ON THE RIGIDITY OF GENERAL TERMS

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ON THE RIGIDITY OF GENERAL TERMS

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Thesis Abstract

Alper Yavuz, “On the Rigidity of General Terms”

The aim of this thesis is to discuss whether general terms are rigid and if they are, how their rigidity should be interpreted. To this end, I first present the problems related to the rigidity of general terms. The most important ones among them are the following: What do general terms refer to? Is there any difference between the terms called “natural kind terms” and other general terms? After that, I discuss the arguments of three competent interpretations which try to overcome these problems. The first interpretation holds that general terms refer to (or apply to) each and every object in their extensions. According to this view, only general terms related to essential properties like “cat”, “gold” turn out to be rigid. After I try to expose the drawbacks of this view, I examine the arguments of the second interpretation which holds that general terms refer to abstract kinds. I also argue for this interpretation. According to this interpretation general terms which refer to the same kind in all possible worlds turn out to be rigid. The main objection to this view is that this interpretation makes so many general terms rigid and it trivializes the notion of rigidity. Arguing that this is an unfair objection, I also focus on the philosophical importance of the subject and show that the interpretation I argue for realizes this philosophical importance. The third interpretation, on the other hand, rejects the rigidity of general terms. I also discuss the drawbacks of this view.

Another subject I discuss in the thesis is the rigidity of artifactual kind terms. The kinds of human made objects for specific purposes are usually called “artifactual kinds”. I argue that artifactual kind terms could rigidly refer to artifactual kinds. I reply to the critiques of this view with regard to the semantics of artifactual kind terms and metaphysics of artifactual kinds.

Tez Özeti

Alper Yavuz, "Genel Terimlerin Zorunlu İmlemesi Üzerine"

Bu tezin amacı genel terimlerin zorunlu imleyici olup olmadıklarını, eğer böyle iseler bunların zorunlu imlemesinin nasıl yorumlanması gerektiğini tartışmaktır. Bu amaca yönelik olarak genel terimlerin zorunlu imlemesi konusunda ortaya çıkan sorunları ortaya koyuyorum. Bu sorunlardan en önemlileri genel terimlerin neye gönderimde bulundukları ve "doğal tür terimleri" olarak adlandırılan terimler ile diğer genel terimler arasında bir fark bulunup bulunmadığıdır. Sonrasında bu sorunların üstesinden gelmeye çalışan birbirine rakip üç yorumun uslamlamalarını tartışıyorum. Bunlardan ilki genel terimlerin kaplamlarındaki nesnelerin her birine tek tek gönderimde bulunduğunu (ya da uygulandığını) savunan görüştür. Bu görüşe göre ancak özsel özelliklerle ilişkili "kedi", "altın" gibi genel terimler zorunlu imleyici (ya da zorunlu uygulayıcı) çıkarlar. Bu yorumun sakıncalarını göstermeye çalıştıktan sonra, benim de katıldığım, genel terimlerin soyut türlere gönderimde bulunduğunu savunan ikinci yorumun uslamlamalarını ele alıyorum. Bu yoruma göre bütün olanaklı dünyalarda aynı türe gönderim yapan genel terimler zorunlu imleyici çıkıyorlar. Bu görüşe yöneltilen başlıca eleştiri, bu şekilde çok fazla sayıda genel terimin zorunlu imleyici çıktığı ve bunun da genel terimlerin zorunlu imlemesi konusunu önemsizleştirdiğidir. Bu eleştirinin haksız bir eleştiri olduğunu göstermeye çalışırken konunun felsefi önemi üzerinde duruyor ve benim desteklediğim yorumun bu felsefi önemi nasıl gösterdiğini ele alıyorum. Üçüncü bir yorum is genel terimlerin zorunlu imleyici olamayacağını savunan görüş. Bu görüşün sakıncalarını da çalışmamda tartışıyorum.

Yapay tür terimlerinin zorunlu imlemesi konusu da tezde ele aldığım bir başka konu. Belirli bir amaca yönelik olarak insan yapımı nesnelerin türlerine gönderim yapan terimlerin de zorunlu imleyici olabileceklerini savunuyorum. Bu görüşe yönelik eleştirileri hem yapay tür terimlerinin semantiği hem de yapay türlerin metafiziği açısından tartışıyorum.

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PREFACE

In general, reference[1] is defined as the relationship between an expression and what it stands for. This relationship is more apparent in names than in other terms. There are two main views on the reference of names. The first one is known as descriptivism. Roughly speaking, descriptivism has two claims: Names have descriptive contents and names refer via descriptive contents. The other main view on reference of names is called "the rigidity thesis". This thesis is a negative one and it argues against the two claims of descriptivism. The rigidity thesis can be expressed in the following way: names do not have descriptive contents and names do not refer via any descriptive contents. Instead, names are rigid designators. A rigid designator designates the same object in every possible world in which that object exists and never designates anything else. The rigidity thesis is accepted by the majority of philosophers. The rigidity thesis for proper names[2] brings into question the rigidity of general terms. Do general terms have descriptive contents? How do they refer? The debate on the rigidity of general terms is more complicated than the debate on the rigidity of proper names because the reference of general terms is not a settled issue. While it is clear that singular terms refer to objects, the same clarity does not hold for general terms. What they refer to, or whether they refer at all, are not settled questions. Due to the uncertainty on basics of general terms, the rigidity of general terms is also a controversial issue. In this essay, I shall deal with this issue. In

[1] In this essay, I use the terms "reference" and "designation" interchangeably.

[2] The terms "name" and "proper name" are also used interchangeably.

Chapter I, I shall present the theoretical background. In this chapter, first I shall focus on singular terms. Among the two main views on the reference of names, descriptivism and the arguments of descriptivist philosophers such as Frege and Russell will be my main concern in the first section of Chapter I. In this section I shall also present Kripke's criticism of descriptivism and his claim that names are rigid designators. In the second section of Chapter I, I shall introduce the problem of the rigidity of general terms and emphasize its philosophical importance. Chapter II contains three difference interpretations on the rigidity of general terms. In Chapter III, I shall discuss the rigidity of artifactual kind terms and finally in Conclusion, I shall draw three conclusions which I have inferred from the discussions in the previous chapters.

CHAPTER 1

REFERENCE AND RIGIDITY: THEORETICAL BACKGROUND

My aim in this chapter is to present the theoretical background of the discussions concerning the rigidity of general terms. In the first section of this chapter I shall focus on the singular term. Different views regarding the singular term – general term distinction shall be discussed here. Summarizing the descriptivism of Gottlob Frege and Bertrand Russell, I shall continue with Saul A. Kripke's criticism of them. In the second section, I shall discuss how Kripke extends his thesis to the realm of general terms and what problems arise upon this extension.

Reference of Singular Terms

The distinction between singular terms and general terms is a controversial issue. Do the generality and singularity of terms depend on their position in a sentence or are they singular or general in themselves? When this comes into question, philosophers part ways. According to John Stuart Mill, who was one of the first philosophers to discuss the distinction between the singular term and the general term, the definitions are as follows:

> A general name is familiarly defined, a name which is capable of being truly affirmed, in the same sense, of each of an indefinite number of things. An

> individual or singular name is a name which is only capable of being truly affirmed, in the same sense, of one thing. [3]

Even today the most common definition is this one. For example, Nathan Salmon expresses the same idea in more contemporary terminology in the following way:

> The phrase "singular term" is used throughout as a meta-linguistic term for any object-language expression of a certain logical *type* – specifically, any first-order expression whose primary logico-semantic function is to designate (with respect to a given context, time, place, and possible world, and under a given assignment of values to variables) a single individual, and which attaches to (or fills an argument place of) a first-order predicate to form a (open or closed) formula. A general term, by contrast, is of a logical type that is potentially applicable (with respect to semantic parameters) to any number of individuals.[4]

In this understanding, being a general or singular term is independent of the role of a term in a sentence. On the other hand, some philosophers such as Willard Van Orman Quine, do not agree with the classical definition:

> Now let us get back to the dichotomy between general and singular terms, as clarified by the roles in predication. The ambivalence of mass terms with respect to that dichotomy is strikingly seen in predication. For the mass term is found to enter predication sometimes after 'is', like a general term in adjectival form, and sometimes before 'is', like a singular term. The simplest plan seems to be to treat it accordingly: as a general term in its occurrences after 'is', and as a singular term in its occurrences before 'is'. (...) The protean character indeed goes farther. We already noted in § 19 that even an ordinary general term such as 'apple' or 'lamb' could double as a mass term. In all, thus, 'lamb' figures not in two ways but three. In 'Lamb is scarce' it figures as a mass term used as a singular term to name that scattered object which is the world's lamb meat. In 'Agnes is a lamb' it figures as a general term true of each young specimen of *Ovis aries*. In 'The brown part is lamb', finally, it figures as a mass term used as a general term true of each portion or scattered quantity of lamb meat.[5]

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[3] John Stuart Mill, *A System of Logic, Ratiocinative and Inductive* (New York: Harper & Brothers, Publishers, 1858), p. 18.

[4] Nathan Salmon, "Are General Terms Rigid?" *Linguistics and Philosophy* 28, (July 2005), p. 117, fn. 1.

[5] Willard Van Orman Quine, *Word and Object* (Cambridge, Mass.: The MIT Press, 1960), pp. 97-9.

Hence, the distinction between singular and general terms is not a settled issue; however we can say that most philosophers accept Mill's definition. I will also use this definition throughout this essay.

Descriptivism

The most typical kind of singular terms are proper names. What a proper name contributes to a statement is a controversial issue. In general, we can say that there are two different views. The first one rejects the idea that proper names have meanings other than their referents. This idea dates back to Mill:

> Proper names are not connotative: they denote the individuals who are called by them; but they do not indicate or imply any attributes as belonging to those individuals. When we name a child by the name Mary, or a dog by the name Cæsar, these names are simply marks used to enable those individuals to be made subjects of discourse." [6]

Recognizing the problems of the Millian view concerning informative true identity statements[7], Frege proposes a different theory. According to him, proper names[8] have both sense (*Sinn*) and reference (*Bedeutung*). Frege has basically three claims regarding the sense-reference distinction for proper names. The first one expresses

[6] Mill, p. 21.

[7] If names had only referents, then the statement "Hesperus is Phosphorus" would not be cognitively different than the statement "Hesperus is Hesperus." Yet, they are cognitively different. The former one is highly informative and expresses an astronomic discovery, whereas the latter is merely a tautology.

[8] Frege uses the term "proper name" more comprehensively than it is used today. He calls terms uniquely designating an object "proper name" (Frege, Gottlob "On Sinn and Bedeutung" translated by Max Black. In *The Frege Reader,* edited by Michael Beaney (Oxford: Blackwell, 1997), p. 153). For example the followings are names: Aristotle, The father of Aristotle, 2+2, People called "Ali" in this room (assuming there is only one Ali in the room), the most distant celestial body from Earth, etc. Since declarative sentences refer to one of the objects "True", "False" or "Neither True nor False", they are also considered as proper names by Frege (Ibid., p. 158). Though the distinction between sense and reference holds for all types of proper names, here I am only dealing with the proper names like "Aristotle" and "Atatürk" which are called "ordinary proper names" in contemporary literature.

the idea that the sense of a proper name could be given by definite descriptions. A name could have several senses. For instance, the name "Aristotle" could have a sense like "The Tutor of Alexander", "The Pupil of Plato", or "The Author of Metaphysics". This is not a source of confusion because given a context there is a specific definite description that is assigned as the sense of a proper name. [9]

Secondly Frege claims that the referents of names are determined by their senses. Sense is the "mode of presentation" of objects:

> It is natural, now, to think of there being connected with a sign (name, combination of words, written mark), besides that which the sign designates, which may be called the *Bedeutung* of the sign, also what I should like to call the *sense* of the sign, wherein the mode of presentation is contained.[10]

Thus, we need the "mode of presentation" of an object in order to speak of it. As a result of this strict relationship between sense and reference, it follows that the sense of a name uniquely identifies its referent.

Thirdly, in Frege's theory, it is assumed that a speaker knows the sense of a name if she is familiar with that name. This claim is not explicitly stated but it can be inferred from this passage: "The sense of a proper name is grasped by everybody who is sufficiently familiar with the language or totality of designations to which it belongs (…)"[11]

Russell is another descriptivist philosopher but his descriptivism is different from Frege's. He is against Frege's sense-reference distinction.[12] Beyond that, according to him the definition of "proper name" is completely different:

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[9] Ibid., p. 153, fn. B.

[10] Ibid., p. 152.

[11] Ibid., p. 153.

[12] Bertrand Russell, "On Denoting," *Mind* 14, No. 56 (Oct., 1905), p. 483, fn. 3.

> The only words one does use as names in the logical sense are words like "this" or "that". One can use "this" as a name to stand for a particular with which one is acquainted at the moment. We say "This is white". If you agree that "This is white", meaning the "this" that you see, you are using "this" as a proper name.[13]

In this view, only particular sense-data could be "named". What we call "proper names" like "Socrates" and "Napoleon" in ordinary language are not proper names, but descriptions:

> What pass for names in language, like "Socrates", "Plato", and so forth, were originally intended to fulfill this function of standing for particulars, and we do accept, in ordinary daily life, as particulars all sorts of things that really are not so. The names that we commonly use, like "Socrates", are really abbreviations for descriptions; not only that, but what they describe are not particulars but complicated systems of classes or series.[14]

As we have seen, Russell's theory has completely different assumptions from Frege's, however both theories have some very similar consequences. In Russell's theory, ordinary proper names are equivalent to some descriptions; we can replace a name with a description. Statements in which proper names[15] occur actually do not express one thought, but rather three different thoughts. For instance, in the statement "Atatürk was born in Thessalonica", the equivalent description of the proper name "Atatürk" might be something like "The founder of the Turkish Republic". This description is not a singular term as Frege thought. According to Russell, it is not a referring expression, in the strict sense. The original statement should be analyzed in the following way:

(i) There is at least one person who founded the Turkish Republic;

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[13] Bertrand Russell, *The Philosophy of Logical Atomism* (London: Routledge, 2010), p. 29.

[14] Ibid., p. 29.

[15] While discussing Russell, unless otherwise stated I will use the term "proper name" to mean ordinary proper names.

(ii) There is at most one person who founded the Turkish Republic; and

(iii) Whoever founded the Turkish Republic was born in Thessalonica.

This analysis shows that the description "The founder of the Turkish Republic" is not a singular term. However, though Russell does not explicitly express what the original statement speaks of, it follows from his argument that it is the object which makes (i)-(iii) true. Hence, though he claims that proper names are not singular terms, they are used to speak of an object. These objects are determined by the descriptions which are associated with proper names. In this case, the consequence of Russell's argument is that the referents of proper names are determined by the equivalent descriptions. This is the same idea with Frege's second claim.

