Note e studi critici

Thales of Miletus and the semantic possibilities of his view of the soul

MIGUEL LÓPEZ-ASTORGA*

* University of Talca, Chile - Institute of Humanistic Studies “Juan Ignacio Molina”
e-mail: milopez@utalca.cl

Introduction

A problem for logic and logicians is to find the suitable logical forms corresponding to the sentences in natural language. Solving this problem is really difficult¹, and this circumstance is, probably, one of the reasons that have led certain theories to claim that human reasoning and language have nothing to do with logic. One of these theories is that of the mental models².


According to it, the sentences do not refer to logical forms, but to semantic possibilities called ‘models’, and this can be noted not only in sentences of everyday language, but also in sentences included in scientific or philosophical arguments.

The main goal of this paper is to show that, indeed, this is so at least in the case of an important thesis about the soul provided by the first of the known Greek philosophers, Thales of Miletus. True, he proposes a thesis hard to express by means of the logical forms of standard logic and whose meaning, however, can be captured by means of semantic models such as those of the mental models theory (from now on, MMT) without difficulties. To prove this, firstly, I will describe and comment on the passage authored by Diogenes Laërtius in which it is said that, according to Aristotle and Hippias, that thesis was actually raised by Thales, and what the thesis exactly provides. Then, I will explain why the aforementioned thesis has a sense that it is not easy to relate to a well-formed formula of standard logic. Thirdly, I will argue in favor of the idea that the framework of MMT does have the means to represent the real meaning of the thesis in a simple way. And finally, I will address a possible objection against my arguments. So, I begin by the passage.

1. The beings without soul have soul

The passage is to be found exactly in, as mentioned, a work written by Diogenes Laërtius. In particular, it is in *Vitae Philosophorum*, I 24\(^3\). The original text in ancient Greek is as follows:

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Ἀριστοτέλης δὲ καὶ Ἰππίας φασίν αὐτὸν καὶ τοῖς ἀψύχοις μεταδιδόναι ψυχῆς, τεκμαιρόμενον ἐκ τῆς λίθου τῆς μαγνήτιδος καὶ τοῦ ἥλεκτρου.

[Aristotle and Hippias claim that he (Thales) assigns a soul to the beings without a soul, coming to this conclusion from the magnetic stone and the amber]

What, in principle, is controversial or problematic about this passage is that it seems to include a clear logical contradiction, which can be noted if the words ἀψύχοις and ψυχῆς are considered. As it is known, ψυχῆς is the singular genitive case of ψυχή-ῆς, which means ‘soul’, and ἀψύχοις is the plural dative case of ἄψυχος-ον, which means ‘without a soul’. So, what the thesis appears to provide is that the things that do not have a soul do have it. This, undoubtedly, it is a problem from the standard logical point of view, as it is hard to capture such an idea in a logical form of that logic. In Greek, the letter ‘α’ as a prefix indicates denial, which implies that, if, for example, the letter ‘p’ is used to refer to ψυχή-ῆς, the expression ‘¬p’ (where ‘¬’ is negation) must be used to denote ἄψυχος-ον. I explain to what extent this fact can be a difficulty in first-order predicate logic in more detail in the next section.

2. First order-predicate logic and the Thales’ thesis about the soul

Indeed, to formally express the thesis in first-order predicate logic, it is necessary to assume equivalences such as these ones:
∀: universal quantifier

x: independent variable

P: to have a soul

→: conditional relationship

Thus, a well-formed formula that could capture the idea could be this one:

∀x (¬Px → Px)

That is, ‘for any x, if x does not have a soul, x has a soul’.

The problems of this formula are obvious, but they can be even clearer if we note that the formula can be transformed, by virtue of the universal quantifier elimination rule, i.e., the rule that allows deriving [Pa] (where ‘a’ is a constant) from [∀x Px], into the following:

¬Pa → Pa

Evidently, a formula such as this one is hard to accept. If, for example, ‘a’ denotes a chair, i.e., an object without a soul, the formula enables derive, by virtue of Modus Ponendo Ponens, that is, the rule that allows deducing a formula such as [q] from formulae such as [p → q] and [p], that it has a soul. In this way, [¬Pa] and [Pa] would be true at the same time, and a contradiction would be found: [Pa ∧ ¬Pa] (where ‘∧’ stands for conjunction). However, as it is well known, contradictions lead to complex situations in standard logic, since they enable to conclude any well
formed formula that can be supposed, which means that any conclusion can be inferred from them. It is evident that neither Aristotle nor Hippias meant that, according to Thales, any idea is valid. It is also obvious that Thales did not think that either. Therefore, it can be said that standard logic is not a suitable framework to address the Thales’ thesis about the soul. Nevertheless, the same observation does not apply to MMT. This theory has the necessary machinery to express the real meaning of that thesis. The next section shows this.

