193

A Blueprint for a Calculator of Intensions

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Abstract. We are on Mars again – the favourite laboratory for philosophical experiments. Our host colleagues introduce us to some Martian stuff referred to as "T", and ask us to help them to identify T on other possible worlds. Or, technically speaking, we are asked to determine the *intension* of "T", i.e., what the term designates with respect to different possible worlds. Following a short series of experiments on the planet, we conclude that the intension of "T" depends upon three factors: (1) The semantic rule linked with the term, i.e., the way in which the term is designed to pick out its referent with respect to different possible worlds (e.g., as a definite description, or as a proper name, or as an actualised description etc.); (2) The properties of the referent of "T" in the actual world; and, (3) What we shall call 'the metaphysical background of the universe', i.e., what counts as a thing vs. what counts as a property of things (e.g., whether the universe is such that it contains material objects that merely happen to have their manifest properties, or whether the universe primarily contains manifest objects that merely happen to have their material constitution). As our experiments show, changing the values of any of these variables will result in a change in the reference of the term with respect to different possible worlds, viz., it will result in a change in the intension of the term. We then demonstrate how the three variables are interrelated, and specify how exactly they combine to produce a particular intension of a term. We conclude with a general "formula" that determines what will deserve to be called "T" relative to the different values of the above variables, i.e., we come up with a calculator of intensions. Finally, we also draw some morals about rigidity.

Keywords. Natural language semantics, identity and change, formal relations

Introduction

This paper is concerned with the modal aspect of terms, i.e., with the reference of terms relative to different ways the world might be. More technically, it is concerned with intensions. One common notion of intension is that the intension of a term is a function that assigns to each possible world the term's extension relative to that world.[1] (Although there are other notions of intension, our scope will be limited to this Carnapian notion.) For example, the intension of "the fourth planet from the Sun" assigns to each possible world, the planet which occupies the fourth place from the Sun in that world (if there is such a planet there), whether it is Mars or not; whereas the

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[1] There is by no means commitment here to intensions, thus defined, being a proper account of meaning. Ultimately, it is not: As is famously pointed out, "triangular" and "trilateral", for example, although sharing the same intension, nonetheless clearly differ in meaning. Thus sameness in intension does not guarantee sameness in meaning; yet difference in intension does entail difference in meaning. However, intensions and meanings do bear an "almost" one-one correlation to one another ("almost" due to cases like the triangular / trilateral one), and therefore sameness in intension, for the overwhelming majority of cases, does go hand in hand with sameness in meaning.

intension of "Mars" assigns Mars to each possible world in which Mars exists, whether it is the fourth planet from the Sun or not in that world. Thus while the singular terms "The fourth planet from the Sun" and "Mars" have the same extension, i.e., they designate the same object in the actual world, nonetheless they have different intensions, i.e., they designate different objects in some possible worlds. Due to this sensitivity of intensions to semantic differences, intension is widely considered a semantic concept. However, as will be demonstrated below, on top of such semantic sensitivity, intensions are no less affected by metaphysical issues, as well as by the actual state of the world. The aim of this paper is to clearly demonstrate these sensitivities, and to devise a general formula that will enable to calculate the intension of referring terms, by considering all relevant factors. More broadly, by analysing the modal aspects of our language, we will gain some insight into the nature of the interaction between semantics, metaphysics and actuality.

To achieve this goal, we consider a study case in which we are to determine the intension of a new term. To avoid presuppositions regarding the term or its referent, we shall set our study case on Mars.

1.

So we are on yet another philosophical expedition to Mars. Our host colleagues introduce us to some purple, jellylike Martian stuff called "T", and ask us to help them to identify T on other possible worlds, to which they frequently travel.[2] (Needless to say, Mars, as well as Earth, both belong to the actual world). In other words, we are asked to determine what would deserve to be called "T". Or, more technically, we are asked to assign to each possible world "T"'s extension, which is just to determine the *intension* of "T".[3] We, of course, are happy to assist. So happy, that we postpone our doubts about the possibility of travelling to other possible worlds.