Russell would not object to Frege's third claim. The idea that the speaker knows the description which replaces a proper name is compatible with Russell's theory of language.

Consequently, I think it is clear that Russell and Frege agree on at least these three claims. In the next section, I shall focus on Kripke's criticism of the Frege-Russell descriptivism in terms of these three claims.

Kripke's Criticism of Descriptivism: the Rigidity of Names

Kripke discusses three claims of descriptivism and rejects all of them. I shall only present his criticism of the first claim. That will suffice for my purposes. In my opinion it is clear that the first claim is essential for the other two. Thus, if the first claim is refuted, then the other two would become groundless.

Kripke's main thesis in *Naming and Necessity*[16] is a negative one: the meaning of a name is not a singular description. Kripke's main objection to descriptivism is usually referred to as "the modal argument"[17]. Suppose we had a statement like the following:

(1) Mozart might not have been the composer of Magic Flute.

Intuitively, this statement seems to be true. Mozart might not have been a musician and therefore might not have been the composer of Magic Flute. According to one of the basic assumptions of semantics, if we substitute a term for one of its synonyms in a statement, the meaning of the statement does not change. In that case, if we assume that "the composer of Magic Flute" and "Mozart" are synonymous, and substitute the latter with the former in (1), then the meaning of the statement should remain the same:

(2) Mozart might not have been Mozart.

This statement, however, is not true because it expresses a logical contradiction. It is a logical rule that everything is identical with itself. Hence, (1) and (2) could not be synonymous because they have different truth values. Therefore, the meanings of "Mozart" and "The Composer of Magic Flute" are not the same.

In order to clarify his thesis, Kripke turns to the notion of "possible worlds". Mozart would be Mozart in all possible worlds, so (2) is false. On the other hand, one can easily imagine a possible world in which Mozart would not have been the composer of Magic Flute. [18] That's why (1) is true. The main problem with

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[16] Saul A. Kripke, *Naming and Necessity* (Cambridge, Mass.: Harvard University Press, 1980.

[17] There are also epistemological and semantical arguments. For this classification see Nathan Salmon's *Reference and Essence* (Princeton: Princeton University Press, 1980), pp. 23-31).

[18] According to Kripke, possible worlds are just stipulative entities: "A possible world isn't a distant country that we are coming across, or viewing through a telescope. Generally speaking, another possible world is too far away. Even if we travel faster than light, we won't get to it. A possible world

descriptivism is that it ignores the semantic differences between names and singular descriptions. While names are rigid designators, most of our ordinary singular descriptions are just accidental designators.[19] Kripke's definitions for these two concepts are the following: "Let's call something a *rigid designator* if in every possible world it designates the same object, a *nonrigid* or *accidental designator* if that is not the case."[20] After that he adds another condition and expresses that a rigid designator designates the same object in every possible world in which the object exists.[21] Let me emphasize Kripke's thesis once more through the notion of rigid designator: Since names are rigid and singular descriptions are nonrigid they could not replace each other.

Kripke proposes a rigidity test in order to determine whether a term is rigid using the idea of modal argument.[22] Assuming N is a singular term, the general formula of this test is the following:

(3) N might not have been N

Note that statements in this form are ambiguous with respect to the position of the modal operator. Applying the rigidity test we get two readings. If none of the readings are true, then N in the original statement would turn out to be rigid. For

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is *given by the descriptive conditions we associate with it.*" (Kripke, 1980, p. 44) When Kripke talks about an object in another possible world, he does not assume that the object in another possible world is a different entity. His only assumption is that an object is identical to itself. So, transworld identity is not a problem in Kripke's picture. (Kripke, Saul A. "Identity and Necessity." In *Naming, Necessity, and Natural Kinds*, edited by Stephen P. Schwartz (London: Cornell University Press, 1977), pp. 80-1)

[19] There are also rigid descriptions of which I will give examples below.

[20] Kripke, *Naming and Necessity*, p. 48.

[21] Ibid., pp. 48-9.

[22] Ibid., pp. 48-9.

instance let us apply the test to these three terms "Aristotle", "The conqueror of Istanbul" and "the sum of two plus two":

(4) Aristotle might not have been Aristotle.

(5) The conqueror of Istanbul might not have been the conqueror of Istanbul.

(6) The sum of two plus two might not have been the sum of two plus two.[23]

Two readings of (4) and (5) are apparent in formalized expressions:

a: Aristotle

Cx: x is a conqueror of Istanbul

(4*) $\Diamond (\exists x (x = a \wedge x \neq a))$

(4**) $\exists x (x = a \wedge \Diamond (x \neq a))$

(5*) $\Diamond \iota x (Cx \wedge \sim Cx)$

(5**) $\iota x (Cx \wedge \Diamond \sim Cx)$

The rigidity test shows that (4*) and (4**) are both false[24] and the singular term in (4), namely "Aristotle" is rigid. On the other hand (5) has a true reading. In (5**), the modal operator has narrow scope. It shows that there is a unique conqueror of Istanbul, but in another possible world this person might not be the conqueror of Istanbul. Some facts might have been different in history and another commander might have conquered Istanbul. In (6), the case is different. A description occurs in (6) but this description designates a mathematical object, thus none of the readings of (6) are true. "The sum of two plus two" could not designate anything other than four

[23] Note the grammar of the statements in the rigidity test and above, in the modal argument. If one talks about counterfactuals, then the subjunctive mode should be used. Kripke points out this in his John Locke Lectures (*Reference and Existence, The John Locke Lectures for 1973,* p. 26).

[24] Kripke (*Naming and Necessity*, p. 12, fn. 15) objects the view that (4) has one reading. He holds that simple sentences containing names have two readings too but these readings are equivalent.

in another possible world. It turns out that not only names, but some descriptions are also rigid.

One of the philosophical consequences of the rigidity thesis is that if two rigid terms flank the "is" of identity in a true statement, then the statement will be a posteriori but necessary.[25] For example terms "Aziz Nesin" and "Mehmet Nusret Nesin" designate the same person.[26] So the statement

(7) Aziz Nesin is Mehmet Nusret Nesin.

is a true identity statement. Since two rigid terms flank the "is" of identity in a true statement here, it means that the statement is necessary. It is also a posteriori for someone not knowing that these two terms designate the same person. One of the most important aspects of the rigidity thesis is that by appealing to it Kripke argues that there are necessary a posteriori statements.

Reference of General Terms

In the third lecture of *Naming and Necessity* Kripke extends his rigidity thesis to the realm of general terms. The traditional view on this issue is that the meaning associated with a general term determines the extension of this term used in a certain context. In other words "a criterion in mind" determines whether the term is

[25] According to Kripke rigidity assures that true identity statements between two rigid designators are necessary a posteriori. Some direct reference theorists like Scott Soames (*Beyond Rigidity: The Unfinished Semantic Agenda of Naming and Necessity* (New York: Oxford University Press, 2002), pp. 240, 243), and Nathan Salmon (*Frege's Puzzle* (Atascadero, California: Ridgeview Publishing Company, 1986), pp. 133-42)), however object to this idea and claim that only necessity of these statements is assured by rigidity. This is a controversial issue. In this essay I shall not go into this issue and assume that Kripke's claim is true.

[26] The author Mehmet Nusret Nesin used "Aziz Nesin" as his pen name.

applicable or not to a given object.[27] An example to this traditional view could be Kant:

> For that reason all analytic propositions are still *a priori* judgments even if their concepts are empirical, as in: Gold is a yellow metal; for in order to know this, I need no further experience outside my concept of gold, which includes that this body is yellow and a metal; for this constitutes my very concept, and I did not have to do anything except analyze it, without looking beyond it to something else.[28]

According to Kant one infers the property of "yellowness" from the concept of gold a priori. In this sense, for Kant, the description "yellow metal" is a part of the meaning of the term "gold".[29] Kripke objects to this idea and maintains that the meaning of the general term "gold" could not be given by any kind of description. What makes gold gold is not its property of yellowness. He proposes a thought experiment. Suppose that due to an atmospheric gas we were in an illusion and saw gold as yellow. Then one day this gas was removed and we saw gold in its real color, say blue. If this is a metaphysically possible scenario, then we can conclude that "yellowness" is not a part of the meaning of the term "gold".[30] Similarly the meaning of the term "tiger" is not its dictionary definition. Such a definition could be the following: "A tiger is a large carnivorous quadrupedal feline, tawny yellow in color with blackish transverse stripes and white belly". If this definition gave the meaning of the term "tiger" then all tigers would have to have four legs. However one can see

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[27] Schwartz, Stephen P., ed. *Naming, Necessity, and Natural Kinds* (London: Cornell University Press, 1977), p. 18.

[28] Immanuel Kant, Prolegomena to any Future Metaphysics translated by Gary Hatfield, (New York: Cambridge University Press, 1997), p. 17.

[29] Kant does not talk about terms but rather concepts. However, in this context such interchangeability seems to me legitimate.

[30] Kripke, *Naming and Necessity*, p. 118.

a three-legged tiger in a jungle.[31] More succinct definitions could be found but none of them would exhaust the meaning of "tiger".

Consequently, it turns out to be that descriptivism is false for general terms like "gold" and "tiger". Kripke claims that these are also rigid terms like names without giving another definition of rigidity for general terms. The same philosophical consequence of the rigidity thesis for proper names also holds for general terms. When two rigid designators flank the "is" of identity in a true statement, then the statement in which they occur turns out to be necessary. "(…) a good deal of what contemporary philosophy regards as mere physical necessity is actually necessary *tout court*."[32] What Kripke points out is that there are also metaphysical necessities. He counts several examples: "Heat is the motion of molecules", "Water is H_2O" and "Gold is the element with the atomic number 79". He calls this kind of statements "theoretical identifications"[33] and explains them in the following way:

> Let us return to the question of theoretical identification. Theoretical identities, according to the conception I advocate, are generally identities involving two rigid designators and therefore are examples of the necessary *a posteriori*. [34]

As this definition states, a statement in which two rigid designators have a true identity relationship is called "theoretical identification". In theoretical identification statements two rigid terms are coreferential. This constitution makes them necessary

[31] Ibid., p. 119.

[32] Ibid., p. 164.

[33] He also uses "theoretical identities" interchangeably. I shall use them both in this essay.

[34] Ibid., p. 140.

a posteriori. Nevertheless Kripke does not remain faithful to his definition in the text and he calls several other nonidentity statements "theoretical identification":

> Philosophers have, as I've said, been very interested in statements expressing theoretical identifications; among them, that light is a stream of photons, that water is H_2O, that lightning is an electrical discharge, that gold is the element with the atomic number 79.[35]

The statements occurring in this quotation such as "light is a stream of photons" and "lightning is an electrical discharge" are clearly not identity statements. This is a source of confusion. In addition to these, in *Naming and Necessity*, Kripke gives some other examples of necessary statements like "Cats are animals" and "Whales are mammals". Though some authors[36] think that according to Kripke, these can also be taken as theoretical identification statements, I could not see any textual support for this claim. This type of statements subsumes a kind under another one and is usually called "generic implication statements". Although Kripke holds that these statements are necessary, nowhere does he associate this necessity with rigidity. Hence, in my opinion, the following conclusion would be plausible. When two rigid general terms flank the "is" of identity in a true statement, they constitute a necessary a posteriori theoretical identification statement but it does not mean that all necessary a posteriori statements are theoretical identification statements. In this sense, statements like "light is a stream of photons" and "lightning is an electrical discharge" should not be taken as theoretical identification statements. They might be necessary statements but their necessity cannot be accounted for by appealing to the notion of rigidity.

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[35] Ibid., p. 116.

[36] Soames, pp. 254-5.

Could theoretical identification statements give the meaning of general terms? For instance, is "H_2O" the meaning of "water"? I think, Kripke would say "No" to this question. According to him neither theoretical identification statements nor other types of necessary a posteriori statements could present the meaning of a general term. Though he does not explicitly explain what general terms mean, he emphasizes what is not the meaning, namely any kind of description. The following quotation supports this idea:

> Note that on the present view, scientific discoveries of species essence do not constitute a 'change of meaning'; the possibility of such discoveries was part of the original enterprise. We need not even assume that the biologist's denial that whales are fish shows his 'concept of fishhood' to be different from that of the layman; he simply corrects the layman, discovering that 'whales are mammals, not fish' is a necessary truth. Neither 'whales are mammals' *nor* 'whales are fish' was supposed to be *a priori* or analytic in any case.[37]

To him, scientific discoveries do not change the meaning of a general term because the meaning could not be given by any kind of descriptions including the scientific explanations.

We have seen that theoretical identification statements express the identity relationship between the referents of two coreferential rigid terms. There are also some other true identity statements which express the relationship between the referents of a rigid general term and a nonrigid one. This kind of statements is of importance in reference fixing. It is one way of introducing a general term in language. For example, since people in ancient times did not know the scientific description of light, they might have fixed the reference of the term "light" in the following way: "Light is a fact that affects our eyes in a certain way." The description "a fact that affects our eyes in a certain way" is obviously not rigid. In

[37] Kripke, *Naming and Necessity*, p. 138.

another possible world people might be blind but the natural phenomenon of light might exist.[38] Yet this nonrigid description is sufficient for fixing the reference, i.e. for introducing the term in language.

At this point I would like to discuss a terminological problem. One confusing point in *Naming and Necessity* is that in the text Kripke mostly uses the term "natural kind term" instead of the term "general term". Philosophically, the term "natural kind term" is highly vague. Chemical substances, biological species, natural phenomena are more commonly considered as natural kinds, however the way in which these kinds are different from the others is very controversial.[39] Kripke does not use this term consistently:

> First, my argument implicitly concludes that certain general terms, those for natural kinds, have a greater kinship with proper names than is generally realized. This conclusion holds for certain for various species names, whether they are count nouns, such as 'cat', 'tiger', 'chunk of gold', or mass terms such as 'gold', 'water', 'iron pyrites'. It also applies to certain terms for natural phenomena, such as 'heat', 'light', 'sound', 'lightning', and, presumably, suitably elaborated, to corresponding adjectives – 'hot', 'loud', 'red'.[40]

Here, Kripke seems to give examples of natural kind terms but it cannot be so, because some of the terms he mentions like "hot", "loud" and "red" do not seem to be natural kind terms. So, it is difficult to interpret these passages. Because of this, in this essay I prefer to discuss the issue under the title of "the rigidity of general terms". There are some philosophers (e.g. Stephen P. Schwartz) who use the term "natural kind term" and think that this term represents an important distinction, on

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[38] Ibid., p. 130.

