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Propositions and Logical Form

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Propositions and Logical Form

1. *The truth-conditional view*

In my book *Logical Form* I outline some reasons for thinking that, in the sense of «logical form» that matters to logic, logical form is determined by truth conditions¹. This paper discusses three widely debated theories of propositions that might be employed to substantiate the underlying notion of truth conditions: the naturalized propositions theory, the truthmaker theory, and the classificatory theory.

The view advocated in *Logical Form* is that logical properties, such as validity or consistency, and logical relations, such as entailment or contradiction, are determined by truth conditions. This view, which will be assumed as a background hypothesis in what follows, may be called the *truth-conditional view*. To say that logical properties and logical relations are determined by truth conditions is to say that sentences, or sets of sentences, have logical properties and logical relations in virtue of their truth conditions.

The notion of truth conditions that underlies the truth-conditional view has two main features. First, truth conditions are understood as material conditions which involve the extension of the expressions that occur in a sentence, rather than structural conditions on their extension. So they are identified with content or what is said, rather than with meaning or semantic structure. For example, the sentence «This is a philosopher» can be used in different contexts to say different things. If «this» refers to Plato, it says that

¹ A. Iacona, *Logical Form: Between Logic and Natural Language*, Cham, Springer, 2018.

Plato is a philosopher, while if «this» refers to Aristotle, it says that Aristotle is a philosopher. The structural rule that determines its truth in both cases is the following: «This is a philosopher» is true in a context if and only if the object demonstrated in the context has the property of being a philosopher. Although the term «truth-conditions» is often used to refer to such a rule, as in the Davidsonian tradition, this is not the use that concerns us here. In the sense of «truth conditions» that matters to the truth-conditional view, «This is a philosopher» has different truth-conditions in different contexts: the condition that Plato is a philosopher differs from the condition that Aristotle is a philosopher².

Second, truth conditions are understood hyperintensionally. Sameness of content is not definable in terms of sameness of modal profile, that is, as truth in the same possible worlds. Sameness of modal profile may be regarded as a necessary condition for sameness of content, but it is definitely not a sufficient condition. This turns out clear if we think about logical equivalence. While some pairs of logically equivalent sentences seem to express the same content, others seem to express different contents. For example, «Plato is a philosopher and Aristotle is a philosopher» apparently says the same thing as «Aristotle is a philosopher and Plato is a philosopher». By contrast, «Plato is a philosopher» and «Either Plato is a philosopher, or Plato is a philosopher and Rome is pretty» apparently say different things: the latter, unlike the former, talks about Rome. Similarly, «Either Plato is a philosopher or he is not» and «Either Aristotle is a philosopher or he is not» apparently say different things: the former is about Plato, the latter is about Aristotle. As these examples suggest, two necessarily equivalent sentences express the same content only if they are about the same things. This is also clear in the case of synonymy, which is a special case of necessary equivalence. When two sentences are synonymous in virtue of some simple grammatical transformation, as in the case of «Aristotle admires Plato» and «Plato

² I borrow the term «material condition» from D. Marconi, *Introduction*, in A. Bianchi and D. Marconi, *On the very idea of logical form*, «Disputatio», forthcoming.

is admired by Aristotle», they are obviously about the same things.

Being about the same things, on the other hand, is not by itself sufficient for sameness of content. Consider «Plato is a philosopher» and «The author of *The Republic* is a philosopher». These two sentences ascribe the same property to the same object. But they cannot express the same content, on the assumption that sameness of modal profile is necessary for sameness of content, because they have different modal profiles. Note also that a sentence and its negation are about the same things, but we don't want to say that they express the same content. For example, we don't want to say that «Plato is a philosopher» and «Plato is not a philosopher» express the same content.

The clarifications just provided yield a very rough characterization of truth conditions, in that they constrain truth conditions without settling the question of what truth conditions are. Now we will focus on three recently debated theories of propositions, to show how the characterization of truth conditions just sketched can be substantiated by a coherent account of content. Each of the three theories is able to explain cases of apparent sameness or difference of content such as those just considered, so it justifies the assumption that two sentences have the same truth conditions if and only if they express the same proposition.

2. *The naturalized propositions theory*

Let us start with the *naturalized propositions theory* advocated by Jeffrey C. King. According to this theory, the proposition expressed by a sentence *s* in a context *c* is a complex entity whose constituents – individuals, properties, and relations – are the semantic values that the expressions occurring in *s* have in *c*. These constituents are bound together by a relation, the «propositional relation», which is defined in terms of the syntactic structure of *s* and the semantic relations that obtain between the expressions occurring in *s* and their semantic values. For example, the proposition expressed by «Plato is a philosopher» – the proposition that Plato is a philosopher – is a complex entity whose constituents, Plato

and the property of being a philosopher, are bound together by a relation that may be stated as follows for any x and y : for some context c , assignment g , and language L , there are two lexical items a and b of L such that x is the semantic value of a relative to g and c , y is the semantic value of b relative to g and c , a occurs at the left terminal node of syntactic relation R that in L encodes ascription, and b occurs at R 's right terminal node. It is in virtue of this relation, which is interpreted by speakers as ascribing the property of being a philosopher to Plato, that the proposition expressed by «Plato is a Philosopher» represents Plato as being a philosopher³.