2.

So we start working. Let us define a descriptive term Φ in the following manner: Φ has a sense and Φ designates, with respect to every possible world, that which fits this sense in that world (if there is such a thing there).[4] For example, "The fourth planet from the sun", would be such a descriptive term; it will designate Mars in the actual world, but other heavenly bodies in some other possible worlds. "T" may just be such a descriptive term. It may, for instance, have the sense 'jellylike purple stuff'. In such a case, the Martian stuff is designated by "T" by virtue of being jellylike purple stuff, and

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[2] True, the task of reidentification of entities in other possible worlds is at odds with Kripke's famous contention that such identities are *stipulated* rather than discovered (S. Kripke, *Naming and Necessity,* Oxford, Blackwell, 1980, 46). Although I agree with Kripke that possible worlds *can* be thus stipulated, I am nonetheless not convinced that an alternative, *qualitative* introduction of possible worlds – i.e., in which no such stipulation of identity is involved – is not as permissible.

[3] To avoid confusion: as the Martians know what the actual world is, our mission is to determine the intension of "T" on other possible worlds *taken as counterfactual*, and not as actual. I.e., in Frank Jackson's terminology, we are after the C-intension and not after the A-intension of "T" (F.C. Jackson, *From Metaphysics to Ethics: A Defence of Conceptual Analysis*, Oxford, Oxford University Press, 1998.)

[4] Note that reference-fixing descriptions do not belong in this category, but rather in the following one.

likewise "T" will designate, with respect to every possible world, whatever is jellylike purple stuff, in that world. As there may be different stuffs that fit this sense, T on other possible worlds may be distinct from the actual Martian referent. (Thus, a descriptive "T", like "the fourth planet from the sun", need not mark a natural kind.)

Yet "T" may not be such a term; it may be something like a name – a sort of term that we shall call "nondescriptive", and define in the following way: a nondescriptive term Ψ is designed to designate, with respect to every possible world, the same stuff that it designates in the actual world (if such stuff exists in that world).[5] For example, the name "Mars" is such a nondescriptive term; it names Mars in the actual world and thus designates that same object, Mars, in every possible world in which Mars exists. If "T" is indeed such a nondescriptive term, then "T" designates, with respect to every possible world, just this very same stuff that we were introduced to a short while ago on Mars, in that world.[6] (Arguably, a nondescriptive "T" includes cases in which "T" is a proper name, or an actualised description – like "*the actual* fourth planet from the sun", or "*the actual* jellylike purple stuff", or a demonstrative – like "*that* fourth planet from the sun" or "*that* jellylike purple stuff".)

3.

So if "T" is a nondescriptive term, then in order to identify T on other possible worlds we need to be able to tell whether certain stuff that we might encounter on some such world is or is not identical to our actual stuff. This may not be so trivial, as some possible worlds contain stuffs that are similar to our stuff in certain respects but differ from it in other respects, and we need to be qualified to determine whether each stuff is or is not identical to ours. Thus before travelling to other possible worlds, we need to get a pretty good idea of what this stuff that "T" actually designates on Mars consists in. So we go and have a closer examination of that actual referent of "T". We note its manifest properties – that it is purple, jellylike, etc., and upon further examination we determine its material constitution to be P. We learn from the Martians that they in fact conceive the collection of manifest properties as one property, M. We easily manage to adapt and conclude that the actual referent of "T" has the properties P and M. So "T", if nondescriptive, designates, with respect to every possible world, that which is identical to this P+M stuff. Evidently, given that the intension of a nondescriptive "T" assigns to each possible world "T"'s reference in the actual world, had this actual referent of "T" been different from our P+M stuff, the intension of "T" would differ accordingly; it would assign to each world the alternative actual referent.

Now, with respect to these two properties, P and M, there are four kinds of stuff that may be found on other possible worlds: 1. Stuff that is P and M (P+M); 2. Stuff that although shares the manifest property M has nonetheless a different material constitution, say, Q (Q+M); 3. Stuff that has the same material constitution P but a different collection of manifest properties, say, N (P+N)[7]; and, finally, 4. Stuff that is

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[5] Note that this definition is a description of the *semantic function* of the term, and not of its *content*, and hence does not make the term a descriptive one; as demonstrated here, such a description of function can be provided for Millian names like "Mars", which are, by definition, not descriptive.