[39] For the discussion of natural kinds see John Dupré ("Natural Kinds and Biological Taxa," *The Philosophical Review* 90, No. 1 (Jan., 1981), pp. 66-90).

[40] Kripke, *Naming and Necessity*, p. 134.

the other hand some other philosophers (e.g. Salmon) do not take this term seriously and take it to just be a terminological preference.[41]

When we come to the philosophical importance of the rigidity discussion of general terms, we can observe that it is of importance in a similar way to the rigidity discussion of proper names is. Just as it is important whether the reference of proper names change in counterfactual contexts, it is equally important whether the reference of general terms change in counterfactual contexts. Philosophers frequently appeal to thought experiments. If none of the general terms turn out to be rigid, then the reliability of thought experiments will diminish. For example, if the reference of the term "justice" changes in counterfactual contexts, a philosopher imagining a just society will face some strange results. For this reason, it is highly philosophically important to determine whether or not philosophical terms like "truth", "knowledge", "beauty", etc. are rigid.[42]

Regarding these clarifications, I see two important problems concerning the rigidity of general terms. These problems arise from the shortcomings of *Naming and Necessity*. The first one is related to determining which types of general terms are rigid. I have emphasized above how confusing Kripke's terminology is. If only natural kind terms are rigid, then why does Kripke mention some other types of general terms such as "hot", "loud" and "red"? Are different types of general terms like so-called human made kind terms or "artificial (nominal) kind terms" rigid? Is there a different rigidity test for general terms? These are all open questions.

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[41] In this essay, when I discuss a philosopher, I am trying to be loyal to his/her terminology.

[42] Ilhan Inan ("Rigid General Terms and Essential Predicates," *Philosophical Studies* 140, (Aug., 2008)), p. 218) emphasizes this point.

The second problem in *Naming and Necessity* is about the reference of general terms. Kripke does not discuss this question. If they are rigid they have to refer to the same thing in all possible worlds, if that thing exists. But what kind of entities are these referents? This is another problem to be discussed.

As far as I can see, four different views[43] may be defended in order to solve these problems. The first view claims that general terms refer to their extensions. Extensions are taken as sets, so they are abstract entities. The extension of a term contains objects to which the term applies (including objects in the past and in the future). For instance, extension of the term "cat" is the set of all cats. All actual cats, cats in the past and cats in the future are in the extension of the term "cat". It is also possible to speak of "possible cats". If facts had been different, then the term "cat" might have had a different extension. Thus, the reference of the term "cat" turns out to be changeable. Ones who hold that such terms are rigid designators would not show interest to this view in which the reference of a term could be affected by contingent factors.

The second view is slightly different from the first one. In this view, a general term is taken to refer to a collection, not a set. A collection is a group of objects. Contrary to sets, collections are concrete objects. For instance, the eleven players in a football team consist of a collection. Collection has different properties than its members. In the above example, all players might be shorter than 2 m. but this property could not be attributed to the collection. Although they are different from sets, in terms of reference the same problem arises about collections too. If

[43] Actually these are possible views, because as far as I know nobody has defended first two of them.

general terms are taken to refer to collections, again, reference turns out to be changeable; reference of a term becomes affected by contingent factors.

"Multiple designation" is the term sometimes used to refer to the third view.[44] According to this view a term designates each object in its extension one by one. In this view, rigidity might be explained in the following way: If a general term designates an object in the actual world and it designates the same object in all possible worlds in which that object exists, then that term turns out to be rigid. Such a rigidity account might be attractive for nominalist philosophers.[45]

The fourth view holds that general terms refer to abstract entities. For example, the term "blue" refers to a color, the term "hotness" refers to a phenomenon, the term "tiger" refers to a species, the term "gold" refers to an element, and so on and so forth. Color, phenomenon, species, element are abstract entities. Thus, general terms refer to abstract entities. The interpretation of rigidity follows from this. If general terms refer to one object, it would be the natural way to treat them as proper names. The rigidity conditions for proper names hold for general terms.

In the next chapter I shall analyze the third and forth views and their arguments concerning the rigidity of general terms. In addition to them, I shall discuss another view which rejects the rigidity of general terms.

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[44] For the use of this term, see Salmon ("Naming, Necessity, and Beyond," *Mind* 112, No. 447 (July 2003), p. 480). Salmon in somewhere else ("Are General Terms Rigid?" p. 119) refers to the same view as "poly-designation".

[45] Michael Devitt ("Rigid Application," *Philosophical Studies* 125, (Aug., 2005), pp. 139-165) does not use the term "designation" and take rigid general terms as "rigid appliers". So, despite the similarities between his view and multiple designation view it could be listed as another view. I shall go into the details of rigid application in the next chapter.

CHAPTER 2

ON THE PROBLEM OF THE RIGIDITY OF GENERAL TERMS: THREE DIFFERENT INTERPRETATIONS

Regarding the problem of the rigidity of general terms, there are three different interpretations. The first interpretation approaches the subject from an essentialist perspective and takes only some terms related to essential properties as rigid. The second interpretation assumes the existence of abstract kinds and claims that a rigid designator designates the same kind in all possible worlds in which that kind exists whereas the third one rejects the rigidity of general terms. In this chapter, I shall discuss theories of various philosophers based on these interpretations. I shall analyze their arguments on the rigidity of general terms. I leave aside only their discussion of artifactual kind terms to the next chapter.

The Essentialist Interpretation of Rigidity: Cook and Devitt

In general, the essentialist interpretation is the interpretation which holds that if a general term is rigid, there must be a relation with this term and an essential property. This interpretation of rigidity considers some properties of individuals as essential and some others as accidental. For instance “being a cat” is an essential property of a cat and “being gold” is an essential property of a chunk of gold. On the other hand, “having stripes” is an accidental property of a tiger and “being yellow” is an

accidental property of a chunk of gold. Since, individuals could not have been without their essential properties, a cat could not cease to be a cat; a chunk of gold could not be some other metal, such as silver, in any other possible world. Accidental properties, on the other hand, could be different in other possible worlds.

This interpretation takes the similarity between rigid names and rigid general terms on the base of essentialism.[46] For Aristotle, saying "Aristotle might not have been Aristotle" is false because if we take "being Aristotle" as a property, it must be an essential one; it could not have left Aristotle. Similarly, the proposition "Aristotle might not have been a human being" is false because "being a human being" is another essential property of his. Aristotle would be a human being in all possible worlds.

The essentialist approach limits rigid general terms to the terms related to essential properties. Other terms, like artificial (nominal) kind terms are not considered as rigid. Now, let us focus on the two proponents of the essentialist interpretation of rigidity, namely Cook and Devitt.

Cook's Multiple Designation Theory

In his very short paper *If "Cat" is a Rigid Designator, What does It Designate?* Monte Cook very briefly defines his theory. First he tries to answer the question what general terms designate. According to him there is an "obvious" answer to this

[46] Some proponents of this interpretation might not hold this, but some other like Monte Cook ("If 'Cat' is a Rigid Designator, What does it Designate?" *Philosophical Studies* 37, (Jan., 1980), p. 63) clearly holds.

question: they designate their extensions.[47] For instance, the term "cat" designates all cats. To him however, this "obvious" answer has an obvious flaw. A rigid general term designates the same thing in all possible worlds, as Kripke proposed in *Naming and Necessity*. The extension of a general term might be different in another possible world. If we take the extension of a term as a set, we can claim that the set of cats at the present moment is different from the set of cats in another possible world. Some cats might not have come to existence. So, if some general terms are rigid, it is not the case that they designate their extensions.[48]

The problem Cook has to solve is to give an account of the rigidity of general terms without turning to kinds or other abstract entities. He turns to essentialism. Here is his solution:

> So if being a cat is an essential property (something Kripke can plausibly be taken to believe), nothing that is in any possible world a cat can exist without being a cat. But if nothing that is in any possible world a cat can exist without being a cat, then 'cat' is a rigid designator. 'Cat' designates all those objects that cannot exist without being cats- it designates those objects *wherever those objects exist.* It is false that cats might not have been cats, because no cat can exist without being a cat. [49]

According to this theory, a general term does not designate its extension collectively, but rather it designates each and every thing in its extension separately. [50] These kinds of theories are sometimes referred to as "multiple designation theories". In Cook's theory the similarity between a proper name like "Nixon"s designating Nixon

[47] As far as I know, nobody is in favor of such an interpretation.

[48] Ibid., p. 61.

[49] Ibid., pp. 62-3.

[50] Note that extension here is taken world-bound. Some other theory which does not take it world-bound might defend a position of general term rigidity in which general terms refer to their extension.

and a rigid general term like "cat"s designating one of the cats, say Nana[51], lies here. In any possible world in which Nixon exists, "Nixon" designates him and likewise in any possible world Nana exists the general term "cat" designates her. Thus, both "Nixon" and "cat" are rigid terms. On the other hand, a term like "bachelor" designates me for instance for now, but it is obvious that I might have been married and out of the extension of the term "bachelor". No one could be a bachelor in all possible worlds. Bachelorhood is not an essential property. So, the term "bachelor" is not rigid.

I think there are important problems with Cook's theory. Cook tries to find some textual support from Kripke and emphasizes Kripke's essentialism:

> Kripke also links essential properties and existence, in a way that throws light on the connection between essential properties and rigid designators: "when we think of a property as essential to an object", he tells us in 'Naming and necessity', 'we usually mean that it is true of that object in any case where it would have existed' (p.270).[52]

What is clear in Cook's quotation from Kripke is that Kripke believes in essentialism. However, I can't see any connection between essential properties and rigid designators here. What Kripke gives here is his definition of essential properties. Neither in this quotation nor in any other place of *Naming and Necessity*, has he showed a connection between rigid designators and essential properties.

Another problem with Cook's theory that it does not cover all the terms Kripke mentioned in *Naming and Necessity* as being rigid. Since Devitt's theory of

[51] Nana is the famous cat which Devitt and Sterelny (*Language and Reality: An Introduction to the Philosophy of Language,* 2nd ed. (Cambridge, Mass: The MIT Press, 1999), p. 68) introduced to exemplify their causal theory of reference.

[52] Cook, p. 62.

rigid application is somehow a more complicated revival of Cook's theory[53], I shall go into the details of this problem while dealing with Devitt's rigid application in the next subsection.

Devitt and Rigid Application

Like Cook, Devitt also rejects two interpretations of the rigidity of general terms, and for almost the same reasons. According to Devitt, general terms cannot designate their extensions because extensions might be different in other possible worlds. When he comes to the other interpretation he rejects, his target is LaPorte who is a proponent of rigidly designated abstract kinds. Devitt claims that in a theory like LaPorte's too many terms such as "pencil", "hunter" and "bachelor" turn out to be rigid and this trivializes rigidity.[54] Devitt gives some detailed arguments against LaPorte. I shall discuss these below in the subsection titled "LaPorte" and continue now with Devitt's own theory, namely rigid application.

Devitt first tries to find an answer to the question why rigidity for general terms would be an important issue. Here is a hint for his answer:

> *The primary work of a rigidity distinction for kind terms is identifying terms that are not synonymous with descriptions and hence refuting description theories of meaning for those terms.*[55]

So, here is Devitt's point: the rigidity account of proper names refuted the theory claiming that meanings of proper names could be given by some descriptions. The

[53] Inan ("Rigid General Terms and Essential Predicates," p. 214, fn. 1) expresses this and Devitt ("Rigid Application," p. 161-2, fn. 12) admits the connection between his theory and Cook's.

[54] Devitt, "Rigid Application," p. 140.

[55] Ibid., p. 144. Italics in the original.

meaning of the name "Aristotle" is not a description like "The last great philosopher of antiquity." Similarly, rigidity account of general terms should refute the theory claiming that meanings of general terms are descriptions. For example, if the general term "tiger" is rigid it cannot mean "large carnivorous quadrupedal felines that are tawny yellow in color with blackish transverse stripes and white belly", as description theory of general terms claims. Thus, if Devitt's rigid application is the correct interpretation of rigidity of general terms, it should refute the description theories of general terms.

Devitt makes a terminological distinction between rigid singular terms and rigid general terms; rather than calling all rigid terms "rigid designators", he calls rigid general terms "rigid appliers". This means that a rigid singular term rigidly designates an object, whereas a rigid general term rigidly applies to objects. Here is Devitt's definition of rigid application:

> a general term '*F*' is a rigid applier iff it is such that if it applies to an object in any possible world, then it applies to that object in every possible world in which the object exists. Similarly for a mass term.[56]

Given this definition, a metaphysical notion needs to be considered: essentialism. Devitt acknowledges that "there are any such '*F*'s entails a fairly robust metaphysical thesis."[57] For example, "gold" rigidly applies to any piece of gold if and only if that piece of gold is essentially gold; "tiger" rigidly applies to a tiger if and only if that tiger is essentially tiger, and so on and so forth. Thus, in order to identify a rigid applier term, one should know whether or not the property related to the term is essential.

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[56] Ibid., p. 146.

[57] Ibid., p. 146.

Devitt tries to show that his definition of rigid application of general terms is compatible with Kripke's rigidity thesis of names. Devitt tests his theory with the lost rigidity[58] argument. Lost rigidity argument refutes most[59] description theories of names. Similarly, using the definition of rigid application, lost rigidity argument should refute most description theories of general terms. Take gold as an example. According to the description theories, the term "gold" is synonymous with the description "soft, yellow element that is the most malleable and ductile element". This description applies to gold in the actual world; however it is obvious that it might not have applied to gold. Gold might be green in another possible world. So, this description is a nonrigid applier, whereas "gold" is a rigid applier. A chunk of gold could not have failed to be gold. Rigid application works well on some of paradigm natural kind terms like "water", "iron pyrites", "heat", "light", "sound", and "lightning". However some other general terms, which Kripke mentions as rigid, like "hot", "loud", "red" turn out to be nonrigid appliers in this theory. Devitt acknowledges this.[60] This is one of the problems with rigid application. One may say Kripke is wrong at considering them as rigid. This may be true, this is not a knock-down problem for rigid application; nevertheless another theory covering these terms as well would certainly be more attractive. In any way, Devitt thinks that his theory does the primary work, namely it refutes descriptivism for general terms.[61]

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[58] Here is Devitt's (Ibid., p. 144) brief explanation of lost rigidity argument for names: "a name is rigid; a description of the sort that the theory alleges to be synonymous with the name is not rigid; so that theory is false". For more detailed explanation see Devitt and Sterelny (pp.51-4).

[59] Except rigidified descriptions

[60] Devitt, "Rigid Application," p. 162 fn. 13.

[61] Ibid., p. 146.