It is easy to see how the naturalized propositions theory explains the cases of difference of content considered in section 1. The proposition expressed by «This is a philosopher» in a context in which «this» refers to Plato differs from the proposition expressed by «This is a philosopher» in a context in which «this» refers to Aristotle because the former includes Plato as a constituent whereas the latter includes Aristotle. The proposition expressed by «Either Plato is a philosopher, or Plato is a philosopher and Rome is pretty» differs from the proposition expressed by «Plato is a philosopher» because it includes additional constituents and additional relations. «Either Plato is a philosopher or he is not» and «Either Aristotle is a philosopher or he is not» express propositions that have different constituents bound by different relations. The same goes for «Plato is a philosopher» and «The author of *The Republic* is a philosopher», and for «Plato is a philosopher» and «Plato is not a philosopher».

The explanation of the cases of sameness of content considered in section 1 is less obvious, because it might seem that propositions are individuated too finely. If we assume that the structure of the proposition expressed by a conjunction is sensitive to the order of its conjuncts, we get that

³ J. King, *Structured Propositions and Complex Predicates*, «Noûs», XXIX, 1995, pp. 516-35; Id., *Structured Propositions and Sentence Structure*, «Journal of Philosophical Logic», XXV, 1996, pp. 495-521; Id., *The Nature and Structure of Content*, Oxford, Oxford University Press, 2007; Id., *On Fineness of Grain*, «Philosophical Studies», CLXIII, 2013, pp. 763-781; Id., *Naturalized Propositions*, in *New Thinking about Propositions*, ed. by J. Speaks, J. C. King, S. Soames, Oxford, Oxford University Press, 2014, pp. 47-70.

«Plato is a philosopher and Aristotle is a philosopher» and «Aristotle is a philosopher and Plato is a philosopher» express different propositions. Similarly, if we assume that the structure of the proposition expressed by a sentence is sensitive to its active or passive construction, we get that «Aristotle admires Plato» and «Plato is admired by Aristotle» express different propositions. However, such assumptions are not essential to the naturalized propositions theory. We may think of propositional relations as either involving specific sentential relations, or as involving existential generalization over sentential relations. In the second case «Plato is a philosopher and Aristotle is a philosopher» and «Aristotle is a philosopher and Plato is a philosopher» turn out to express the same proposition, and the same goes for «Aristotle admires Plato» and «Plato is admired by Aristotle». So, it is not obvious that propositions are individuated too finely⁴.

3. *The truthmaker theory*

Now let us consider the *truthmaker theory* advocated by Kit Fine. According to this theory, the proposition expressed by a sentence is a set of *states* — facts, events or any other kind of entities — that verify the sentence. For example, the proposition expressed by «Plato is a philosopher» is a set of states that include Plato. As in the case of traditional possible world semantics, the theory is extensional rather than structural, in that propositions are defined as sets of entities rather than as structured entities. But it involves a more fine-grained individuation of the relevant sets⁵.

⁴ In J. King, *The Nature and Structure of Content*, cit., and *On Fineness of Grain*, cit., propositional relations are taken to involve specific sentential relations, while in J. King, *Naturalized Propositions*, cit., p. 58, and J. King, *On Propositions and Fineness of Grain (again!)*, «Synthese», CX-CVI, 2019, pp. 1343-67, it is suggested that they can be defined in terms of existential generalization over sentential relations.

⁵ The truthmaker theory is outlined in K. Fine, *Truthconditional content – part I*, published online <https://nyu.academia.edu/KitFine>, 2015, *Truthconditional content – part II*, published online <https://nyu.academia.edu/KitFine>, 2015; *Truthmaker Semantics*, in *A Companion to the Philosophy of Language*, second edition, ed. by B. Hale, C. Wright, A. Miller, Oxford, Wiley, 2017. Note that the definition of proposition adopted here

The truthmaker theory assumes that states stand in mereological relations to one another. For any set of states $S_1, S_2, S_3, \dots$, there is a state $S_1 \sqcup S_2 \sqcup S_3 \dots$ which is the fusion of $S_1, S_2, S_3 \dots$ and has $S_1, S_2, S_3 \dots$ as parts. For example, given that there are states of snow being white and of snow being cold, there is a state of snow being white and cold, which is the fusion of them. To say that a state S verifies a sentence s is to say that S is relevant as a whole to the truth of s . This means that there is no guarantee that any state that includes S as a part verifies s as well. Conjunctions and disjunctions are defined in accordance with this notion of verification. A state S verifies the conjunction of s_1 and s_2 if and only if S is a fusion $S_1 \sqcup S_2$ such that S_1 and S_2 respectively verify s_1 and s_2 . Instead, S verifies the disjunction of s_1 and s_2 if and only if either S verifies s_1 or it verifies s_2 .