[6] Or its counterpart, if we are persuaded by David Lewis's view on the nature of cross-worlds relations.

[7] One may object that this option violates physicalism, namely the view according to which the manifest supervenes upon the physical and hence no change in the manifest is possible without a change in the

neither P nor M, say, some Q and N stuff. (Q+N). Each of these stuffs in fact stands for a type of possible worlds; let us tag them w_1, w_2, w_3 and w_4 respectively. (We are aware, that if there is more than one alternative to P, or more than one alternative to M, there will be accordingly more candidates, and thus more types of possible worlds. Our list of possible worlds thus might not be exhaustive. This fact, however, need not currently worry us, for the argument as it stands by no means depends on a complete list of possible worlds).

4.

For a start, we consider the candidate that has the same material constitution P as the actual stuff, but different manifest property, namely, P+N, which is the stuff on w_3. Is it identical to the actual P+M stuff or not? Being heavily indoctrinated by the presuppositions of our Earthean science, we tend to believe that the universe is such that it contains various materials, such as P and Q, that merely happen to have their manifest properties, like M and N. So it seems that despite the difference in the manifest property, the stuff on w_3 (P+N), is the same stuff, P, as the actual stuff (P+M); so we are naturally drawn to conclude that that stuff is indeed identical to our actual referent of "T". Yet, to our surprise, we soon learn that the Martians have a different view on this matter; they take the universe to be such that it contains primarily manifest entities, such as M and N, that merely happen to have their material constitution, like P or Q. In other words, P+M stuff is primarily the stuff M, that merely happens to have the material constitution P, and which might have had another material constitution, like, say, Q. Thus on their view, the stuff on w_3, having the manifest property N rather than M, is in fact distinct from the stuff on actual Mars; it is, rather, the stuff on w_2, Q+M, which is identical to the actual stuff P+M, despite the difference in their material constitution.[8] What is at stake here is the identity criteria of our Martian entity, the P+M stuff, i.e., the identity criteria of "this", regardless of the way it is described, namely, regardless of calling it "stuff" or otherwise.[9] And whereas we believe that these criteria of identity are primarily material, our hosts believe that these criteria of identity are primarily manifest.

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physical. The stuff on W_3, namely, P+N stuff, entails a change, albeit a modal one, in the manifest (from M to N) without a change in the physical (P). There are two responses to this. Firstly, physicalism in its common versions is restricted to the actual world; it is commonly accepted that, for example, there *might* have been "zombies" (same physical state but no mental state), or immaterial souls, yet *actually* aren't any. In other words, in some possible worlds, non-physical properties may supervene in a different way on physical properties, or, indeed, may not supervene upon them at all (e.g., in worlds with different laws of nature). Hence, just as zombies exist *in other possible worlds*, so does stuff with the same physical property P as the actual stuff P+M, but with a different manifest property, N. Secondly, even if we accepted a more ambitious version of physicalism that applied to all possible worlds (and thus eliminated this type of possible world), still, this would not undermine the general argument here, for we could, in principle, choose some stuff with two *independent* dominant properties, i.e., properties that hold no supervenience relations between them. So the objection is not one of essence in this context.

[8] Note that this does not commit the Martians to deny supervenience of the manifest upon the material. For such supervenience is consistent with non-material criteria of identity; it seems perfectly consistent to assume that the universe is inhabited by, e.g., animals, that merely happen to have the material constitution they have (i.e., they might have had different material constitution), and yet at the same time to believe that these animals supervene upon their material constitution.

[9] The cost of denying that there are such independent identity criteria is enormous: it is the overall denial of intensions of nondescriptive terms, such as "T", "Mars", "Alik" etc.