When we come to "nominal kind terms"[62] like "bachelor", Devitt expects his theory to discriminate these terms from natural kind terms.[63] Rigid application does this work well. A bachelor might be married in another possible world. Hence, "bachelor" is not a rigid applier. According to Devitt, artifactual kind terms are also nominal kind terms and are nonrigid.[64] I shall leave the discussion of artifactual kind terms to the next chapter. In this chapter I only focus on natural kind terms and nominal kind terms other than artifactual kind terms.

Rigid application does its primary work well. It works well with the lost rigidity argument. According to Devitt rigid application also has some secondary works which are explanatory works.[65] One of these secondary works is to explain the modal status of some statements. Devitt holds that as rigid designation does for names, rigid application should explain why some statements are necessary. Rigid designation clearly explains why a true identity statement between two names is necessary. The following statements exemplify the case:

(1) Cicero is Tully.

(2) Cicero is the most famous Roman orator.

In (1) the "is" of identity connects two names, whereas in (2) it connects a name and a definite description. As Kripke puts it, (1) is necessary if it is true; on the other hand, (2) is not necessary even if it is true. This difference between modal status of (1) and (2) is explained by rigid designation. Since names are rigid designator, a

[62] Devitt prefers using "nominal kind term" instead of "artificial kind term" to refer to nonnatural kind terms.

[63] Devitt (Ibid., p. 144, 154) rejects the idea that the primary work of rigidity is to distinguish natural kind terms from other terms but anyway he expects rigid application to be discriminative on certain terms (Ibid., p. 146).

[64] Ibid., pp. 146-7.

[65] Ibid., pp. 148-54.

statement such as (1) is necessary, if it is true. Cicero is Tully in all possible worlds, in which he exists. For (2) we cannot claim necessity even if it is true. It is obviously contingent: somebody might have been more famous than Cicero in oration. When it comes to general terms we have similar statements including general terms:

(3) Water is H_2O.

(4) Water is the most common liquid on Earth.

Assuming they are true, (3) is different from (4) in modality. (3) is necessary whereas (4) is contingent. As we have seen in the section titled "Reference of General Terms", Kripke calls a statement like (3) "theoretical identification". According to Kripke theoretical identifications are necessary statements, if they are true. In all possible worlds if water exists, it could not have been something other than H_2O.[66] Then, how should we explain this necessity? Devitt interprets general terms in (3) and (4) as predicates and arrives at the following statements:

(3*) Anything is water iff it is H_2O.

(4*) Anything is water iff it is a liquid that is more common than any other liquid on Earth.

According to this interpretation we cannot explain the modal difference between (3) and (4). First of all, (3*) and (4*) are not identity statements. They are just containing two terms which have the same extensions. Even if we assume that it includes two rigid terms and it is true, (3*) does not turn out to be necessary. From (3*), one cannot claim that they would have same extensions or they would apply to same stuff in other possible worlds. Devitt acknowledges this problem: "At best we can say that rigid application is *part of* the explanation of the necessity because if the

[66] Ibid., pp. 128-9.

terms in (18') [here 3*] were not rigid it would not be necessary."[67] Again, this is not a knock-down problem for rigid application, but we should keep in mind this shortcoming while we are evaluating competing theories. If the phenomenon of the necessity of theoretical identity statements could be explained by another theory, that theory will be more powerful.

Rigid application brings together a semantic notion, rigidity and a metaphysical notion, essentialism. Devitt sees this togetherness as obvious. According to him, the rigidity of names also brings semantics and metaphysics together. A rigid name designates its object if the object exists. "Existence" as a metaphysical notion plays a role in the definition of the rigidity of names. So, metaphysical assumptions are required for both the rigidity of names and the rigidity of general terms. "Aristotle" designates Aristotle if he exists and similarly "tiger" applies to tigers if "being a tiger" is an essential property. Devitt is very clear on this point. He claims that if science shows that there was no essentiality in nature, any claim of the rigidity of general terms would be invalidated.[68]

At this point I shall deal with Inan's criticisms of Devitt. These criticisms fall into two groups: The first group is on the relationship of rigid application and essentialism, while the second group is on the rigidity test of certain terms. He takes certain terms as examples and examines their rigidity status. Let us start with the first group. Inan criticizes Devitt for inferring essentialism from rigidity:

> As Devitt rightly acknowledges, EVR together with the claim that some general terms are rigid "entails a very robust metaphysical thesis" (Devitt

[67] Devitt, "Rigid Application," pp.152-3.

[68] Devitt's discussion of the terms "tadpole" and "frog" is an evidence in favor of this conclusion (Ibid., pp.157-9). When it turns out that "being a tadpole" and "being a frog" are not essential properties, Devitt concluded that the terms "tadpole" and "frog" are not rigid appliers. Moreover, in conversation he explicitly approved this conclusion.

> 2005, p. 146.) Let us remember that Salmon (1980) has forcefully argued that we should not infer any serious metaphysical thesis concerning essentialism from a semantic theory such as direct reference. Now the same goes for *rigidity*, which is a semantic and not a metaphysical notion. If we agree that the term 'tiger' is a rigid designator, from this semantic claim, given EVR, it follows that every individual tiger is essentially a tiger. But doesn't that require a separate metaphysical argument?[69]

In my opinion this criticism against Devitt is unfair. What Devitt claims is the following: "Clearly, if '*F*' is a rigid applier then any individual *F* must be essentially *F*. So the view that there are any such '*F*'s entails a fairly robust metaphysical thesis."[70] I think what Devitt emphasizes here is just the necessary entailment of rigid application. Adding the implicit assumption, we can rewrite the argument in the following way: If there are rigid appliers and if "*F*" is a rigid applier, then *F* is essential to individuals that are *F*". I cannot see any problem with this argument. Essentiality of some properties is the necessary conclusion of the argument, if the premises are true. Inan turns to Salmon's argument that one could not infer non trivial essentialism from a purely semantic theory[71]. Salmon would not object to the metaphysical consequences coming from metaphysical assumptions. For example, his criticism of Kripke is not about Kripke's essentialist doctrines. What he tries to show is that Kripke's doctrines could not be inferred from semantics only. Here is his point in his own words:

> I also do not want to challenge Kripke's essentialist doctrines. Indeed, they too seem quite plausible to me. What I want to question is simply whether the theory yields the essentialist doctrines as consequences. The question may be put thus: Can nontrivial doctrines of essentialism, such as Kripke's thesis concerning the origin and composition of tables, be derived from the

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[69] Inan, "Rigid General Terms and Essential Predicates," p.215. Inan calls Devitt's theory "Essentialist View of Rigidity (EVR)".

[70] Devitt, "Rigid Application," p.146.

[71] Nathan Salmon, "How not to Derive Essentialism from the Theory of Reference," *The Journal of Philosophy* 76, No. 12 (Dec., 1979), pp. 703-725; Salmon, *Reference and Essence.*

> theory of direct reference taken together only with trivial and philosophically uncontroversial premises that are themselves free of nontrivial essentialist import?[72]

Hence, Salmon's objection does not hold for Devitt. Devitt's theory has a metaphysical assumption; it is not pure semantics. Essentiality depends on the existence of rigid appliers. If there were no rigid appliers, then the argument would not give a true conclusion.

Another argument Inan makes against Devitt is the following:

> Or take the molecules that make up an individual tiger—call it 'M'. Now it is true that M is a tiger, but if the arrangement of the molecules are altered, the tiger will cease to exist. So we have one thing, namely the collection of the molecules, that is a tiger, but not essentially.[73]

I think Devitt could rebut this criticism too. He does not mean a totality of molecules when he says "tiger". Being a tiger is a matter of certain causal relationship with the tiger species. If we assume Kripkean notion of essentialism, certain sperm and egg are essential to an individual tiger.[74] A replica of an individual tiger could not have such an origin; so, it should not be considered as a tiger.

When we come to the second group of criticisms[75] we see that Inan tests rigid application on several terms like "meter", "rectangular", "blue" and "truth". These terms could take both subject and predicate positions in a sentence. For instance take the term "meter". It is one of the paradigmatic examples of rigidity which Kripke gives in *Naming and Necessity*. The term "meter" in Kripke's examples may take a subject position: "1 meter is the length of s."[76] It may also take

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[72] Salmon, "How not to Derive Essentialism from the Theory of Reference," p.704.

[73] Inan, "Rigid General Terms and Essential Predicates," p.215.

[74] Kripke, *Naming and Necessity*, p. 113.

[75] I made some slight changes on Inan's criticisms.

[76] Ibid., p. 135. In the original, there is "=" instead of "is the".

a predicate position: "Stick S is one meter"[77]. According to rigid application theory, the term "meter" in "Stick S is one meter" would not be rigid because the "being one meter" is not an essential property of stick S. However, the same term seems to become rigid when it takes the subject position in "1 meter is the length of s". What is the reason for this difference? What about "rectangle"? Take the statement "Rectangle is a convex geometrical shape." What does the subject in this statement refer to? This time we do not have a sample. In my opinion, Devitt is not clear on the reference of this type of terms. I know that he rejects abstract entities.[78] Could they be taken as rigid appliers? I do not think so. So, what is his proposal? At least Devitt should explain reference of geometrical shape (and mathematical objects like numbers) terms when they take subject position. Neither Inan nor I could find a hint of his position in Devitt's article.[79]

Inan examines the term "blue" also. "Blue" is a color term and color terms are among the terms Kripke mentions as rigid terms in *Naming and Necessity*[80]. The questions raised below for "rectangle" may also be raised for "blue". Moreover Inan takes some philosophical terms such as "knowledge", "belief", "justice", "truth" and tests rigid application on them. These terms should turn out to be rigid "if the notion of rigidity is going to have any philosophical merit as a semantic notion that says something about what our terms refer to in counterfactual contexts (…)"[81]. However,

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[77] Ibid., p. 54. In the original, the statement is "Stick S is one meter long". I omit "long" here.

[78] Devitt believes in nominalism. To see his nominalist defense against realism see Devitt (*Putting Metaphysics First: Essays on Metaphysics and Epistemology* (New York: Oxford University Press, 2010), Chapter 1).

[79] Inan, "Rigid General Terms and Essential Predicates," pp. 216-7.

[80] Kripke, *Naming and Necessity*, p. 134.

[81] Inan, "Rigid General Terms and Essential Predicates," p. 218.

none of them turn out to be rigid according to rigid application at least[82] when they are in the predicate position.

In my opinion Inan's testing of rigid application with the examples below convincingly shows that rigid application limits the rigidity of general terms to a very small set of terms. Rigid application excludes from rigidity not only some clearly rigid general terms, but also some terms mentioned by Kripke. I think this is a serious problem for the theory.

Another type of criticism is directed to Devitt from a biological point of view. As we have seen above Devitt has two kinds of paradigmatic examples for rigid appliers: chemical substances and biological kinds. The latter are under threat by some counter examples concerning changes. For instance tadpoles become frogs and caterpillars become butterflies. A tadpole which becomes a frog might not become frog in another possible world. It might have died young as a tadpole.[83] These changes look problematic for rigid application. Devitt acknowledges this. Here is his solution in his own words: "We can deal with that claim by allowing that, for the purposes of rigid application, a term applies to an object in a world if it applies to that object *at some time* in that world"[84]. This is the basic explanation of his solution. Then he tries to formulate this solution more strictly and calls it "weakly rigid application". It is called "weak" because its definition is partly descriptive. After discussing two unsuccessful attempts, he gives his final definition of weakly rigid applier:

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[82] I say "at least" because Devitt does not go into the designation of general terms when they take subject position. As I mentioned above, he only takes them as appliers in the predicate position.

[83] Stephen P. Schwartz, "Formal Semantics and Natural kind Terms," *Philosophical Studies* 38, (Aug., 1980), p. 195.

[84] Devitt, "Rigid Application," p. 163, fn. 28.

> a general term '*F*' is a weakly rigid applier iff *it applies to objects not simply in virtue of a descriptive element* and if it is such that if it applies to an object in any possible world, then it applies to that object in every possible world in which the object exists and any descriptive element of '*F*' applies to that object.[85]

This definition covers terms like "tadpole", "frog", "caterpillar" and "butterfly" but excludes entirely descriptive terms like "bachelor". As Devitt readily acknowledged however, this definition has a very basic flaw. It does not refute descriptive theories of natural kind terms, thus it does not do the primary work of rigid application. Finally, Devitt puts aside the weak rigidity and concludes that some natural kind terms like "frog", which are partly descriptive, are not rigid appliers. He admits that the class of rigid appliers is different from the class of natural kind terms.[86] This conclusion is not that disappointing for Devitt because as it is mentioned above he is against the idea that rigidity should make a distinction between natural and nonnatural kind terms.

Devitt believes that there are biological species and a member of a species has both a relational and an intrinsic component.[87] However, some philosophers and biologists have challenged this idea. There are some theories denying the view that the members of a species have to share similar properties. I shall not go into the details of this controversy but at least I can assume that current biology does not support the idea of essential traits:

> A species' essential trait must occur in all the members of a species for the entire life of that species. Moreover, if that trait is to be unique to that species, it cannot occur in any other species for the entire existence of life on this planet. The temporal parameters that species essentialism must satisfy are quite broad. The occurrence of a biological trait in all and only

[85] Ibid., p. 159.

[86] Ibid., p. 159.

[87] Ibid., p. 147.

> the members of a species is an empirical possibility. But given current biological theory, that possibility is unlikely.[88]

There are also different definitions of other taxonomic terms. Up to now, biologists have not come to an agreement on criteria for taxonomic terms and they may not do so in the future.[89] This is a problem for rigid application. If there were not any essential properties concerning biological species, biological kind terms would not be rigid appliers. Hence, we would have only chemical terms such as "gold" and "water" and a few natural phenomena as rigid appliers and rigid application would be a very restrictive theory.

Devitt makes an argument in favor of species essentialism and claims that even relational theories of species could support some kind of essentialism:

> (…) on the most plausible views of the relational component of a species' essence, and even on some implausible ones, any individual member has that component essentially too. At least, any member has it essentially if Kripke is right in thinking that an organism's essence is its relation to a certain sperm and ovum, hence to certain parents, hence to a certain family tree.[90]

I think this argument does not support the point that it is supposed to do. If he were arguing the essentiality of an ancestral lineage to an organism, it might have been acceptable. It might be true that an organism would have the same ancestral lineage in all possible worlds. However, Devitt is supposed to argue the essentiality of a property like "being a tiger" and his argument fails to do so.[91]

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[88] Ereshefsky, Marc. 27 January 2010 "Species." *Stanford Encyclopedia of Philosophy*. Available [online]: http://plato.stanford.edu/entries/species/ [10 December 2011].

[89] Joseph La Porte, "Rigidity and Kind," *Philosophical Studies* 97, (Feb., 2000), pp. 310-1.