If truth conditions are understood as truthmaking conditions, that is, if they are identified with sets of states, the examples considered in section 1 can be handled quite easily. The proposition expressed by «This is a philosopher» in a context in which «this» refers to Plato differs from the proposition expressed by «This is a philosopher» in a context in which «this» refers to Aristotle, because the former contains states that include Plato whereas the latter contains states that include Aristotle. «Plato is a philosopher and Aristotle is a philosopher» and «Aristotle is a philosopher and Plato is a philosopher» express the same proposition: if A is the proposition that Plato is a philosopher and B is the proposition that Aristotle is a philosopher, the proposition expressed by «Plato is a philosopher and Aristotle is a philosopher» and «Aristotle is a philosopher and Plato is a philosopher» is $\{S_1 \sqcup S_2: S_1 \in A \text{ and } S_2 \in B\}$. «Plato is a philosopher» and «Either Plato is a philosopher, or Plato is a philosopher and Rome is pretty» express different propositions. If A is the proposition that Plato is a philosopher and B is the proposition that Rome is pretty, the proposition expressed by the second disjunct of «Either Plato is a philosopher, or Plato is a philoso-

is not the only possible definition in the framework under consideration. Another way is to identify a proposition with an ordered pair formed by the set of its verifiers and the set of its falsifiers. But the pros and cons of each option are beyond the scope of this section.

pher and Rome is pretty» is a set C that contains every state $S_1 \sqcup S_2$ such that $S_1 \in A$ and $S_2 \in B$. So C differs from A . It follows that $A \cup C$, the proposition expressed by «Either Plato is a philosopher, or Plato is a philosopher and Rome is pretty», differs from A . «Either Plato is a philosopher or he is not» and «Either Aristotle is a philosopher or he is not» express different propositions. Assuming that A and A^- are respectively the proposition that Plato is a philosopher and the proposition that Plato is not a philosopher, and that B and B^- are respectively the proposition that Aristotle is a philosopher and the proposition that Aristotle is not a philosopher, the proposition expressed by «Either Plato is a philosopher or he is not» is $A \cup A^-$, whereas that expressed by «Either Aristotle is a philosopher or he is not» is $B \cup B^-$. «Aristotle admires Plato» and «Plato is admired by Aristotle» express the same proposition because they have the same verifiers. «Plato is a philosopher» and «The author of *The Republic* is a philosopher» express different propositions. The proposition expressed by «Plato is a philosopher» does not contain the state that Aristotle is a philosopher, just as it does not contain any state which includes that state. But it is plausible that the proposition expressed by «The author of *The Republic* is a philosopher» does contain such a state, assuming that Aristotle could have written *The Republic* instead of Plato, for it is reasonable to grant that an existential sentence is made true by the verifiers of its instances. The apparent difference of content between «Plato is a philosopher» and «Plato is not a philosopher» can also be explained in terms of different sets of verifiers.

4. *The classificatory theory*

Finally, let us consider the *classificatory theory* advocated by Scott Soames and Peter Hanks. According to this theory, the primary bearers of representational properties are mental or linguistic actions, the actions we perform in thinking and speaking about the world. Propositions are types of mental or linguistic actions, which derive their representational properties from their tokens. Soames and Hanks provide different versions of the theory, but the differences between them are

irrelevant for our purposes. In what follows we will rely on Hanks' version⁶.

To illustrate the classificatory theory, we will focus on predication, the kind of action that speakers perform in making assertions. In predicating a property of an object a subject characterizes the object as being a certain way and thereby does something that can be evaluated as true or false. Suppose that Aristotle utters «Plato is a philosopher» to assert that Plato is a philosopher. In doing so he refers to Plato, he expresses the property of being a philosopher, and he predicates this property of Plato. Therefore, he performs a token of a type of action that can be represented as $\vdash\langle \mathbf{Plato}, \text{PHILOSOPHER} \rangle$. The symbol $\vdash$ stands for predication, **Plato** is a type of reference act, and PHILOSOPHER is a type of expression act. $\vdash\langle \mathbf{Plato}, \text{PHILOSOPHER} \rangle$ is the proposition that Plato is a philosopher. Its tokens are particular actions in which subjects refer to Plato, express the property of being a philosopher, and predicate this property of Plato. Since these particular actions are true if and only if Plato is a philosopher, $\vdash\langle \mathbf{Plato}, \text{PHILOSOPHER} \rangle$ itself is true if and only if Plato is a philosopher.