3. MMT and the problem of the soul in Thales

MMT does not resort to formulae. It only uses models or representations of reality that correspond to the different possible states of affairs. Such representations are iconic\(^4\) and reveal possible situations or scenarios in which some element changes\(^5\).

In this way, it is absolutely clear that MMT is not a formal theory, and that semantics and pragmatics are very important to it. Thus, beyond its logical form, it is evident that what the fragment authored by Diogenes Laërtius described above actually means is that Aristotle and Hippias state that Thales of Miletus attributed a soul not to the beings without a soul, but even to the beings that are usually thought not to be a soul. Accordingly, it can be assumed that the thesis implicitly distinguishes two totally different ideas: (A) being thought not to be a soul and (B) really having a soul.

Given these ideas, in principle, it could be thought that the possible combinations of possibilities including (A) and (B) would be the following:

\(^4\) E.g., Johnson-Laird, *Inference with mental models*, 136-137.
\(^5\) E.g., Johnson-Laird, *Inference with mental models*, 137.
[I] A
[II] A \neg B
[III] \neg A B
[IV] \neg A \neg B

[I], [II], [III], and [IV] represent possible scenarios of the world in which almost everything is the same, but the reality of (A) and (B). For example, the worlds described in [I] and [II] are practically identical. The only difference between them is that in [I] (B) is true and in [II] (B) is false. In [III] (B) is true again but (A) is false. Obviously, in [IV] the two elements of the model are false.

Nevertheless, taking into account the literature on MMT\textsuperscript{6}, it can be said that, following the theory, although, if all the models are identified, [I], [III], and [IV] are a priori those corresponding to conditional sentences, in practice, semantics and pragmatics can modify the possible scenarios. Thus, in the case of the Thales’ thesis, the models that must be rejected are actually two: [II] and [IV]. [II] is not admissible because it describes a situation in which something is considered to have a soul and it does not really have it, which is inconsistent with the idea that Thales seems to support. On the other hand, [IV] is not acceptable either because it refers to a possibility in which something that is thought not to be a soul does not truly have it, which is also incompatible with what Thales appears to mean.

So, the only possibilities that can be taken into account are [I] and [III]. Indeed, both of them together seem to appropriately describe the world such as understood by Thales of Miletus. Everything in that world has a soul \neg (B) is true both in [I] and

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\textsuperscript{6} And, especially, works such as Johnson-Laird, Against logical form; Johnson-Laird, Inference with mental models; Khemlani et al., Immediate inferences.
and in [III]- whether it is thought to have a soul –in [I] (A) is true – or not –in [III] (A) is false.

Furthermore, the sentences that only refers to models such as [I] and [III] are not uncommon in MMT. The theory holds that, for example, there are many sentences that are expressed by means of a conditional in natural language and that only can be related to these two last models. Such sentences are considered to be of the kind ‘Relevance’ in the paper authored by Johnson-Laird and Byrne⁷ and an example of them is as follows:

“If you are interested in seeing Vertigo then it is on TV tonight”⁸.

If we assume that now (A) indicates that ‘you are interested in seeing Vertigo’ and that (B) denotes that ‘Vertigo is on TV tonight’, the reasons why [I] and [III] are the suitable models in this case too are not difficult to understand. It is known for sure that Vertigo will be on TV tonight. [II] and [IV] hence cannot be admitted, since in them (B) is false. On the other hand, although this is so, you might be interested in seeing it or not, and in [I] you are interested and in [III] you are not.

Thus, based on all of this, it seems that the thesis about the soul held by Thales confirms that human language is more linked to the mental models of MMT than to the formulae of standard logic. Logical forms appear to be unable to capture what the sentences in natural language really mean, and this is a problem that, in principle, MMT does not have. However, an objection against this argument can be given. A sentence in natural language can be formalized in different ways in first-or-

⁷ Cf. Johnson-Laird — Byrne, Conditionals.
⁸ Johnson-Laird — Byrne, Conditionals, 663.
der predicate logic. So, the logical form assigned to the Thales’ thesis in the previous section is not the only one that is possible. In my view, this does not solve the problem of standard logic with logical form in this case, and I explain why below.