[90] Devitt, "Rigid Application," p. 147.

[91] In my opinion, it is possible that there are not one but two or more evolution trees, but these trees have the same structure. So, different members of a species could come from different origins. Prof. Ömer Naci Soykan brought my attention to this point.

There might also be found counter examples to rigid application from chemistry. Consider radioactive decay.[92] As a result of radioactive decay, one element becomes another. For example uranium decays into thorium, thorium decays into protactinium and so on and so forth. In my opinion, these are obvious examples of changes in kind. One cannot say that the term "uranium" rigidly applies to some substance since it might decay into thorium in some other possible world. Devitt seems to ignore this problem with chemical elements.

To sum up, rigid application is problematic for five reasons:

1) Rigid application does not cover some general terms such as "hot", "loud" and "red", which are considered as rigid by the father of the rigidity thesis.

2) Rigid application does not explain the necessity of a theoretical identification statement such as "Water is H_2O."

3) Certain philosophical and mathematical terms like "truth", "belief", "knowledge" and "rectangle" do not turn out to be rigid in rigid application. Rigid application entails that in counterfactual contexts, these kinds of terms would refer to different things and consequently, the philosophical language in counterfactual contexts would be vague. Philosophical importance of rigidity decreases.

4) Some biological kinds like "frog" and "butterfly" do not turn out to be rigid because of the changes from tadpoles to frogs and caterpillars to butterflies.

5) Current biology does not support the idea that there is an intrinsic, essential component which is shared by all the members of a species. In this case, all biological kinds turn out to be nonrigid. For chemical elements, there are also

[92] Schwartz ("Formal Semantics and Natural kind Terms," p.194) mentions this problem.

examples of changes in kind. Even in biology and chemistry, rigid application has limitations.

Rigidly Designated Abstract Entities: LaPorte, Salmon and Inan

The second interpretation of the rigidity of general terms assumes the existence of abstract entities and claims that general terms refer to abstract entities. Let us call this interpretation the Rigidly Designated Abstract Entities (RDAE) interpretation. At the beginning, the assumption of abstract entities brings a metaphysical burden upon the interpretation. What kind of things are these abstract entities? Where are they? Are they everlasting or created at some point? These questions and some others have been controversial for over two millennia. We should first make clear the notion of "abstract entity" before we move on. I think we can turn to Kripke on this issue. He has some explanation and I think philosophers who shall be discussed in this section implicitly accept his explanation. Kripke's basic example of abstract entities is the "nation":

> (…) a nation is an abstract entity which exists in virtue of concrete relations between people. A particular statement about a nation might be analyzable out in virtue of a more complicated one about the activities of people, or it might not: it might be hard, or maybe, because of problems of open texture, impossible to do so. But, at any rate, the statement about the nation is true in virtue of, and solely in virtue of, the activities of the people.[93]

According to Kripke, abstract entities do not have any different ontology in a Meinongian sense. There is only one reality and all concrete and abstract objects belong to this same reality. Abstract entities are based on some concrete activities of

[93] Kripke *Reference and Existence*, p. 55.

people. They are not eternal. In his view, if there were no people in the world, there would be no abstract entities.[94]

The RDAE interpretation easily overcomes the two shortcomings of *Naming and Necessity* on general terms. The RDAE interpretation assumes abstract entities and takes them like objects. This assumption enables RDAE to use the same rigidity definition and rigidity test for both singular and general terms. Thus in terms of rigidity, there is nothing special for general terms and the limitations for general terms are eliminated.

I shall discuss three philosophers in this section in the following order: LaPorte, Salmon and Inan. What is common among them is the claim that the designations of general terms are abstract entities such as kinds, species, universals, etc. Other than that, these three philosophers have slightly different views on the rigidity of general terms. They have different focuses and different arguments. I shall discuss their arguments separately in the following three subsections.

LaPorte

On the rigidity of kind terms[95], LaPorte focuses on theoretical identifications. According to him, the philosophical merit of rigidity is to show why certain

[94] In Ibid., pp. 60-1 and Saul A. Kripke, *Philosophical Troubles: Collected Papers, Volume 1* (New York: Oxford University Press, 2011), p. 63 Kripke makes an analogy between fictional entities as abstract objects and nation as an abstract object. Though he doesn't explicitly say, I think he would not object to extend this view to other abstract objects like kinds. Only mathematical objects and objects like God and space might be exceptions in his view. These might be necessary existents, which exist in all possible worlds. See Kripke (*Reference and Existence*, p. 29).

[95] LaPorte does not use the term "general term" but rather he uses the term "kind term". He takes these kind terms as names of kinds ("Rigid Designators for Properties," *Philosophical Studies* 130*,* (Aug., 2006), p. 323) and call them "singular terms" (Ibid., p. 335, fn. 10). Thus, LaPorte focuses on the kind terms in the subject position and leaves aside their usage as part of predicates.

statements are necessary. “Hesperus is Phosphorus” is an example of a true identity statement connecting two names. This statement is necessary. If this statement is true, then it means that it expresses a necessity. In all possible worlds “Hesperus is Phosporus” would be true because the terms “Hesperus” and “Phosphorus” are rigid designators. The transition from this point to the kind terms is straightforward for LaPorte. If a statement such as “The honeybee is Apis Mellifera” is true, then it means that it is necessarily true. “The honeybee” and “Apis Mellifera” are two rigid kind terms and the “is” they flank is the “is” of identity. Kripke calls a statement like this “theoretical identifications” if it is true. The metaphysical status of theoretical identifications is very similar to a statement like “Hesperus is Phosphorus.” Theoretical identifications are necessary too. In sum, the similarity between names and rigid kind terms is their role in true identity statements.[96] It seems to me that this similarity makes LaPorte focus on this kind of statements.

One common criticism to the RDAE interpretation is that this interpretation dissolves the philosophical merit of rigidity. For example, Devitt claims that in LaPorte’s theory too many terms such as “pencil”, “hunter” and “bachelor” turn out to be rigid and this trivializes rigidity.[97] LaPorte replies to this criticism and argues how his interpretation does philosophical work. According to LaPorte, philosophical importance of rigidity of kind terms is to show that how a term like “honeybee” picks up the same kind in all possible worlds and a term like “the insect species that is typically farmed for honey” picks up different kinds in different possible worlds. This is the very same difference between “Aristotle” and “the last great philosopher

[96] LaPorte, “Rigidity and Kind,” p. 297-9.

[97] Devitt, “Rigid Application,” p. 140.

of antiquity."[98] When it comes to the worries about the term "bachelor", LaPorte's explanation is very similar to his explanation of the term "honeybee". The bachelor kind or bachelorhood is rigidly designated by "bachelor", whereas the designation of the description "the kind most commonly broached in discussion about analyticity" to the same kind is nonrigid. Its designation might have been different like spinsterhood.[99] So kind terms "honeybee" and "bachelor" are rigid like the term "Aristotle" is. Whereas the terms "the insect species that is typically farmed for honey" and "the kind most commonly broached in discussion about analyticity" are not rigid as "the last great philosopher of antiquity" is not.

Devitt also criticizes LaPorte of being "a selective realist". Devitt thinks that LaPorte selects some universals and rules out some others but his basis for this selection is not clear. Here is Devitt's argument against LaPorte in his words:

> Suppose that among the kinds there is not only the soda kind but also the *different* beverage-my-uncle-requests-at-Super-Bowl-parties kind (which happens to be coextensive with the soda kind in the actual world). [Or, suppose that there is not only the property of sodahood but also the *different* property of being a beverage-my-uncle-requests-at-Super-Bowl-parties. (Let us ignore that my use of 'my' has a different reference from LaPorte's.)] For short, call this kind "BMURASP." Then, in the actual world, 'beverage my uncle requests at Super Bowl parties' would *not* designate the soda kind because the soda kind happens to satisfy a particular description. Rather it would designate the BMURASP kind. Indeed it would designate the BMURASP kind in all possible worlds: it would be rigid. So the semantic issue of whether this term is rigid comes down to the issue of whether the BMURASP kind exists and is distinct from the soda kind.[100]

So, Devitt brings LaPorte's RDAE interpretation to a metaphysical discussion on universals.[101] LaPorte's reply is a kind of reductio ad absurdum argument. LaPorte

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[98] LaPorte, "Rigidity and Kind," p. 296-7.

[99] Ibid., p. 299.

[100] Devitt, "Rigid Application," p. 141.

[101] Devitt made this criticism to LaPorte as a referee of his paper.

carries Devitt's supposition of "unusual kinds" to the realm of concrete objects and assumes for the sake of argument that there are office persons, in addition to human persons. For instance "Prez" is an office person and it is constituted by the presidents of the USA. Prez is permanent but its constituent changes like it may be Obama, Nixon, Washington… So, here is LaPorte's argument: If one countenances objects like "Prez" in her ontology, then the definition "the president of USA" would rigidly designate Prez. It is obvious that Prez is an unusual object, and one does not need Prez in her ontology. Similarly "BMURASP" is an unusual object. So, one does not need it either.[102]

In my opinion, we should be wary of Devitt's hyphenation in his example. Devitt applies to hyphenation and adding the term "kind" in order to rigidify the expression.[103] So the semantic status of "beverage my uncle requests at Super Bowl parties" and "beverage-my-uncle-requests-at-Super-Bowl-parties kind" are different. The latter is a rigidified expression; it no longer designates the kind that the former expression designates. It does not look like a description any more. So, Devitt's question "(…) what could the principled basis be for the view that 'beverage my uncle requests at Super Bowl parties' does not rigidly designate the BMURASP kind?"[104] is not a just question. In more common usage of descriptions of kinds, a description designates the kind which is described by the description. On the other hand, sometimes we rigidify descriptions by using some rigidifiers. When one turns to rigidifiers, the description in question does not behave like a description, but like a rigid kind term. It does not describe anything anymore.

[102] LaPorte, "Rigidity and Kind," p. 300-1.

[103] Inan ("Rigid General Terms and Essential Predicates," pp. 222-3) emphasizes this point.

[104] Devitt, "Rigid Application," p. 143.

Devitt may continue his criticism of LaPorte in following way: We have the "principled basis" problem even if we remove the rigidifiers. He may be right. Let us discuss his view. As I argued above, rigidified descriptions do not refer *nonrigidily* to the kinds described but *rigidly* to some other kinds. I mean, contrary to what Devitt maintains, using rigidifiers would rule out the ambiguity. However, the problem Devitt points out also emerges in the ordinary use of descriptions. In this sense, it can be said that descriptions are ambiguous. [105] For example the description "large carnivorous quadrupedal felines that are tawny yellow in color with blackish transverse stripes and white belly" may be interpreted in two ways. It may refer to the tiger kind, but it may also refer to the kind *large carnivorous quadrupedal felines that are tawny yellow in color with blackish transverse stripes and white belly*[106] This ambiguity may be understood as a principled basis problem. It is a controversy about ontology. Do we need to countenance these unusual kinds in our ontology? Preferred ontology determines philosopher's approach to this principled basis problem. I shall argue more on the ontology problem in the Conclusion.

Another critic of LaPorte is Schwartz. According to Schwartz neither (A) "Hesperus = Phosphorus" nor (B) "Water = H_2O" is similar to (C) "The Honeybee = Apis mellifera". The first two statements are the expressions of scientific discoveries but the third statement is not. Schwartz claims that biologists did not discover that the honeybee is Apis mellifera as astronomers discovered the identity of Hesperus and Phosphorus or chemists discovered water is H_2O. Here is his argument in his own words:

[105] As it is pointed out in LaPorte ("Rigid Designators for Properties," pp. 327-8)

[106] Probably nobody has referred to this property before.

> Did biologists discover that the honeybee is Apis mellifera as astronomers discovered that Hesperus is Phosphorus? Did we need Kripke to tell us that 'The honeybee = Apis mellifera' is necessarily true? Could we (epistemically) discover that it turns out that the honeybee is not Apis mellifera? Since the answer to these questions is at least arguably 'No', there seems to be no clear parallel between 'Hesperus = Phosphorus' and 'The honeybee = Apis mellifera'.
>
> Nor does 'The honeybee = Apis mellifera' seem to be like 'Water = H_2O'. 'Water = H_2O' is necessarily true and *a posteriori* in the way that 'Hesperus = Phosphorus' is, but it is giving the essence or underlying trait of water, its chemical composition. 'The honeybee = Apis mellifera' is not giving the biological essence or underlying trait of the honeybee – that would have to be something about its DNA presumably. So 'The honeybee = Apis mellifera' is not analogous to 'Water = H_2O' either. They are different types of necessarily true statements. I would say that the truth of 'The honeybee = Apis mellifera' is based more on decision than a discovery and thus that the statement is rather analytic in nature. Thus it seems that LaPorte's proposal to treat rigid general terms as rigidly designating their kinds is not needed to explain the necessity of 'The honeybee = Apis mellifera'.[107]

In my opinion, what Schwartz is not right is his claim that (C) is not a discovery. I think (C) is also a consequence of a scientific discovery. Biologists classify organisms with respect to their biological traits and their evolutional origins. In this sense, for instance we know that Apis mellifera and Apis cerena are the species which are under the same genus. Biologist concluded that these two species have very similar origins and they have very similar traits. They also concluded that these two species are very different from the Culiseta longiareolata (A mosquito species) in terms of origination and traits. Thus, I do not see why Schwartz claims that (C) does not express a discovery. Finding The Honeybee's evolutionary origins is a

[107] Stephen P. Schwartz, "Kinds, General Terms, and Rigidity: A Reply to La Porte," *Philosophical Studies* 109, (June 2002), pp. 270-1.

discovery. In sum, (C) expresses a discovery and it is also a necessary a posteriori statement, if it is true at all.[108]

Salmon

Let us start with why the rigidity of general terms is an important subject for Nathan Salmon. According to Salmon before *Naming and Necessity* people were assuming that general terms and some descriptions are synonymous. Kripke refuted this understanding of general terms:

> It was once maintained by many that a general term like "blue" is synonymous with a description like "the color of the sky", that "water" is synonymous with a description, such as perhaps "the colorless, odorless, potable, thirst-quenching liquid that fills oceans, lakes, and streams", and that "pain" is synonymous with a description of the form "the physiological state that occupies such-and-such causal/functional role." Some consequences of these views are that "The sky is blue" and "The oceans are filled with water" express necessary, *a priori* truths, whereas "Water is the chemical compound of two parts hydrogen, one part oxygen" and "Pain is the stimulation of C-fibers" expresses contingent identities. Today we know better –many of us anyway – thanks in large measure to *N&N*'s lasting insight that "blue" and "water" and "pain" are, and the allegedly synonymous general-term descriptions are not, rigid designators in the original sense of that term.[109]

Salmon's basic approach is to identify what Kripke understands from the rigidity of general terms. In *Naming and Necessity*, Kripke doesn't give any definition of rigidity for general terms. In that case, we should decide whether his definition of rigidity of singular terms holds for general term rigidity. Salmon believes it holds,[110]

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[108] LaPorte ("Rigid Designators for Properties," p. 333) also gives a very striking example. The discovery of "Brontosaurus = Apatosaurus" was very similar to the discovery of "Hesperus = Phosphorus". Biologists recognized that these two kinds, which they thought separate once, are identical

[109] Salmon, "Are General Terms Rigid?" p. 133.