The classificatory theory is consistent with the characterization of truth conditions provided in section 1: on the assumption that types are ways of classifying actions, propositions can be individuated as finely as we want. It is reasonable to expect that the proposition expressed by «This is a philosopher» in a context in which «this» refers to Plato differs from the proposition expressed by «This is a philosopher» in a context in which «this» refers to Aristotle, for the two propositions involve distinct types of reference act. «Plato is a philosopher and Aristotle is a philosopher» and «Aristotle is a philosopher and Plato is a philosopher» may be taken to express the same proposition, if the latter is defined as a type of action in which the conjunction relation is predicated of the types of actions expressed by the two conjuncts irrespectively of the order in which they occur. «Plato

⁶ One version is outlined in S. Soames, *What is Meaning?*, Princeton, Princeton University Press, 2010, and Id., *Cognitive Propositions*, in *New Thinking about Propositions*, cit. The other is outlined in P. Hanks, *Propositional Content*, Oxford, Oxford University Press, 2015.

is a philosopher» and «Either Plato is a philosopher, or Plato is a philosopher and Rome is pretty» express different propositions, given that «Either Plato is a philosopher, or Plato is a philosopher and Rome is pretty» involves additional reference acts and expression acts. «Either Plato is a philosopher or he is not» and «Either Aristotle is a philosopher or he is not» express different propositions, given that they involve different reference acts and different expression acts. «Aristotle admires Plato» and «Plato is admired by Aristotle» can be taken to express the same proposition, assuming that this proposition involves an act of «sorted» predication, that is, an act of predication in which the subject targets two objects and treats them differently by assigning them different argument roles. «Plato is a philosopher» and «The author of *The Republic* is a philosopher» clearly express different propositions, for they involve different types of reference acts and expression acts. The same goes for «Plato is a philosopher» and its negation, on the plausible assumption that the action type performed in asserting a sentence differs from the action type performed in asserting its negation⁷.

5. Entailment

As sections 2-4 show, each of the three theories considered provides a criterion of fine-grainedness that substantiates the claim that two sentences have the same truth conditions if and only if they express the same proposition. However, this does not mean that these three theories suit equally well the truth-conditional view. The crucial question to be addressed is how can we make sense of the idea that propositions are the bearers of logical properties and logical relations. In what follows I will suggest that, as far as this question is concerned, the naturalized propositions theory and the truthmaker theory fare better than the classificatory theory.

⁷ P. Hanks, *Propositional Content*, cit., explicitly deals with the case of conjunction and disjunction, pp. 103-108, draws a distinction between «sorted» and «unsorted» predication, pp. 85-86, and treats the case of negation, pp. 98-103.

A first point that deserves attention concerns entailment, which may be defined as a relation that obtains between two propositions when it is impossible that one is true and the other is false. For example, the inference from «Plato is a philosopher and Aristotle is a philosopher» to «Plato is a philosopher» is valid, because it is impossible that Plato and Aristotle are philosophers but Plato is not a philosopher. This fact can be stated by saying that the proposition that Plato is a philosopher and Aristotle is a philosopher entails the proposition that Plato is a philosopher. It is in virtue of this relation that one can infer «Plato is a philosopher» from «Plato is a philosopher and Aristotle is a philosopher»⁸.

Now let us compare our three theories. If we adopt the naturalized propositions theory, the claim that entailment is a relation between propositions makes perfect sense. The proposition expressed by «Plato is a philosopher and Aristotle is a philosopher» and the proposition expressed by «Plato is a philosopher» are structured entities formed by objects combined in a certain way, and the former entails the latter in virtue of the objects they contain and the way in which they are combined. When one infers «Plato is a philosopher» from «Plato is a philosopher and Aristotle is a philosopher», one reasons validly because this relation obtains.

Similarly, if we adopt the truthmaker theory, the claim that entailment is a relation between propositions makes perfect sense. The proposition expressed by «Plato is a philosopher and Aristotle is a philosopher» and the proposition expressed by «Plato is a philosopher» are sets of states, and the former entails the latter in virtue of some relation between these two sets. When one infers «Plato is a philosopher» from «Plato is a philosopher and Aristotle is a philosopher», one reasons validly because this relation obtains.

