses (determinables) expressed by personal pronouns such "I" or "you", demonstratives such as "this" or "that", etc. According to Kapitan, quasi-indicators cut across the internal-external distinction, and his representational strategy does justice to this, for these doubly indexed variables have "the right blend of internal and external content expressed by quasi-indicators" (p. 205). Thus, (3) is to be understood as

(3a) $(\exists x_t)(\text{Tom believes that } x_t^I \text{ is happy}),$

where t indicates that x has the same referent as "Tom", and "Tom" refers to such a referent by means of a mode of presentation of type I (as indicated by the superscript " I "), i.e., by a determinate corresponding, roughly, to the determinable property of being an I (or Self, or Ego). Such a determinate is available only to Tom, in virtue of his own private perspective on himself.

Kapitan's account is Fregean in spirit in his appeal to modes of presentation of a sort. In contrast, **Eros Corazza's** chapter, "She*: Pragmatically Imparted or Semantically Encoded?", tries to regain Castañeda's original identity view of quasi-indicators, by analyzing them in a Russellian direct-reference framework. This means allowing for direct reference to ordinary objects, unmediated by Fregean senses or modes of presentation. In doing so, Corazza explicitly pursues the objective of accounting for quasi-indicators without any ontological commitment to guises. Corazza submits that belief ascriptions of the form *A* believes *S* express triadic relations involving a thinking subject *A*, a Russellian proposition *p*,³ and a third element $ACC[A, S', t]$, representing *A*'s belief state as it results from *A*'s being disposed to accept sentence *S* at time *t* (p. 228). *S'* is a sentence available to the speaker (but not necessarily to *A*) in order to express the proposition *p*. Typically, *S* and *S'* coincide. In particular, this is the case in a belief ascription such as

(5) Tom believes that Caesar crossed the Rubicon,

understood *de dicto*. On the other hand, if *S* contains a quasi-indicator, *S* and *S'* are bound to differ. For example, if the belief ascription is (3), then *S* is "he himself is happy", and *S'* should be taken to be "I am happy".⁴ Corazza's Russellianism appears to be blended with what could be called a "language-dependent Fregeanism", for it assumes that belief states are dependent on a potential appropriate verbalization (rather than on language-independent modes of presentation). In any event, it requires that, e.g., (4) and the that-clause of (3) be taken to express the very same (Russellian) proposition, and in this sense revives the identity view of quasi-indicators.

William J. Rapaport has long argued that quasi-indicators should be adequately represented in AI knowledge-representation systems. The SNePS knowledge-representation and reasoning system developed at State University of New York at Buffalo reflects this conviction (Rapaport & Shapiro 1984, Rapaport 1986, Wiebe & Rapaport 1986). In the chapter "Quasi-Indexicals and Knowledge Reports", Rapaport, his colleague **Stuart C. Shapiro**, and his former student (Castañeda's grand-student!) **Janyce M. Wiebe** focus on how such a system should handle belief and knowledge attributions so as to take into account Castañeda's observation that the rule "(*A* knows that *P*) implies *P*" appears to fail when *P* contains a quasi-indicator. The proposed solution is centered on representing quasi-indexical as well as *de se/de dicto* belief and knowledge reports as having (roughly) the form (p. 259)

(6) Propername(B1, 'A') & Know(B1, F(B1))

where B1 is a node in the speaker's belief space representing "neutrally" (that is, independently of any property ascribed to it by the speaker/believer, p. 264) another agent

³On the distinction between Russellian and Fregean propositions, see Castañeda 1989c.

⁴In general, the fact that the sentence *S* (or *S'*) is an essential component of the underlying logical form of a belief ascription explains, according to Corazza, why substitutivity of co-referential terms fails in belief-ascription contexts.

to whom the speaker attributes the property of being called 'A'. The first conjunct represents such an attribution, and the second conjunct represents the speaker's attribution to the agent in question of the knowledge that she or he is *F*. In particular, (6) can be taken to correspond to sentences of the form

(7) *A* knows that she herself is *F*.

In these cases, B1 corresponds to the quasi-indicator "she herself" and, roughly, to *A*'s self-concept (p. 262). The fact that B1 in (6) occurs both inside and outside the context of the knowledge predicate (p. 262) can be taken to relate to the fact—discussed extensively in Kapitan's chapter in this volume—that quasi-indicators cut across the internal-external distinction.

2.3 Ontology and the History of Philosophy

Castañeda (1974a, 1978) distinguished an Athenian and a Darwinian approach to the history of philosophy. According to the former, a philosopher's corpus is viewed as a coherent and unitary system developed piecemeal by the philosopher in question in the course of his life. According to the latter, a philosopher's corpus is a "Darwinian fauna" full of contrasting views and half-views all struggling for survival. The last three contributions in this volume address, from the point of view of the Darwinian methodology, historico-ontological issues springing from the writings of Plato, Leibniz and Kant, and Peirce, respectively.

The logic and ontology of relations is often said to have been deeply misunderstood up until the time of Peirce and Russell. Plato and Leibniz are usually considered as particularly responsible for this, on the ground that Plato failed to sharply distinguish qualities and relations, and Leibniz even explicitly theorized the reduction of the latter to the former. In a number of seminal papers written from his Darwinian perspective, Castañeda (1972, 1982) tried to discharge these two major thinkers from these allegations. In particular, Castañeda 1972 saw at *Phaedo* 102b–d a sophisticated account of *relational* facts as involving "form-chains" encompassing necessarily at least two correlated Platonic forms, as opposed to *monadic* facts where only one form is involved. **Priyedarshi Jetli's** chapter, "Relations in Plato's *Phaedo*", proposes an alternative reading of the same passage, which agrees with Castañeda's in attributing to Plato a clear-cut distinction of relational and non-relational facts. According to Jetli's account, however, this is accomplished via a distinction between "relational Forms" and "quality Forms". Jetli's chapter then compares these two accounts, as well as the most prominent interpretations of *Phaedo* 102b–d, in the light of Castañeda's philosophical method (cf. Castañeda 1980b) as applied to the exegesis of philosophical texts.

Castañeda's (1978) Darwinian commentary of a Leibnizian text of 1676 stimulated **Ricardo Gomez's** search for a historical link between Leibniz's and Kant's notions of space. Gomez's chapter, "Leibniz's Spark for Kant's Great Light: An Application of

the Darwinian Approach to the History of Philosophy”, focuses on Kant’s conception of space as (i) an analytic whole, i.e., “as a unity of which every extension must be regarded as a part” (Kant’s quotation in Gomez’s chapter, p. 315) and (ii) possessing an ideal or subjective nature qua form (together with time) of the phenomenal world. Through a Darwinian exploration of Kantian texts between 1768 and 1770, Gomez shows that both these aspects of Kant’s notion of space are rooted in Leibnizian themes in ways that are explicitly recognized by Kant in his *Anfangsgrunde* of 1786.

Finally, **Ana H. Marostica**’s chapter, “Peirce’s Evolutionary Idea of Evolution”, brings Castañeda’s Darwinian methodology into a territory that it had not touched before. Marostica identifies in Peirce’s conception of evolution a common theme that persists through changes and adjustments in the course of Peirce’s continuous philosophical reflections. This is the idea that evolution involves “growth ... progress and perfection” (p. 322). Most importantly, she argues that at the core of Peirce’s evolution is a *tychist* hypothesis, which undergoes profound modifications through the years. It is initially based on pure chance; it then becomes the view of the laws of nature as themselves subject to evolutionary laws (p. 322); this view finally comes to incorporate an “agapastic” conception, according to which, as Marostica puts it, “the laws of love ... are operating in the universe” (p. 325).

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