[110] Ibid., p. 120, fn. 6.

namely we could use the same rigidity definition for both singular and general terms. But to argue for this, he needs some clarifications. In his article *Are General Terms Rigid?* Salmon gives weight to some terminological and technical elaborations. He makes a distinction between general terms and predicates. According to his distinction a general term is a term which forms a monadic predicate when it is combined with the "is" of predication. In other words, general terms are terms which can be parts of monadic predicates (predicates which take one argument). [111]

After giving the definition of the general term, Salmon goes into the distinction between singular and general terms. According to Salmon, being a singular term and being in a position of a singular term[112] are different issues. Being in a singular term position (i.e. subject position) in a sentence grammatically is a required but not a sufficient condition to be considered as a singular term because general terms may also take grammatically singular term position. For example, in "Gold is a malleable metal", though "gold" is in the subject position it is still a general term.[113] Similarly, in "The most popular color of this season can be seen everywhere", "The most popular color of this season" is a general term although it is a description and it is in the subject position. [114]

Another distinction Salmon made is the reference of predicates and general terms. In his view, predicates refer to properties. For instance, the predicate "is the

[111] Ibid., p. 123.

[112] I think Salmon means in the Fregean sense saturating of an unsaturated predicate.

[113] The "is" in the sentences like "Gold is the most valuable metal" is not the "is" of predication, but the "is" of identity. So, predicates in this kind of sentences are not monadic, but rather the dyadic "is" of identity. There are two objects in dyadic predicates. In order to discriminate the "is" of identity from the "is" of predication, one can try to reverse the sentence. For instance we get, "The most valuable metal is gold" when we reverse the above sentence. Identity statements allow this kind of reversion but not the other statements.

[114] Ibid., pp. 127-8.

color of the sky" refers to the property "being the color of the sky". On the other hand, general terms refer to the different kinds of abstract entities:

> The term "tiger" designates the species, *Tiger (Felis tigris)*. In general, a biological taxonomic general term should be seen as designating a biological taxonomic kind (a species, a genus, an order, or etc.), a chemical-element general term ("gold") should be seen as designating an element (gold), a chemical-compound general term as designating a compound (water), a color general term as designating a color (red), a natural-phenomenon general term as designating a natural phenomenon (heat), and so on.[115]

Salmon goes into details of the relationship between predicates and general terms in the following passage:

> Though the general-term description "the color of the sky" designates blue, the corresponding predicate "is the color of the sky" semantically expresses the property of having the same color as the sky, as opposed to the more specific property of being blue (in color). The two properties share the same metaphysical extension – *to wit*, the class of all blue things – but they differ in metaphysical extension in some counter-factual worlds, and so differ in metaphysical intension.[116] [117]

This passage makes one point clear. Salmon, here, points out a distinction between entities like *being blue* and *blue*. *Blue* is a color and it is an abstract entity. On the other hand *being blue* is a property but it is also an abstract entity. General terms refer to different kinds of abstract entities, whereas all predicates refer to same kind of entities, namely properties.

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[115] Ibid., p. 120.

[116] Ibid., p. 132, fn. 22.

[117] Here are the Salmon's definitions of metaphysical extension / intension and semantic extension / intension: "The *metaphysical extension* of a property P (in a possible world w at a time t) $=_{def}$ the class of possible objects that have P (in w at t). The *semantic extension* of a predicate Π (with respect to semantic parameters) $=_{def}$ the metaphysical extension of the property semantically expressed by Π (with respect to those same parameters). The *metaphysical intension* of a property $P =_{def}$ the function that assigns to any possible world w (and time t) the metaphysical extension of P in w (at t). The *semantic intension* of a predicate $\Pi =_{def}$ the metaphysical intension of the property semantically expressed by Π." (Ibid., p. 118, fn. 2).

Salmon's distinction between general term and singular term is different from LaPorte's. LaPorte only examines terms, as he calls "kind terms", in subject positions of sentences and he argues that they should be considered as singular terms[118]. These terms are names of kinds according to him. Salmon, however, holds that these terms are general terms and their generality does not depend on their position in sentences. These terms could not be taken as singular. Salmon gives examples to clarify his point:

(1) My true love's eyes are blue.

(2) My true love's eyes are the color of the sky.

The "are" here functions as a predicator. In such a predication, one part of a predicate should be general, Salmon maintains. Neither "blue" nor "the color of the sky" is singular in these sentences.[119]

After all these technical explanations Salmon concludes the following: "Blue" designates the color of blue. "The color of the sky" also designates the color of blue in the actual world. So, these are co-designative. However their rigidity status is different. Whereas the former is rigid, the latter is not; it might have designated the color of red. According to Salmon, true identity statements containing general terms are also possible. "Water is H_2O" and "Gold is Au" are examples of this type of identity statements. They have the same properties with identity statements containing proper names, namely they are necessary if true.[120]

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[118] LaPorte, "Rigid Designators for Properties," p. 330.

[119] Salmon, "Are General Terms Rigid?" pp. 122-3.

[120] Salmon, "Are General Terms Rigid?" pp. 131-2.

Inan

Ilhan Inan is another philosopher of the RDAE camp. According to him, the importance of this subject comes out in the counterfactual contexts. Rigidity is of importance when we need to know what terms refer to in counterfactual contexts. We should look at the rigidity of general terms from this perspective. For instance, terms such as "knowledge", "belief", "wisdom", "justice" etc. are basic terms of philosophy. In counterfactual contexts, like in thought experiments, if it turns out that these terms refer to something other than what they refer to in actuality, our way of doing philosophy would be different. Hence, the discussion of the rigidity of general terms will have important philosophical consequences.[121]

According to Inan two main different views on the rigidity of general terms part way in how to apply Kripke's rigidity test to general terms. This test could be applied in two different ways:

(T1) For every object x, if $F(x)$, then it is possible that not-$F(x)$

(T2) There is a kind x such that, $x = F$, and it is possible that $x \neq F$

Inan claims that Kripke prefers (T2) though he is not explicitly say. If we take the term "truth" and test it with (T2) we would get the statement "Truth might not have been truth". On the other hand if we test it with (T1) we would have something like "True propositions might not have been true". According to Inan the latter statement has nothing to do with the rigidity of the term "truth". While (T2) is testing the rigidity of "truth", (T1) is doing something else. Thus, the correct test must be

[121] Inan, "Rigid General Terms and Essential Predicates," p. 218.

(T2).[122] Inan also believes that the same rigidity definition holds for both singular and general terms.[123] So for him, (T2) is a very natural extension of the rigidity test for singular terms.

Inan focuses on general terms in their singular occurrences.[124] He points out the difference between general terms which have a singular occurrence and general terms which are parts of predicates. As far as I can see, Inan does not take a position on the rigidity of predicates. On the other hand he is very clear on the rigidity of general terms which have singular occurrences. Some statements in which a general term has a singular occurrence seem to allow two different analyses. For instance take the sentence "Blue is a color." In Inan's opinion, the term "blue" in this sentence refers to a color. However one could also argue that it is analyzed with quantifiers like "If something is blue, then it is colored". One could ignore the singular occurrence of the general term here and take it like a predicate.[125] Nevertheless, some other sentence like "Blue is my favorite color" could not allow two different analyses. The singular occurrence of the general term is more apparent here. One could not analyze this one by using quantifiers. This sentence shows the existence of general terms in singular occurrence. As a consequence, Inan believes that general terms in their singular occurrences refer to kinds (colors, species, elements etc.) According to Inan his position is shared by Kripke:

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[122] Ibid., p. 219.

[123] Ibid., p. 220.

[124] A general term would have a singular occurrence when it occupies one of the argument places of a predicate. (Ibid., p. 221).

[125] Actually, he does not believe in this of analysis. He tries to show that even if we assume this analysis is correct, there remain statements which could not be analyzed in this way.

> This, I believe, is Kripke's approach. When he speaks of a general term such as 'tiger' as a rigid designator, he does not intend this to mean that the predicate 'is a tiger' is rigid; rather he considers the term in its singular occurrence, as for instance when it occupies the subject position of a sentence as the name of a species.[126]

Inan argues that the rigidity of a general term should be evaluated with respect to its being a predicate or subject position in a sentence.[127] For instance, a description like "beverage my uncle requests at Super Bowl parties" is not rigid when it takes subject position since it refers to different beverage kinds. Whereas the same term may refer to a property rigidly[128] when it becomes a part of the predicate "is a beverage my uncle requests at Super Bowl parties".[129]

Rejection of the Rigidity of General Terms: Schwartz and Soames

Philosophers on the third side of the discussion reject the rigidity of general terms. After considering the shortcomings of the two different sides of the problem, they take the way of maintaining that the notion of rigidity should not be extended to general terms. I shall discuss here the arguments of Schwartz and Soames, who take the third side of the discussion.

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[126] Ibid., p. 221.

[127] Even in a singular occurrence general terms are still general. On this issue Inan (Ibid., p. 225) agrees with Salmon.

[128] Anyway this is not his position. As I said before Inan does not take a position in predicate rigidity. He just emphasizes the possibility of a change in rigidity status.

[129] Ibid., p. 222.

Schwartz

Stephen P. Schwartz' basic claim is that there is an empirical distinction between natural kind terms and the other kind of general terms. Terms such as "gold", "water" and "tiger" are names of something subject to empirical discovery. On the other hand, in using terms like "bachelor", "lawyer" and "sloop" "we do not have some kind of thing in mind, name it, and seek to discover what it is we have named (…)"[130] Following Locke, Schwartz calls these kinds "nominal kinds" and the terms naming them "nominal kind terms". Nominal kinds have nominal essences whereas natural kinds have real essences. The traditional descriptivist theory is correct in claiming that the references of nominal kind terms are determined by some descriptions. Schwartz argues that the problem of the traditional theory is to overextend its analysis to natural kind terms. Reciprocally the problem of the new theory of reference, namely the rigidity thesis, is to overextend its analysis from natural kind terms to nominal kind terms.[131] In Schwartz view, philosophers of language should show how to distinguish nominal kind terms from natural kind terms.[132] So, he prefers discussing this distinction.

According to Schwartz both the essentialist and the RDAE interpretations fail to distinguish natural and nominal kinds.[133] The problem with essentialist view is very basic for him. He claims that considering the changes in kind is sufficient to

[130] Schwartz, *Naming, Necessity, and Natural Kinds*, p. 38.

[131] Ibid., p. 39.

[132] Ibid., p. 41.

[133] As the other philosophers discussed above, Schwartz (Ibid., pp. 37-8) also rejects in the first place the view that rigid general terms designate their extensions for the obvious reasons mentioned above.

reject the essentialist view. Schwartz gives the examples of change in kind from both biological and chemical natural kinds.[134] I shall not go into the details of this criticism once more here. I have already discussed this criticism in the subsection titled "Devitt and Rigid Application".

The RDAE interpretation could not distinguish between natural and nominal kind terms. Many nominal kind terms turn out to be rigid in this interpretation. Schwartz expresses this problem in the following words:

> (…) several philosophers suggested that a rigid general term be understood to rigidly designate a kind or sort. At first blush this seems like a useful suggestion since natural kind terms such as 'gold', 'water', and 'tiger' will clearly come out rigid. Each will designate the same kind as it does in the actual world in every possible world in which it designates at all. Alas, as several authors pointed out this solution is unsatisfactory because, among other things, it extends the privilege of rigidity to just about all general terms (Schwartz, 1980). 'Bachelor' will designate the same kind – the same marital status – in every possible world in which it designates. Likewise for other nominal kind terms. They all turn out to be rigid. To some this result would be welcome, but it seems to me to lose all the ground gained. Rigidity has lost its exclusivity, like a club of which all are automatically members, and thereby its interest. Clearly there is an important difference between natural kind terms like 'gold' and nominal kind terms like 'bachelor' – and isn't this difference based on the rigidity of the one and non-rigidity of the other? Since the proposed solution lost this difference it was abandoned. The basic problem is that this proposed solution trivializes rigidity.[135]

Another problem for Schwartz for the rigidity of natural kind terms is about the theoretical identification statements. This problem holds for both the essentialist and the RDAE interpretations. According to Schwartz, these interpretations could not account for necessary a posteriori statements. To explain the existence of necessity and a posteriori statements is a success of the rigidity thesis. This explanation is obvious for singular terms, whereas problematic for natural kind terms. Schwartz

[134] Schwartz, "Formal Semantics and Natural Kind Terms," p. 194.

[135] Schwartz, "Kinds, General Terms, and Rigidity: A Reply to La Porte," p. 266.

claims that the rigidity thesis for natural kind terms does not help in explaining a statement like "Water is a compound". According to Schwartz, two so called rigid terms come together in a statement and it is obvious that this statement is necessary a posteriori but the necessity and the a posteriority of this statement does not follow from the rigidity of the terms "water" and "compound":

> Although I cannot provide a full account here I do not think that rigidity will help explain the necessity of these *a posteriori* truths because many necessary *a posteriori* truths are not identities. For example, 'water is a compound', 'gold is an element', and 'tigers are animals' are necessarily true (if true) and *a posteriori*. So the necessity of identities between rigid designators will not explain the necessity of these claims, since they are not identities. Note that we do not even know of any non-trivial true identities in many cases, e.g. tiger, and yet we do know *a posteriori* that e.g. necessarily tigers are animals. We should expect that the account that explains why 'Water is a compound' is a necessary *a posteriori* truth will also explain why 'Water = H_2O' is necessarily true if true and *a posteriori*. The necessity of identities between rigid designators cannot be that account. [136]

I think Schwartz is wrong in his criticism. The claim of the rigidity thesis is to give an account of the necessity and a posteriority of a true statement in which two rigid designators flank the "is" of *identity*. There may be some other kinds of true statements which are necessary a posteriori. Only true necessary a posteriori *identity* statements could be explained by the notion of rigidity. Schwartz should not expect rigidity to give an account of all necessary statements.