If we adopt the classificatory theory, instead, the claim that entailment is a relation between propositions seems to have puzzling implications. According to this theory, the propositions expressed by «Plato is a philosopher and Aristotle is a philosopher» and «Plato is a philosopher» are types

⁸ Note that it is not essential to this example that the validity of the inference is formally explainable. The same point can be made with the inference from «Düsseldorf is pretty» to «Düsseldorf is not ugly».

of action that inherit their truth conditions from their tokens. Since entailment depends on truth conditions, this seems to imply that entailment also is – or primarily is – a relation between actions: just as the proposition expressed by «Plato is a philosopher and Aristotle is a philosopher» entails the proposition expressed by «Plato is a philosopher», my act of asserting that Plato is a philosopher and Aristotle is a philosopher entails my act of asserting that Plato is a philosopher. However, it is not clear what this means exactly. It certainly cannot mean that the first act necessitates the second, given that nothing prevents me from uttering «Plato is a philosopher and Aristotle is a philosopher» without uttering «Plato is a philosopher». In such a case, should we say that my act of asserting that Plato is a philosopher and Aristotle is a philosopher is logically related to a nonexistent event?

Perhaps the classificatory theorist might opt for a modal account along the following lines: my act of asserting that Plato is a philosopher and Aristotle is a philosopher entails my act of asserting that Plato is a philosopher if and only if, supposing that the first act is true, if I asserted that Plato is a philosopher, then I would perform a true act. Since the same conditional holds for any agent, the account should be generalized as follows: for any agent A, A's act of asserting that Plato is a philosopher and Aristotle is a philosopher entails A's act of asserting that Plato is a philosopher if and only if, supposing that the first act is true, if A uttered that Plato is a philosopher, then A would perform a true act. However, entailment so defined turns out to be a relation between types of action rather than between actions, contrary to what the classificatory theorist wanted to say in the first place.

6. *Logical form as a property of propositions*

A second point that deserves attention concerns the very idea that logical form is a property of propositions. Consider again the sentence «Plato is a philosopher». The fact that this sentence is adequately formalized as Fa can be explained by saying that Fa formally represents the proposition that Plato is a philosopher. Arguably, the way of being true of

«Plato is a philosopher» depends on the kind of state of affairs it describes as obtaining. Since «Plato is a philosopher» says that a certain individual, Plato, has a certain property, being a philosopher, «Plato is a philosopher» is true if and only if that individual has that property. The semantics of first order logic provides a formal account of this way of being true, in that Fa is true in a model if and only if the object denoted by a belongs to the extension of F .

Now let us compare again our three theories. If we adopt the naturalized propositions theory, the idea that logical form is a property of propositions makes perfect sense. If the proposition expressed by «Plato is a philosopher» is a structured entity that has Plato and the property of being a philosopher as constituents, Fa may be regarded as a formal representation of that entity. Fa is formed by the predicate letter F and the individual constant a , and the way these symbols are combined represents the relation that ties Plato and the property of being a philosopher in the proposition that Plato is a philosopher.

The truthmaker theory squares equally well with the idea that logical form is a property of propositions. If the proposition expressed by «Plato is a philosopher» is a set of states each of which includes Plato and the property of being a philosopher, Fa may be regarded as a formal representation of that kind of state. As in the case of naturalized propositions, the fact that Fa is true in a model if and only if the object denoted by a belongs to the extension of F represents the way of being true of «Plato is a philosopher», which is an essential feature of the proposition that Plato is a philosopher.

The classificatory theory is less straightforward on this point. Let us grant that $\vdash \langle \mathbf{Plato}, \text{PHILOSOPHER} \rangle$ is the proposition expressed by «Plato is a philosopher». According to the classificatory theory, $\vdash \langle \mathbf{Plato}, \text{PHILOSOPHER} \rangle$ inherits its truth conditions from its tokens. So it is natural to expect that what holds for truth conditions holds for logical form, namely, that $\vdash \langle \mathbf{Plato}, \text{PHILOSOPHER} \rangle$ has the form Fa because its tokens have the form Fa . But it is not obvious that the tokens of $\vdash \langle \mathbf{Plato}, \text{PHILOSOPHER} \rangle$ have the form Fa in some interesting sense, where «in some interesting sense» means «not merely in the sense that their content has that form». Suppose, as before, that Aristotle asserts that

Plato is a philosopher. If one were asked what is the form of this action, one could easily answer that it is Rab , where R represents a binary relation, «...asserts...», a stands for Aristotle, and b stands for what Aristotle asserted, namely, that Plato is a philosopher. Or perhaps one could answer that it is $Rabc$, where R is a ternary relation, «...predicates...of...», a stands for Aristotle, b stands for Plato, and c stands for the property of being a philosopher. In any case, the first answer that would come to one's mind would *not* be that the form of this action is Fa .