**4. Other possible formalizations are also problematic**

True, it could be argued that the two clauses of the thesis do not have to be considered as contradictory elements (p and ¬p), that it can be assumed that ‘P’ refers to ‘being considered to have a soul’ and that ‘Q’ represents ‘having really a soul’, and that another possible formula valid for the Thales’ idea can be this one:

$$\forall x \ (P_x \rightarrow Q_x)$$

Undoubtedly, this new formula removes the difficulties of contradiction but not all the difficulties. Firstly, transforming the text written by Diogenes Laërtius into this last formula requires taking semantic and pragmatic factors into account, and not just logical form. Therefore, accepting this formula is really accepting basic and important theses of MMT, such as, for example, that logical form do not determine the sense of a sentence and that that sense can be identified only considering aspects such as the meaning, the context or the role of pragmatics. On the other hand, the formula is not very useful, since, given, for example, [¬Pa], that is, something that is considered not to be a soul (i.e., the type of beings to which Thales seem to refer), nothing can be inferred. As indicated, a formula such as $$[\forall x \ (P_x \rightarrow Q_x)]$$ can be transformed into $$[P_a \rightarrow Q_a]$$, but no formula can be deduced from this last formula along with [¬Pa]. And this is so because there is no a valid rule in standard logic that allows deriving something from formulae such as [p → q] and [¬p].
Of course, this difficulty could be overcome proposing a new formalization and assuming that a better formula for Thales’ thesis can be, for example, the following:

$$\forall x (\neg Px \rightarrow Qx)$$

Indeed, this formula appears to better capture Thales’ thought, since it provides that, if something is considered not to have a soul, it has a soul. Nonetheless, the problem remains. It can be transformed into $$[\neg Pa \rightarrow Qa]$$, and this last expression into $$[\neg Qa \rightarrow Pa]$$ by contraposition (as it is well known, in standard logic, $$[p \rightarrow q]$$ is equivalent to $$[\neg q \rightarrow \neg p]$$). But, what this last formula means is that, if ‘a’ does not have a soul, then ‘a’ is considered to have a soul, which makes no sense and does not seem to correspond to the idea of universe that Thales raised. It is clear that in that universe $$[\neg Qa]$$ is always false, since everything has a soul. However, $$[\neg Qa \rightarrow Pa]$$ implies that, if something truly without a soul is ever found, in spite of that, we must continue to think that it has a soul, and this, evidently, is not Thales’ view. And this drawback in addition to the fact that semantics and pragmatics are also necessary to come, from words such as ψυχή-ῆς and ἄψυχος-ον, to $$[\forall sx (\neg Px \rightarrow Qx)]$$, a very complex formula\(^9\).

There is no doubt that other alternative formulae with different sophistication levels are possible. Nevertheless, it is very probable that they have difficulties akin to the previous ones, or even worse inconveniences. Therefore, as stated, the Thales’ thesis about the soul can be considered to be one more proof

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\(^9\) As indicated, papers to be reviewed on the difficulties of translating expressions in natural language into formulae of standard logic can be, e.g., Johnson-Laird, Against logical form; or López-Astorga, Mental models.
that language is more related to semantic mental models than to purely syntactic logical forms.

**Conclusions**

The literature of cognitive science shows that MMT is a powerful theory that is able to account for many aspects of the human intellectual behavior. One of them is obviously the way human beings build mental representations from expressions in natural language. This can be checked in many works supporting the theory, but it is confirmed by the arguments provided in this paper as well.

On the other hand, the same literature also reveals that it is sometimes hard to standard logic to explain even the results in certain deductive reasoning experimental tasks\(^{10}\). Clearly, this is related to the fact that, as said above, there are not exact and clear correspondences between the expressions in natural language and the formal machinery of standard logic, and that logical forms cannot usually capture the exact meaning of the sentences\(^{11}\).

Therefore, maybe, from fields such as that of Philosophy of Language, it is necessary to pay more attention to the review of the semantic possibilities. In fact, as in this paper for Thales of Miletus, in many other works it has been shown that this last activity can also be methodologically useful to better understand logical, philosophical, linguistic, or psychological theories, problems, and issues\(^{12}\). So, although MMT is not the only cognitive

\(^{10}\) Cf., e.g., Orenes – Johnson-Laird, *Logic, models, and paradoxical inferences*.

\(^{11}\) As pointed out, Johnson-Laird, *Against logical form*; or López-Astorga, *Mental models*, can be very illustrative in this sense.

\(^{12}\) Just two examples of the several papers in this direction authored by López-Astorga can be M. López-Astorga, *The first rule of Stoic logic and its rela-
theory nowadays and there are other cognitive approaches that are based on other assumptions, it seems that it should be acknowledged that it can give at least interesting tools to be used in very different research projects with diverse aims and goals.

**References**


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*Inscription with the indemonstrables*, in *Tópicos, Revista de Filosofía* 50 (2016), 9-23, a work in which he tries to interpret certain aspects of Stoic logic from MMT; and LÓPEZ-ASTORGA, *Mental models*, a paper in which, based on this very theory, a known ancient sophism, the horns sophism, is analyzed.