Schwartz, in conclusion, rejects any interpretation of rigidity of natural kind terms (general terms).[137] In my opinion this conclusion is false and the problem is coming from Schwartz' following premise:

> Both Kripke and Putnam strongly suggest that we ought to be able to decide *a priori* whether a term is a natural kind term. Kripke employs certain linguistic tests for distinguishing rigid from non-rigid designators and

[136] Ibid., p. 274.

[137] Ibid., p. 275.

> Putnam suggests including 'natural kind term' as a semantic marker in giving the meaning of a natural kind term. Of course, empirical discoveries could lead us to abandon some natural kind term or to change its meaning, but whether some term is a natural kind term now should depend on our present beliefs, presumptions, and intentions with respect to it.[138]

I do not see any ground for this claim. Where does Kripke "strongly suggest" something like this? I could not find any textual support. Nor does Schwartz show one.[139] Beyond this, Kripke is evidently against the idea that scientific discoveries cause a change in meanings of kind terms. Recall the following quotation:

> Note that on the present view, scientific discoveries of species essence do not constitute a 'change of meaning'; the possibility of such discoveries was part of the original enterprise. We need not even assume that the biologist's denial that whales are fish shows his 'concept of fishhood' to be different from that of the layman; he simply corrects the layman, discovering that 'whales are mammals, not fish' is a necessary truth. Neither 'whales are mammals' nor 'whales are fish' was supposed to be *a priori* or analytic in any case.[140]

Putnam does not hold this idea either. I shall go into his arguments against this idea in the next chapter.

Soames

Scott Soames, in his analysis of the rigidity of general terms, deals with natural kind predicates. He holds that predicate form has priority over nominal form. People understand the latter by the former. For example, according to Soames, one can

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[138] Schwartz, "Formal Semantics and Natural Kind Terms," p. 196.

[139] LaPorte ("Rigidity and Kind," p. 304) has an idea that the difference between the terms such as "whale" and "bachelor" arises from the difference of their reference fixing procedure. The former is causally grounded in sample whales, whereas the latter is not. Devitt ("Rigid Application," p. 144) also objects the idea that rigidity should distinguish natural kind terms from nonnatural kind terms.

[140] Kripke, *Naming and Necessity,* p. 138.

understand the abstract kind term[141] "the color red" by the predicate "is red".[142] For this reason, Soames focuses on the rigidity of predicates.

In order to understand predicate rigidity Soames examines the theoretical identity statements. As it is discussed above, Kripke claims that the theoretical identity statements are necessary. There are different types of theoretical identity statements counted in *Naming and Necessity*:[143]

(1) Water is H_2O (126-129),

(2) Flashes of lightning are flashes of electricity (132),

(3) Light is a stream of photons (129-130),

(4) Gold is the element with atomic number 79 (123-125),

(5) Cats are animals (122-123),

(6) Whales are mammals (138),

(7) Heat is the motion of molecules (99-100).[144]

According to Soames, there may be two strategies in examining the rigidity of predicates occurring in these sentences. In Strategy 1, we can take natural kind predicates as essential predicates. If we examine the examples above we can see that (2) and (3) are not identity statements though they look like so. However, with some elaboration they could be written in the identity statement form. On the other hand, (5) and (6) are more different from identity statements. What is the correct interpretation of these? Soames holds that these could be "broadly construed" as

[141] What Soames means by "nominal form" is an abstract kind term: "Like the term *red*, which has a primary use as a predicate and a secondary use as a name of a property (the color red), mass terms such as *water* and H_2O have primary uses in which they function as predicates, and secondary uses in which they are names of abstract kinds." (*Beyond Rigidity*, p. 364, fn. 9).

[142] Ibid., pp. 246-7.

[143] Soames (Ibid., p. 244) quotes this sentences from *Naming and Necessity*.

[144] Each sentence occurs in *Naming and Necessity* in page numbers given in parentheses.

identity statements with conditionals. For example (5) could be interpreted like the following way:

(8) ∀x (x is a cat → x is an animal)

According to Soames, there is no identity sign in this interpretation, but one can take this as an identity-like relation anyway: "Although it doesn't contain the identity predicate, (7) [here 8] might still be counted as an identity sentence (broadly construed) on the grounds that it identifies each cat with some animal."[145] In *Naming and Necessity* there are some loose textual supports of this interpretation. Kripke translates some of his theoretical identity statements to semi-formal sentences by using conditionals. Soames gives the following examples from *Naming and Necessity*: "(…) a material object is (pure) gold if and only if the only element contained therein is that with atomic number 79" and "For all bodies x and y, x is hotter than y if and only if x has a higher mean molecular kinetic energy than y." [146] Nevertheless the obvious problem with this interpretation is that it does not explain the necessity of theoretical identity statements. For instance if we formalize (5) in the following way:

(9) ∀x (Cx→Ax)

and assume the predicates "is cat" and "is animal" rigid, then

(10) ∀x □ (Cx→Ax)

follows from the premises. Yet what is required to follow is:

(11) □ ∀x (Cx→Ax)

[145] Ibid., p. 255.

[146] Ibid., p. 256.

(10) only shows that cats in the actual world would be cats in all possible worlds but the necessity should also hold for possible cats. In other words, (11) must have been shown. Soames gives a scenario to illustrate this problem. Suppose that there are four kinds of primates in the actual world such as human, ape, monkey and lemur. The compound predicate showing that being a member of one of these four kinds will be the following:

(12) λx (x is a human or x is an ape or x is a monkey or x is a lemur).

Since "is a human", "is an ape", "is a monkey", "is a lemur" and "is a primate" are natural kind predicates, for the sake of argument let us assume that they are rigid. Then, from this according to Soames, it will follow that (12) is also rigid. Thus, we can write such a theoretical identity statement:

(13) ∀y [y is a primate ↔ λx (x is a human or x is an ape or x is a monkey or x is a lemur) y]

This modal sentence follows from the premises above:

(14) ∀y □ [y is a primate ↔ λx (x is a human or x is an ape or x is a monkey or x is a lemur) y]

Nevertheless (14) does not give the necessity we wanted. In a possible world, other than these four primate kinds, another primate kind might evolve. In that case, we cannot say that (14) is a necessary statement.[147]

This result and other failures on some rigid predicate examples ("hotter than") Kripke counts makes Soames reject the Strategy 1.[148] In my opinion, this

[147] Ibid., pp. 257-8.

[148] Ibid., p. 259.

consequence is not a problem for essentialist strategy. As Inan points out[149], Kripke does not claim the necessity of a statement like (5) if it is true. (5) is not an identity statement. Strategy 1, however could not explain the necessity of true identity statements too, because it takes general terms as predicates. This is a serious problem for it. This strategy lessens the philosophical importance of the rigidity thesis. In fact, Kripke never uses the notion of "natural kind predicate". What he means in his definition of theoretical identification is not the identity of predicates but identity of general terms.[150] Strategy 1 does not go along with the basics of the rigidity thesis.

The second strategy Soames deals with is a strategy which can be subsumed under the RDAE interpretation. In Strategy 2 Soames looks for singular terms associated with predicates. Yet there are two problems with this strategy. First, in this way, one cannot discriminate natural kind predicates from other predicates.

> (…) if the singular terms corresponding to the predicates *is a philosopher, is a bachelor,* and *is a yellow metal* are *the property of being a philosopher, the property of being a bachelor,* and *the property of being a yellow metal,* respectively, then even these ordinary descriptive predicates will be classified as rigid, since their corresponding singular terms are. This is problematic, since Kripke wanted to distinguish natural kind predicates like *is gold* and *is a tiger* from ordinary descriptive predicates such as these.[151]

I do not see why Soames assumes that rigidity should distinguish natural kind predicates from other predicates. As far as I can see, nowhere in *Naming and Necessity*, Kripke points out that general terms such as "philosopher", "bachelor" or in Soames' terminology predicates such as "is a philosopher", "is a bachelor" are not

[149] Inan, "Rigid General Terms and Essential Predicates," p. 214.

[150] Salmon emphasizes a similar point with Soames' Strategy 1: "Soames's discussion suffers from a failure to distinguish sharply between a general term like 'tiger' and its corresponding predicate, 'is a tiger'" ("Are General Terms Rigid?" p.121).

[151] Soames, *Beyond Rigidity*, pp. 260-1.

rigid. Thus, Soames' first reason against Strategy 2 does not seem to be a well-established one.

Secondly, Soames mentions a "principled basis" problem with Strategy 2. He questions that on what basis one determines the singular term associated with a natural kind predicate. His example is the following:

(15) Her eyes are the color of a cloudless sky at noon.

What is the singular term associated with the predicate "are the color of a cloudless sky at noon". It could be either "The color that cloudless skies at noon are instances of" or "the property of being the same in color as a cloudless sky at noon". While the former one is nonrigid, the latter one is rigid. Thus, there is a substantial semantic difference between these two singular terms. Which one should be chosen? Do we have any criterion for choosing one of them? Soames does not see any basis for selection. Moreover he holds that without a criterion for selection Strategy 2 could not be successful. Therefore, Strategy 2 should also be rejected.[152]

I think the problem with this objection to Strategy 2 is about the misleading distinction between singular and general terms. In statement (15), the term "the color of a cloudless sky at noon" is predicated to the object "her eyes" by the "is" of predication. As Salmon points out in a very similar example, "are" in this sentence is the plural of the "is" of identity.[153] Why should one look for a singular term associated with a predicate here? If we take general terms as parts of monadic predicates as Salmon argues, Soames' objection to Strategy 2 would be invalidated. The general term "the color of a cloudless sky at noon" in the predicate of (15) is a

[152] Ibid., p. 261-2.

[153] Salmon, "Are General Terms Rigid?" p. 123.

description which is coreferential with the term "blue". The difference between them is that while the former is nonrigid, the latter is rigid. In my opinion, in this way the principled basis problem would be removed.

After arguing for the failure of these two strategies, Soames proposes to quit the project of trying to account for the rigidity of natural kind predicates which according to him will never succeed.[154] [155]

[154] Soames, *Beyond Rigidity*, p. 263.

[155] Soames (Ibid., p. 366, fn. 22) also claims that Kripke approved his conclusion in a conference. What is interesting, Kripke also approved Salmon's interpretation in another conference as Salmon writes. (Salmon, "Are General Terms Rigid?" p. 134, fn. 25).

CHAPTER 3

ON THE RIGIDITY OF ARTIFACTUAL KIND TERMS

Throughout the previous parts of this study, mostly I discussed the rigidity of general terms with respect to natural kind terms. The rigidity discussion might be extended to other types of general terms. One of them is "artifactual kind terms". Artifactual kinds are usually thought to be the kinds of human made objects for specific purposes. For example table, lighter, paperweight are all artifactual kinds and the terms "table", "lighter", "paperweight" are artifactual kind terms. During the discussion of these terms, we should go into some other issues which we ignored in the discussion of natural kind terms. In this chapter, I shall discuss the rigidity of artifactual kind terms.

Hilary Putnam in his "The Meaning of 'Meaning'" examines natural kind terms and arrives at the same conclusion with Kripke. Putnam claims that his doctrine and Kripke's doctrine are "two ways of making the same point".[156] [157] After that he maintains that other general terms can be examined in terms of rigidity[158] and he discusses artifactual kind terms. Before proceeding to this issue, I should explain three points.

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[156] Hilary Putnam, *Mind, Language, and Reality* (Cambridge: Cambridge University Press, 1975), p. 234.

[157] LaPorte ("Rigidity and Kind," p. 305) does not agree with Putnam on this point and criticizes him of confusing causal theory of reference with rigidity. This criticism is not of importance in my discussion.

[158] In fact Putnam uses the term "indexicality". Since Putnam identifies his notion of indexicality with rigidity I shall continue using "rigidity" to refer to both indexicality and rigidity.

In *Naming and Necessity* Kripke clarifies the distinction between necessity and a priori. Necessity and contingency are concepts of metaphysics whereas a priori and a posteriori are epistemological concepts. One should not confuse metaphysics and epistemology. Necessity is based on the assumption that something's nature remains the same in other possible worlds. On this issue Kripke says "If I say, 'Gold *might have* turned out not to be an element,' I seem to mean this metaphysically (…)"[159] since it is impossible for a substance to have a different nature. The statement "Gold is an element" expresses a property of gold's nature, thus if it is true, then it is necessary. Gold not being an element is metaphysically impossible in this sense. On the other hand, it might one day turn out that all our scientific knowledge is wrong. In this case "Gold is an element" might turn out to be wrong. In order to explain this Kripke points out the following: "If I say, 'Gold *might* turn out not to be an element,' I speak correctly; 'might' here is *epistemic* and expresses the fact that the evidence does not justify *a priori* (Cartesian) certainty that gold is an element."[160] Our knowledge concerning gold does not contain certainty. In epistemic sense, all our knowledge related to gold is revisable. If so, the statement "Gold is an element" could not be a priori. Hence, according to Kripke, a statement may both be metaphysically necessary and epistemically a posteriori.

We should also briefly look at the *de jure*/*de facto* rigidity distinction which could be useful in the discussion of the rigidity of artifactual kind terms. *De jure* rigid designators are stipulated to designate a single object in both the actual and possible situations. On the other hand, *de facto* rigidity is a property of "a description

[159] Kripke, *Naming and Necessity*, p. 143, fn. 72.

[160] Ibid., p. 143, fn. 72.

'the *x* such that *Fx*' happens to use a predicate '*F*' that in each possible world is true of one and the same unique object."[161]For example mathematical descriptions are *de facto* rigid. "The next prime number after 23" designates 29 in all possible worlds.

Before the examination of artifactual kind terms, thirdly we should turn to the notion of "theoretical identification statement" once more. As discussed above theoretical identification statements are statements in which two rigid designators are connected with the "is" of identity in a true statement. It is possible to give theoretical identification statements of "certain general terms" that Kripke considers as rigid. For example "water is H_2O" and "gold is the element with the atomic number 79" are theoretical identification statements if they are true. There are two important features of theoretical identification statements. First, one of the rigid designators in these statements is *de jure* rigid, and the other one is *de facto* rigid. In other words, a theoretical identification statement[162] is composed via a *de jure* rigid term and a *de facto* rigid definite description of the de jure rigid term's designatum. Second, these statements are metaphysically necessary and epistemically a posteriori.[163] Since they express the nature of a kind, they are true in all possible worlds. On the other hand they are a posteriori due to fact that they are based on scientific (i.e. revisable) knowledge. The philosophical significance of the theoretical identification statements takes its source from their metaphysical and epistemological properties. This kind of statements expresses the results coming from an empirical

[161] Ibid., p. 21.

[162] By definition the term "theoretical identification" is more comprehensive: "Theoretical identities, according to the conception I advocate, are generally identities involving two rigid designators (…)" (Ibid., p. 140) Here, I deal with theoretical identification statements in which the nature of a kind is expressed.