Note that the classificatory theorist can hardly maintain that $\vdash \langle \mathbf{Plato}, \text{PHILOSOPHER} \rangle$ has the form Fa while holding that its tokens have a different form, Rab or $Rabc$. If $\vdash \langle \mathbf{Plato}, \text{PHILOSOPHER} \rangle$ were a structured proposition of the traditional kind, a principled distinction could be drawn between the logical form of the content asserted by Aristotle and the logical form of Aristotle's act of asserting that content. But $\vdash \langle \mathbf{Plato}, \text{PHILOSOPHER} \rangle$ is not a structured proposition of the traditional kind. The only intelligible sense in which $\vdash \langle \mathbf{Plato}, \text{PHILOSOPHER} \rangle$ has a structure – it involves referring to Plato, expressing the property of being a philosopher, and predicating that property of Plato – is the sense in which its tokens have that structure. This means that if $\vdash \langle \mathbf{Plato}, \text{PHILOSOPHER} \rangle$ has the form Fa , then the same holds of its tokens. Consequently, any inclination to think that the tokens of $\vdash \langle \mathbf{Plato}, \text{PHILOSOPHER} \rangle$ have a different form must be mistaken⁹.

The classificatory theorist might argue that if one does not see that Aristotle's action has the form Fa , it is because one is not looking at that action in the right way, that is, one is not concentrating on the components of that action that matter for its logical properties. An action can be described in more than one way, just as any object, and the components that the action turns out to have according to this or that description depend on the purposes of the description itself. When we describe a car from the mechanical point of view, we identify certain components of the car as its mechanical components. Not every part of the car is relevant for the

⁹ P. Hanks, *Propositional Content*, cit., p. 23, explicitly talks of structure in this sense.

purpose of explaining its mechanical functioning. The license plate plays no mechanical role, so it does not qualify as a mechanical component, even though it is a part of the car. Similarly, when we describe an action from the logical point of view, we identify certain components of the action as its logical components. Not every part of the action is relevant for the purpose of explaining its logical properties. Therefore, Aristotle's action does not have the form *Rab* or *Rabc* because Aristotle is not a logical component of that action, even though it is part of that action¹⁰.

However, an argument along these lines would not suffice to dispel our initial doubt about the claim that the tokens of the proposition that Plato is a philosopher have the form *Fa* because its tokens have the form *Fa*. Even if it were granted that Aristotle's action, when described in the right way, has the form *Fa*, this would still be consistent with the hypothesis that Aristotle's action has the form *Fa* in virtue of the fact that its content has the form *Fa*. Therefore, even if there is a sense in which the tokens of $\vdash \langle \mathbf{Plato}, \text{PHILOSOPHER} \rangle$ have the form *Fa*, it is not obvious that this is an interesting sense in which the tokens of $\vdash \langle \mathbf{Plato}, \text{PHILOSOPHER} \rangle$ have the form *Fa*.

The trouble with the classificatory theory may be stated in more general terms as follows. On the one hand, the theory seems to imply that a proposition *p* has a certain logical property – such as entailing another proposition or having a given form – only if the tokens of *p* have that property. On the other hand, however, the tokens of *p* are actions that at least *prima facie* do not have that property. We would be tempted to say that the property belongs to the content of these actions, rather than to the actions themselves.

7. *Truth conditions and the act/content distinction*

The two problems just raised stem from a more basic problem that concerns truth conditions. According to the

¹⁰ A. Barceló Aspeitia, *Sub-sentential logical form. On Robert J. Stainton's «Words and Thoughts»*, «Crítica», XLIII, 2011, pp. 53-63, suggests this line of defense.

classificatory theory, a proposition p has truth conditions because the tokens of p have truth conditions. But the tokens of p are things that at least *prima facie* do not have truth conditions: one might be tempted to say that it is a category mistake to hold that mental or linguistic acts, as distinct from their contents, can be true or false. Since Hanks explicitly addresses this problem – call it *the category mistake objection* – it is reasonable to expect that his considerations in defense of the claim that actions, and types of action, have truth conditions must apply, *mutatis mutandis*, to our problems concerning logical form. This section is intended to show that Hanks' attempts to resist the category mistake objection are not entirely convincing, so they can hardly settle the issue of logical form¹¹.

The category mistake objection hinges on the act/content distinction. One thing is Aristotle's act of asserting that Plato is a philosopher, quite another thing is the content of Aristotle's act, what Aristotle asserts. According to the orthodox picture, truth and falsity can be attributed to the second thing, not to the first. Hanks rejects this picture, and provides at least three distinct arguments in defense of his claim that actions, and types of action, can be true or false.

The first argument goes as follows. In order to justify the orthodox picture it must be shown that there are no constructions in which truth or falsity are attributed to actions. But as a matter of fact there are such constructions. Consider the sentences «Obama truly stated that Clinton is eloquent» and «Obama falsely stated that Putin is honest». These sentences are syntactically similar to «Obama quickly stated that Clinton is eloquent» and «Obama loudly asserted that Putin is honest», where the adverbs «quickly» and «loudly» express properties of actions. So, it seems that the adverbs «truly» and «falsely» also express properties of actions¹².