After the first mutual puzzlement by our conflicting views, we soon realise how dogmatic our beliefs are, and thank the fortunate encounter that allowed us to broaden our outlook and to see both options. We both admit, however, that we have no way of determining what the universe is really like in this respect, and in particular, what "being the same" consists in when applied to the purple jellylike stuff. Indeed, for all we know, there may be no fact of the matter here at all.

Furthermore, we now appreciate that with regard to any property Ω of our stuff, it is possible, contrary to both what we or the Martians believe, that the universe is such that it primarily contains Ωs, that merely happen to have other properties, such as their material constitution P, and their manifest property M (such a property Ω may, for instance, be the object's function). So in principle, there are many more possible metaphysical backgrounds.[10]

Turning back to our job, we so far conclude that the intension of the term "T", i.e., "T"'s reference with respect to different possible worlds, is dependent upon three different factors: 1. The semantic rule of "T", i.e., whether "T" is descriptive or not; 2. The actual extension of "T", i.e., whether it is P+M, or Q+M, or P+N or Q+N; and, 3. The metaphysical background of the universe, namely, what count as objects vs. what count as properties of objects.

5.

But what *is* the intension of the term "T" then? What does in fact deserve to be called "T"? Well, surely, to determine the intension of "T" we need the *values* of each of the above three variables. We have already come to suspect that we do not know for sure the value of the third variable – the metaphysical background of the world. But as if this epistemic worry was not enough, the Martians go on to tell us that they were not even sure about the values of the other two variables as well – the semantic rule of "T", and also the true properties of the actual referent. All they are willing to commit to is the purple jellylike stuff to which the term "T" actually applies on Mars. Firstly, regarding the properties of this actual referent, although their current science told them that it had the properties P and M, still, based on their past experience, they were well aware of how fallible their science has been, and therefore were careful not to assume that it isn't failing this time as well. And secondly, as to the semantic rule of "T", some of them thought that "T" designated that stuff by virtue of simply naming it, like a label; whereas others, by contrast, contended that "T" designated the stuff by virtue of that stuff fitting the sense of the term "T", namely, by having the property M (i.e., being jellylike, purple etc.). Furthermore, they thought that other views on this matter were also possible. And there was nothing in the actual application of the term on Mars to tell them which of the views was right. Pondering about it though, we begin to suspect that our epistemic state might not be very different to theirs.

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[10] There are various metaphysical alternatives in another sense as well. E.g., that the universe contains *both* types of objects, namely Ps and Qs as well as Ms and Ns, that simply coincide (on this view, in the case of a clay statue, there are two objects, the statue and the lump of clay, in the same place at the same time); or, that the universe contains unqualified objects, namely, an unqualified stuff that has the properties P and M, and that any further metaphysical burden is entirely theory-relative. However, such alternatives can be incorporated in the final analysis, once such an analysis is attained.

6.

The problem with this epistemic state is that without the values of the required variables, we simply cannot carry out the job. It is just impossible to determine the intension of "T" without these data, since different data, i.e., different values of the three variables, will result in different intensions. So, what do we do now? Is there a way out? Well, of course there is! We could provide the Martians with some well-defined procedure, which would enable them to calculate the intension of "T" *once* the values of the variables are determined. We could come up with some sort of a *formula*, that when filled in with the appropriate data would simply generate the exact intension. Indeed, with an appropriate re-interpretation of its variables, such a formula can be used to calculate the intension of *any* term.

We also appreciate that such a general formula would provide an understanding of the *general regularity* behind individual intensions of specific terms. After all, isn't it what drives great scientist in their pursuit for theories? Admittedly, unlike us, Newton had methods for measuring weights, speeds, forces, and other values for the variables in his formulas – whereas we, regrettably, do not seem to possess such philosophical yardsticks – yet nonetheless, what he was really after was not so much the specific outcomes of his formulas, but rather the general *rule* that would expose the *regularity* connecting such values. And in *this* respect our formula should enjoy the same merit. So it now seems that even if we knew beyond any doubt the exact values of the three variables, it would still be highly profitable to deliberately put on a "veil of ignorance", and to consider the hypothetical values of each variable, in order to find the general formula… Encouraged by these revelations about the importance of a general formula, we enthusiastically set for the task.