¹¹ The category mistake objection is raised in J. King, *Criticism of Soames and Speaks*, in *New Thinking about Propositions*, cit., pp. 132-39, and in J. Speaks, *Representational entities and acts*, *ibidem*, pp. 164-165, against Soames' version of the classificatory theory. The replies to the objection considered here differ at least in part from those provided in S. Soames, *Clarifying and improving the cognitive theory*, ivi, pp. 226-244.

¹² P. Hanks, *Propositional Content*, cit., p. 68.

This argument is not very compelling. The orthodox picture does not rule out that there are felicitous sentences in which «truly» and «falsely» modify verbs of action. What it does rule out is that such sentences entail that the actions denoted by the verbs modified are true or false in some interesting sense, that is, not merely in the sense that their content is true or false. It is consistent with the orthodox picture to claim that, although «Obama truly stated that Clinton is eloquent» and «Obama falsely stated that Putin is honest» are felicitous, the adverbs «truly» and «falsely» that occur in them do not express genuine properties of actions. The orthodox might deny that «Obama truly stated that Clinton is eloquent» and «Obama falsely stated that Putin is honest» are strictly analogous to «Obama quickly stated that Clinton is eloquent» and «Obama loudly asserted that Putin is honest», assuming that «quickly» and «loudly» do express genuine properties of actions. After all, there might be independent reasons for thinking that here «truly» and «falsely» do not behave exactly like «quickly» and «loudly». For example, «Obama truly stated that Clinton is eloquent» can be paraphrased as «Obama stated that Clinton is eloquent and it is true that Clinton is eloquent». Similarly, «Obama falsely stated that Putin is honest» can be paraphrased as «Obama asserted that Putin is honest and it is false that Putin is honest». By contrast, the other two sentences cannot be paraphrased in the same way, that is, one cannot say «Obama stated that Clinton is eloquent and it is quick that Clinton is eloquent», or «Obama asserted that Putin is honest and it is loud that Putin is honest». So, it might be contended that «quickly» and «loudly» express genuine properties of acts, whereas «truly» and «falsely» express properties of contents¹³.

The second argument goes as follows. Although there are infelicitous sentences in which truth and falsity are explic-

¹³ A further fact, noted in F. Moltmann, *Cognitive Products and the Semantics of Attitude Verbs and Deontic Modals*, in *Act-Based Conceptions of Propositional Content*, ed. by F. Moltmann and M. Textor, Oxford, Oxford University Press, 2017, p. 259, is that the adverbial construction in «Obama truly asserted that» does not generalize to other languages. In German, French, and Italian, the respective counterparts of «truly» mean «really».

itly attributed to actions, such as «What he did in uttering that sentence was true» or «The act Obama is now performing is true», we can explain why these sentences sound bad without giving up the claim that actions can be true or false. Obama's assertion, considered as an action, is subject to both practical and theoretical norms. Some ways of talking about this action focus on its practical side, while others bring out its theoretical side. When we describe Obama's assertion as «something he did» we highlight its practical aspects. Instead, when we describe it as «something he asserted» we highlight its theoretical aspects. Thus, the problems disappear if we substitute predicates of practical rationality for «true», as in «What he did in uttering that sentence was irrational» or «The act Obama is now performing is reasonable». Similarly, the problems disappear if we substitute «asserted» for «did» and «assertion» for «act», as in «What he asserted in uttering that sentence was true» or «The assertion Obama is now performing is true». So, the initial sentences sound bad because they foreground the practical aspects of Obama's action, thereby making attributions of truth sound inappropriate. But this is consistent with the claim that, when considered as an assertion, Obama's action is evaluable as true or false¹⁴.

This argument rests on an assumption that the orthodox may easily reject, the assumption that when we talk about Obama's assertion in the theoretical way, that is, when we describe it as something he asserted, we still refer to Obama's action rather than to its content. The word «assertion» admits both an act reading and a content reading. Therefore, it is simply not obvious that the examples that Hanks describes as cases in which we talk about Obama's assertion in the theoretical way are really cases in which we talk about Obama's assertion *considered as an action*. The orthodox might contend that «What he asserted in uttering that sentence was true» or «The assertion Obama is now performing is true» are not problematic simply because «what he asserted» and «the assertion» trigger a content reading, which makes attributions of truth sound appropriate.

¹⁴ P. Hanks, *Propositional Content*, cit., pp. 69-71.

The third argument goes as follows. Assuming that truth and falsity are properties of contents, it is plausible to say that they are properties of types of action, because contents are nothing but types of action. Obama's statement, in the content sense, is what Obama stated, and «what Obama stated» typically denotes the type of statement he made. We often use phrases of this form to talk about types. For example, «what Obama ate» can be used to denote a type of food. Now consider the sentence «Clinton did what Obama did». This sentence clearly means that Clinton and Obama performed the same type of action: «what Obama did» denotes this type of action. Similarly, in the sentence «Clinton stated what Obama stated», the expression «what Obama stated» is naturally read as denoting a type. So, we should identify the content of Obama's statement with a type of action¹⁵.