7.

To recall, the main values that were considered are the following: 1. The semantic rule: may be either descriptive or not; 2. The actual referent: corresponding to our apparent P+M actual referent of "T", the possibilities are that it is: indeed P+M, but also, that it may be Q+M, or P+N, or Q+N[11]; and lastly, 3. The metaphysical background may be either a material universe (that happens to have some manifest properties), or a manifest universe (that happens to have some material constitution).

True, we are aware that there are possibilities not covered by the ones mentioned – at least as far as the properties of the actual referent and the metaphysical background are concerned. For the sake of simplicity, however, we shall construct our formula by first considering these options. After arriving at the principle formula, it should be fairly straightforward to extend it to encompass the other options as well.

So apparently the logical space of possibilities here amounts to two (possibilities of the semantic rule) times four (possibilities of the actual referent) times two (possibilities of the metaphysical background), which is sixteen. Fortunately, the

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[11] Indeed the last two possibilities are not very probable, since they suggest a different manifest property from M, and given that we seem to perceive such properties quite directly we are most likely not to be mistaken about them. However, in order for our formula to be general, we would be better off to consider those options as well, as it will make the formula applicable to cases in which the M property is not manifest and directly perceived, but rather has to be discovered.

options are considerably less than that. This is due to the fact that if "T" is descriptive, then the values of the other variables play no part in fixing the intension. Such a descriptive "T" will simply designate, with respect to every possible world, that which fits "T"'s sense (allegedly, 'being an M',) in that world – regardless of the metaphysical background, or the nature of the actual referent. Thus all eight combinations linked with a descriptive semantic rule for "T" collapse into one.

So overall we have the following nine possible combinations:

Table 1

	Semantic rule	Actual referent	Metaphysical background	W_1 P+M	W_2 Q+M	W_3 P+N	W_4 Q+N
1	Descriptive	(Whatever)	(Whatever)				
2	Nondescriptive	P+M	Material				
3			Manifest				
4		Q+M	Material				
5			Manifest				
6		P+N	Material				
7			Manifest				
8		Q+N	Material				
9			Manifest				

All we need to do now is to calculate the intension of "T", i.e., "T"'s reference with respect to the different possible worlds, for each of the nine rows. This is a fairly easy task. We shall briefly calculate the intension of the first five rows, from which it will be clear how to proceed to fill in the remaining four rows. The completed nine rows will be given in a concluding table.

In row 1, "T" is descriptive. Since, we are told, it is linked with the sense, 'have the (manifest) property M', it will designate, with respect to each type of possible world, that which M's in that type of world. Hence, the intension of "T" in that case would be the following:

Table 2

	Semantic rule	Actual referent	Metaphysical background	W_1 P+M	W_2 Q+M	W_3 P+N	W_4 Q+N
1	Descriptive	(Whatever)	(Whatever)	+	+	-	-

In all subsequent cases, "T" is nondescriptive, and therefore designates, with respect to every possible world, that which it designates in the actual world. So we need to determine what is the nature of this actual referent of "T". We can do that on the basis of the other two variables: the metaphysical background, and the properties of the actual referent. Let us demonstrate this.

In row 2, "T" designates in the actual world stuff that is P+M (as we actually believe it to be the case), and the universe is taken to be a material-universe (similar to

what our current science tells us), i.e., the universe is such that it contains, among other things, Ps, that happen to have their manifest properties. Hence our actual referent is such a P that happens to have the manifest property M. So in that case, "T" will designate, with respect to every possible world, that which is P in that world. The intension is thus:

Table 3

	Semantic rule	Actual referent	Metaphysical background	W_1 P+M	W_2 Q+M	W_3 P+N	W_4 Q+N
2	Nondescriptive	P+M	Material universe	+	-	+	-

Row 3 is like Row 2, only that now we have a manifest-universe. So in that case, the same actual referent, P+M, is in fact an M that merely happens to have the material constitution P. Thus "T" will designate, with respect to every possible world, that which is M in that world. The intension of "T" in that case is therefore:

Table 4

	Semantic rule	Actual referent	Metaphysical background	W_1 P+M	W_2 Q+M	W_3 P+N	W_4 Q+N
3	Nondescriptive	P+M	Manifest universe	+	+	-	-

In rows 4 and 5, the actual referent is changed, and it is now not P+M but rather Q+M. I.e., in this row we consider the option that our actual referent has different properties than what we in fact believe it to have. Now if the universe is a material-universe, then the referent, Q+M, is primarily a Q, that merely happens to have the manifest property M. So "T" will designate, with respect to every possible world, that which Q's in that world. If, however, the universe is a manifest-universe, this actual referent is an M, and "T" will designate, with respect to every possible world, that which M's in that world:

Table 5

	Semantic rule	Actual referent	Metaphysical background	W_1 P+M	W_2 Q+M	W_3 P+N	W_4 Q+N
4	Nondescriptive	Q+M	Material universe	-	+	-	+
5			Manifest universe	+	+	-	-

Similar considerations will determine the intension for the remaining four rows.

Overall, we end up with the following complete table, that lists "T"'s intension relative to each combination of values of our three variables:

Table 6

	Semantic rule	Actual referent	Metaphysical background	W_1 P+M	W_2 Q+M	W_3 P+N	W_4 Q+N
1	Descriptive	(Whatever)	(Whatever)	+	+	-	-
2	Nondescriptive	P+M	Material	+	-	+	-
3			Manifest	+	+	-	-
4		Q+M	Material	-	+	-	+
5			Manifest	+	+	-	-
6		P+N	Material	+	-	+	-
7			Manifest	-	-	+	+
8		Q+N	Material	-	+	-	+
9			Manifest	-	-	+	+

And so we're done. Mission complete. Well, at least an outline of our task is complete (for our account to be complete we would still need to include more possible options for each variable.)

8.

Finally, we can use our newly devised formula to draw some moral about rigidity.

A *rigid* term is defined as one that designates the same referent, and only that referent, in all possible worlds in which that referent exists. A nondescriptive term was defined as a term that is designed to designate, with respect to every possible world, the same referent that it designates in the actual world (if such referent exists in that world). Thus it follows that a nondescriptive term is by definition a rigid term. A descriptive term, by contrast, carries no such entailment. To recall, a descriptive term was defined as a term that is linked with a sense, and that designates, with respect to every possible world, that which fits its sense in that term. Thus, a descriptive term might be nonrigid, e.g., "the fourth planet from the sun" designates Mars in the actual world, Venus in another possible world, etc. Yet a descriptive term might also be a rigid term, e.g., "2+2" designates 4 in every possible world, and nothing else; likewise, "stuff with atomic number 79" (arguably) designates gold in every possible world in which gold exists and nothing else. Thus, whereas nondescriptive terms are by definition rigid, descriptive terms may or may not be rigid. In other words, whereas a nondescriptive term is rigidified by the very semantic rule that is attached to it, a descriptive term is not thus rigidified. In Kripke's terms, the difference between the two kinds of rigidity is that a nondescriptive term is rigid *de jure*, i.e., by (stipulating a) law, whereas a descriptive terms is rigid, when it is rigid, *de facto*, i.e., as it happens in practice (without stipulation).[12]

Thus all nondescriptive terms are rigid, whereas only some of the descriptive terms are rigid. What is it that makes a descriptive term rigid though? Under what circumstances would a descriptive term be rigid? A rigid term is one that designates the

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[12] S. Kripke, 1980, p. 21, n.21

same referent in all possible worlds, and only that referent. Our intensions formula enables us to determine the referent of a term with respect to every possible world; yet in order to determine rigidity, we must also know whether these referents are identical or not. For instance, the formula entails that the intension of "T" when "T" is descriptive (and has the sense "has the property M") is as follows:

Table 7

	Semantic rule	Actual referent	Metaphysical background	W_1 P+M	W_2 Q+M	W_3 P+N	W_4 Q+N
1	Descriptive	(Whatever)	(Whatever)	+	+	-	-

I.e., the referents of "T" across possible worlds are P+M and Q+M. Yet in order to determine whether "T" is rigid or not, we have to further establish whether these referents, namely, P+M and Q+M are identical or not. Now this in turn depends on the metaphysical background of the universe. The dependence works as follows. If the metaphysical background is material, i.e., the universe is such that it primarily contains material things like P and Q that merely happen to have manifest properties like M and N, then the two stuffs P+M and Q+M, one being P (that happens to have the manifest property M) and the other being Q (that happens to have the same manifest property M) are in effect distinct. If, by contrast, the metaphysical background is manifest, i.e., the universe is such that it primarily contains manifest things like M and N that merely happen to have material constitutions like P and Q, then the two stuffs P+M and Q+M, being both M, are identical (despite having different contingent material constitutions). As a consequence, a material universe will entail that a descriptive "T" (with the sense 'being an M') is nonrigid, whereas a manifest universe will entail that such a descriptive "T" is rigid, despite the identical intension in both cases:

Table 8

	Semantic rule	Actual referent	Metaphysical background	W_1 P+M	W_2 Q+M	W_3 P+N	W_4 Q+N	*Rigidity*
1a	Descriptive	(Whatever)	Material	+	+	-	-	Nonrigid
1b		(Whatever)	Manifest	+	+	-	-	Rigid

It turns out that the same term, with the same descriptive semantic function, may come out rigid or nonrigid, depending on the metaphysical background. Rigidity is thus not an exclusively semantic concept; it is no less a metaphysical concept.

To generalise, what makes a descriptive term like "T" rigid, is that its sense – in our case "being an M" – is linked with a kind of things (as opposed to a kind of properties of things), since such metaphysical background guarantees that all that fits that sense is the same stuff. Whereas when the sense is linked with a kind of a property of things rather than with a kind of things – in our case, when M is considered a kind of a property of things rather than a kind of things – then the term turns out nonrigid, since there are different kinds of things that would fit this sense.

Given that all options in which "T" is nondescriptive make "T" rigid, it follows that there is but a single case in which "T" is rendered nonrigid. This happens only when "T" is descriptive *and* its sense is linked with a kind of a property of things, rather than with a kind of things. In all other cases, "T" comes out rigid:

Table 9

	Semantic rule	Actual referent	Metaphysical background	W_1 P+M	W_2 Q+M	W_3 P+N	W_4 Q+N	Rigidity
1a	Descriptive	(Whatever)	Material	+	+	-	-	*Nonrigid*
1b		(Whatever)	Manifest	+	+	-	-	*Rigid De facto*
2	Non-descriptive	P+M	Material	+	-	+	-	*Rigid De jure*
3			Manifest	+	+	-	-	
4		Q+M	Material	-	+	-	+	
5			Manifest	+	+	-	-	
6		P+N	Material	+	-	+	-	
7			Manifest	-	-	+	+	
8		Q+N	Material	-	+	-	+	
9			Manifest	-	-	+	+	

Conclusion

We were looking for the intension of "T", i.e., the reference of "T" with respect to different possible worlds, or simply, what would deserve to be called "T". We have found the three factors upon which intensions depend. We have further considered possible values for each of these variables. We have listed the different possible combination of these values. Finally, we have calculated the resultant intension for each such combination. Thus, using the corresponding values with regard to the term "T", our Martian colleagues can now determine the intension of "T". In fact, they can do more than that. By reinterpreting "P", "M", "Q" and "N", our hosts are now in a position to determine the intension of *any* term, since the intensions given in the above table remain fixed. Finally, they can also appreciate the common general rule underlying all such intensions.

And, frankly, so can we.[13]

References

[1]   S. Kripke, *Naming and Necessity,* Oxford, Blackwell, 1980.
[2]   F.C. Jackson, From Metaphysics to Ethics: A Defence of Conceptual Analysis, Oxford, Oxford University Press, 1998