The flaw of this argument lies in the analogy that is taken to show that contents are types of action. Even if we grant that «what Obama stated» denotes a type, it is not obvious that it denotes a type of action. There seems to be no reason to think that «what Obama stated» is more similar to «what Obama did» than to «what Obama ate». The analogy between «Clinton stated what Obama stated» and «Clinton ate what Obama ate» seems to be at least as close as the analogy between «Clinton stated what Obama stated» and «Clinton did what Obama did». But the former analogy does not justify the conclusion that the type denoted in «Clinton stated what Obama stated» is a type of action, for «what Obama ate» clearly does not denote a type of action. If Obama ate sushi, what he ate is sushi. If Clinton also ate sushi, he ate the same thing. Sushi is definitely a type, but it is a type of food, not a type of eating.

The three arguments examined do not convincingly show that the category mistake objection is misguided. In each of the three cases there is a way of explaining the linguistic data that is consistent with the orthodox picture. Of course, this is not to say that the orthodox picture is correct. The explanation suggested by Hanks is still available, and it is not obvious that the linguistic data can settle the question.

¹⁵ P. Hanks, *Propositional Content*, cit., pp. 72-73.

But the point here is about the dialectic: Hanks' arguments can hardly work against the orthodox.

This suggests that the classificatory theorist cannot appeal to similar arguments to defend the claim that actions, and types of actions, have logical form. The same troubles that emerge in connection with the three arguments examined would arise if truth and falsity were replaced by some logical property that is directly related to logical form. To illustrate, let us consider a modified version of the three arguments examined, where «true» and «false» are replaced by «tautological», which is easily definable in terms of logical form.

First, the classificatory theorist might appeal to the fact that the following sentence is felicitous in order to show that actions can be tautological: «Obama tautologically stated that either Clinton is eloquent or he is not». However, as we have seen in the case of «Obama truly stated that Clinton is eloquent» and «Obama falsely stated that Putin is honest», it is consistent with this fact to claim that «tautologically» indicates that the content stated by Obama is tautological.

Second, the classificatory theorist might take the following sentence to show that Obama's assertion, considered as an action, is tautological: «What he asserted in uttering that sentence was tautological». However, as we have seen in the case of «What he asserted in uttering that sentence was true», this sentence also admits a content reading.

Third, the classificatory theorist might want to justify the claim that actions, and types of actions, can be tautological by arguing that contents are types of actions. However, as the example of sushi shows, the analogy suggested does not provide such an argument.

8. Conclusion

What has been said so far suggests that there is at least one significant respect in which the naturalized propositions theory and the truthmaker theory suit the truth-conditional view better than the classificatory theory. If propositions are types of action, then it is not clear how they can be the bearers of logical properties and logical relations. This does not necessarily mean that there is something wrong with the

classificatory theory. The truth-conditional view is not a widely accepted view, and this paper makes no attempt to defend it. Its point is merely conditional: if one accepts the truth-conditional view, then one may have some problems with the classificatory theory; conversely, if one endorses the classificatory theory, one may have some problems with the truth-conditional view. Assuming that what has been said so far is correct, either there is no clear sense in which propositions are the bearers of logical properties and logical relations, or there is no clear sense in which propositions are types of action¹⁶.

Summary. Propositions and Logical Form

This paper compares three theories of propositions that might be employed to substantiate the notion of truth conditions that underlies the view of logical form advocated in my book *Logical Form*: the naturalized propositions theory, the truthmaker theory, and the classificatory theory. While the naturalized propositions theory and the truthmaker theory accord equally well with the idea that logical form is determined by truth conditions, the classificatory theory is more problematic in some respects.

Riassunto. Proposizioni e forma logica

Questo articolo mette a confronto tre teorie delle proposizioni che potrebbero essere impiegate per dare sostanza alla nozione di condizioni di verità che sta alla base della tesi sulla forma logica difesa nel mio libro *Logical Form*: la teoria delle proposizioni naturalizzate, la teoria dei fattori di verità e la teoria classificatoria. Il suo scopo è quello di mostrare che, mentre le prime due teorie si adattano ugualmente bene all'idea che la forma logica sia determinata

¹⁶ I presented a previous version of this paper in the spring of 2017 at the Heinrich Heine University Düsseldorf (workshop *Propositions and Linguistic-Cognitive Action*), and in the summer of 2017 at the National Autonomous University of Mexico. I would like to thank the audiences of those talks for their very helpful comments, in particular Axel Barceló, Mario Gómez-Torrente, Peter Hanks, Friederike Moltmann, François Recanati, and Alessandro Torza.

dalle condizioni di verità, la terza teoria presenta aspetti più problematici.

Keywords: Logical Form, Propositions, Truth Conditions.

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