[163] To repeat, there is an ongoing discussion on the epistemic status of these statements. Here, I assume Kripke's claim that these statements are knowable a posteriorily correct.

investigation; hence they are necessary, if they are true. They express truths in all possible worlds, namely in all counterfactual situations. Theoretical identification statements are also important in my examination of the rigidity of artifactual kind terms. If the artifactual kind terms are rigid, then it means that we can give theoretical identification statements with artifactual kind terms too.

Keeping in mind these three points we may move on to Putnam's discussion of artifactual kind terms.[164] Putnam claims that traditional views on the terms such as "pencil", "chair", "bottle" consider these terms as cluster terms. In this sense, if these are cluster terms their definitions will turn out to be analytical also. For example, for the term "pencil", the statements such as "pencils are artifacts" and "pencils are standardly intended to be written with" should be analytic propositions. If a competent speaker uses the term "pencil", it means that she knows the definition of the term a priori.

In one of his famous science-fiction examples, Putnam supposes that "we someday discover that *pencils are organisms*."[165] He asks what would happen if pencils turned out to be organisms which we could observe via a microscope. They produced seeds. This would mean that contrary to our previous assumptions, it turned out to be that there were not any artifactual pencils and all pencils were organisms. If this thought experiment seems to be plausible, then one should admit that pencils might turn out to be organisms one day. This is an epistemic issue. Hence "pencils are artifacts" is not an a priori statement.

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[164] For this discussion see Putnam (*Mind, Language, and Reality*, pp. 242-5).

[165] Ibid., p. 242.

If this thought experiment is able to show that "being an artifact" is not known a priori by the speakers of the word, then we may ask the following question: "Did we also show that a possible world in which pencils are not artifacts is metaphysically possible?" In order to show this, Putnam develops another thought experiment. He appeals to another science-fiction notion of "Twin-Earth".[166] Now, suppose the following situation: We recognized that pencils on the local world were really artifacts whereas the things called "pencils" on Twin-Earth turned out to be organisms. How would we react in this situation? According to him we would say the following: "The things people call 'pencils' on Twin-Earth are not pencils." On the other hand, if on both worlds, pencils turned out to be organisms, then we should admit that pencils were organisms. If pencils on this world were artifacts, then pencils could not be organisms on another world; they could be called "pencils" but this would not make them pencils. Being called "pencil" in another world and being pencil in another world are irrelevant issues. Former one could be just a coincidence of words between local and possible worlds, whereas the latter one is about the sameness of nature. One consequence of this thought experiment is that if "pencils are artifacts" is true in this world, then it is true in all other possible worlds in which pencils (the pencil kind) exist(s).

In sum, "pencil" is not synonymous with any description. We use the term in any context –counterfactual or not- so as to refer objects which share a common nature with the pencils in the actual world. Thus, if the terms "gold" and "water" are rigid, then the term "pencil" should also be a rigid designator.

[166] Though he gives hypothetical examples, in my opinion Putnam always appeals to common sense. He tests his theory on common sense.

Putnam's views on this issue are intensely criticized by several philosophers. Let me evaluate the criticisms of Devitt and Schwartz who hold that Putnam's attempt to extend the rigidity thesis to artifactual kind terms is a failure. According to Devitt, the sole commonality among the members of an artifactual kind is their functions. The questions "for which aim they are used" or "for which aim they are designed" could tell us the functions of artifacts. Devitt takes paperweight as an example. Paperweights are used to secure papers. Paperweights are designed to do this function. The same function, however, may be provided by a piece of stone or wood. According to Devitt, though these are not artifacts, if they are used as paperweights they become paperweights. Hence, having a certain function is part of the definition of paperweight kind, whereas being an artifact is not. Devitt agrees with Putnam on his conclusion that pencils might not be artifacts but he has some different thought on their nature. He thinks that being artifactual or organic is not related to the definition of pencil kind. [167] It seems that Devitt would find no problem if we call "pencils" both organisms and artifacts doing the function of a pencil.

I see some serious problems with Devitt's points of criticism. First, in my view due to the fact that some natural objects such as a piece of stone or wood could be used as a paperweight, they should not be considered in the extension of the term "paperweight". They would have the function of a paperweight but in this case they would only become a piece of stone/wood used as a paperweight. We can always use something in the place of something else. For instance, we can count many things that are used in place of a table: a box, a chair, a heap of books, etc. It seems

[167] See Devitt ("Rigid Application," pp. 155-6), and Devitt and Sterelny (p. 93-95).

implausible to me that these all are to be considered as tables. If we reduce an artifactual kind to its function, and do not take into account some other parameters, then some strange consequences arise. For example take calculators. The function of a calculator in general, is to make calculations. According to Devitt's thesis then, a complex computer or even a man making calculations, are in the extension of the term "calculator" since they have the same function. These consequences are implausible. Putnam starts with fantastic scenarios but at the end his conclusions are very common sensical. On the other hand, Devitt starts with ordinary examples but his consequences are clearly against common sense. No doubt, Devitt would not be pleased with these consequences. Yet in his writings I could not find what he offers to avoid this kind of consequence.

When we come to Schwartz, we can see a summary of his views on this issue in the following quotation:

> I believe, of course, that there is no such underlying nature of pencils, nor is there a presumption of such a nature. What makes something a pencil are superficial characteristics such as a certain form and function. There is nothing underlying about these features. They are analytically associated with the term "pencil," not disclosed by scientific investigation.[168]

Schwartz does not believe that pencils or other artifacts do have an underlying nature. They cannot, therefore, be a subject of scientific investigation. The pencil is a cluster of superficial properties. These superficial properties include having a certain form and function but do not include being an artifact.

In my view, the problem with Schwartz is his mistake of making an improper analogy between natural and artifactual kinds. It is obvious that artifactual kinds do not have a similar "underlying nature" to natural kinds. The atomic

[168] Stephen P. Schwartz, "Putnam on Artifacts," *The Philosophical Review* 87, No.4 (Oct., 1978), p. 571.

structure of gold and the genetic structure of cats are examples of this kind of "underlying nature". There aren't any similar structures for artifactual kinds. Nevertheless beyond this, natural kinds have nothing special. When their hidden nature is enlightened by scientific investigation, their nature becomes no more "underlying". This is completely an epistemic matter. When we come to artifactual kinds, they seem to have no nature since they are designed by human beings. But it is not so. We may truly know many things about artifactual kinds like pencil, chair, but that does not entail that the members of these kinds do not have a common nature. Indeed, except specialists, majority of people know nothing on the nature of artifactual kinds like the electron microscope. In this sense, I do not see any categorical difference between the nature of the elephant and the electron microscope. Both are only known by their specialists in detail. Their nature remains unknown for other people.

At this point a question arises: what is the "nature" of a kind? The nature of the biological kinds, the chemical substances, and natural phenomena that Kripke counts under the title of "certain general terms" seems to be clearer. Their nature can be explained in terms of structures and events in nature. For artifactual kinds, however, this nature should include a certain function (intended function) and form as Schwartz points out. In my opinion, in addition to this at least "being an artifact" has to be added.[169] "Being an artifact" is a common property for all artifacts if it is true that they are artifacts. Artifactual kind objects are formed to have a certain function. In other words they are designed. Thus, being an artifact is an obvious

[169] I assume here that artifacts are artifacts, not organisms or something else.

component of the nature of artifactual kinds. Putnam's presentation above supports this point.

I think Schwartz is also mistaken when he takes artifactual kinds as closed to scientific investigation. Artifactual kinds, in some conditions, may be clearly open to scientific investigations. Let me give a science fiction example first[170]. Suppose that some Martian anthropologists came to the earth. In this case all artifactual kinds might be a subject to scientific investigation for them. For example they might use their science in order to understand the nature of a door handle. UFOs may be another example. We have named such a kind. Certainly, if such a kind exists, it must be an artifactual kind. Yet we do not know much about this kind. Do they really exist? If they do, how do they work? Those questions may be a subject for scientific investigation. For those, who do not like science-fiction examples I may give some other examples. For example, some human made instruments found in an archeological excavation may clearly be investigated in order to understand their intended function or "underlying nature". Or take a primitive tribe and suppose that several cigarette lighters dropped from a plane to the territory of the tribe. The chefs of the tribe would have the wise men investigate the nature of these cigarette lighters. Are they organisms or artifacts? What are their intended functions? Before the wise men find answers to these questions, the nature of the cigarette lighter remains "underlying" for the tribe. We may imagine a naming ceremony, too. The wise men might name the cigarette lighters with the following expression: "Let 'blob' be the

[170] I borrowed this example from Hilary Kornblith ("Referring to Artifacts," *The Philosophical Review* 89, No.1 (Jan., 1980), p. 112).

name of the strange objects dropped from the sky".[171] In this case, all naming procedure is like it is for natural kind terms. At first naming by reference fixing takes place and then kind's nature is investigated. One might object that in all these examples some other intelligent beings know the nature of the artifactual kind in question. For instance if UFO kind exists, some intelligent beings in the universe must know its nature. The same seem to go for archeological findings. The nature of artifacts archeologists find under the ground might be unknown without scientific investigation, but at least people who developed those artifacts in ancient times had knowledge of their nature. So, it could be argued that the nature of artifactual kinds could not be unknown to all people. Since they are human made things, at least their developers must know their nature. However, there may be some counter examples to this objection. Reinforced concrete could be an example.[172] It is first invented in 19. Century and since then it has been used in construction. Today, reinforced concrete is an important research area of civil engineering. Scientists are trying to understand its behavior under certain conditions. They are doing experiments on its interactions between other materials. If we could take these as the research of the nature of reinforced concrete, then it could be claimed that the nature of reinforced concrete, as an artifactual kind, has been partially unknown to scientists and all other people.

We can also generate theoretical identification statements with artifactual kind terms. As we have concluded above, artifactual kind terms are rigid if natural

[171] A very similar scenario takes place in a film called "The Gods Must Be Crazy" (1980, Director: Jamie Uys). In the story a Coca Cola bottle falls to the area of an African tribe, the members of which has never seen any glass before. They try to figure out why God send them such an odd thing and what it is used for. Since there is only one bottle, it causes jealousy among the members of the tribe. They call it "evil thing" and try to get rid of it.

[172] This example was suggested to me by Hasan Bülent Gözkân.

kind terms are rigid. There is nothing special with artifactual kind terms with regard to the rigidity thesis. So, if we can find a precise (rigid) definite description that gives the nature of an artifactual kind and bring it together with an artifactual kind term with the "is" of identity, then we will get a theoretical identification statement. For example for the term "pencil" this kind of a statement might be the following one: "Pencil is the object designed for writing with the aid of graphite." The definite description "the object designed for writing with the aid of graphite" specifies the nature of the pencil by mentioning its intended function, its form and its property of being an artifact ("being designed" gives the same meaning). If this statement is true and the description we found is rigid, this means that the statement is also true in all possible worlds, namely it is metaphysically necessary. So, if these conditions are satisfied, then this statement could be called "a theoretical identification statement of an artifactual kind". The truth conditions of this statement would give the correct criteria to subsume something under the pencil kind. In this case a rigidity test statement would be the following: "Pencil might not have been the object designed for writing with the aid of graphite". This statement should turn out to be false, if the terms "pencil" and "the object designed for writing with the aid of graphite" are rigid.

In sum, we could say that Putnam's attempt to extend Kripke's rigidity thesis to artifactual kind terms is successful. The naming mechanisms for proper names, natural kind terms, and artifactual kind terms are common. These three kinds of terms name an object, a kind or a property by reference fixing or by ostension. Descriptions may play a role during the naming ceremony but they do not give the

meaning of the terms. Meanings of these three kinds of terms cannot be given with descriptions.

Once naming procedure takes place, what is named may be the subject of a scientific investigation. At the end of this investigation the nature of artifactual or natural kinds may be understood. These discoveries give us the criteria according to which we subsume new samples under the kinds. If these criteria are precisely gathered, they constitute a rigid description. These kinds of descriptions are *de facto* rigid and bringing them together with the *de jure* rigid artifactual kind terms in a true statement, theoretical identification statements are obtained.

Schwartz's views on the artifactual kind terms have some typical mistakes. Schwartz holds that at least for a portion of these terms "cluster theory" works. For him, it is possible to give an analytical definition of terms such as "pencil", "chair", and "lamp". Here is his conclusion in his words:

> Since terms like "chair," "pencil," "lamp" are not indexical and it is not analytic that chairs, pencils, and lamps are artifacts, I call them nominal kinds to distinguish them from natural kinds. Members of a nominal kind do not share a common hidden nature, and we can give an analytic specification in terms of form and function of what it is to be a member of the nominal kind.[173]

Schwartz thinks so, because he thinks that these terms cannot be a subject of scientific investigation. He seems to think that everybody knows something true of these kinds of objects. Nevertheless, a similar case holds for some proper names also. For instance, almost everybody knows some properties true of Hitler. These properties may uniquely identify him. Yet the cluster of them cannot be interchangeable with the term "Hitler".[174] Similarly, the properties that uniquely

[173] Schwartz, "Putnam on Artifacts," p. 572.

[174] Kornblith (p.114) emphasizes this point.

identify kinds such as pencil or chair may be known by almost everyone. These clusters of properties, however, cannot be meaning of the kind term. This is the main point Kripke argued in *Naming and Necessity*. In my opinion, Schwartz' views on this issue clearly go against the gist of *Naming and Necessity*.

Up to this point I have approached the discussion from the metaphysical properties of artifactual kinds. Putnam draws the conclusion that artifactual kind terms are rigid (or indexical) after discussing metaphysical properties of artifactual kinds. Schwartz and Devitt attacked his metaphysical conclusions and objected the idea that the rigidity thesis could be extended to artifactual kind terms. Since I have tried to reply to these objections I have gone along similar lines of Putnam and his objectors and discussed the problem with regard to metaphysical properties of artifactual kinds. The same problem however, could be discussed from a mere semantic point of view.[175] In order to see this, applying rigidity test to artifactual kind terms would suffice. We can apply Kripke's rigidity test for names[176] to artifactual kind terms (assuming the same rigidity definition is valid for both names and kind terms). The following statements are given to test the rigidity of two terms: "pencil" and "the kind of the present I bought my father on Father's Day"

(1) The pencil might not have been the pencil.

(2) The kind of the present I bought my father on Father's Day might not have been the kind of the thing I bought my father on Father's Day.

(2) has one true reading. The reading in which modal operator has narrow scope might be true. The present I bought my father is a pencil but it might be a tie in

[175] Ilhan Inan pointed out this option to me.

[176] See Kripke (*Naming and Necessity*, p. 62, n. 25)

another possible world. This would make (2) true. Hence the long description "the kind of the present I bought my father on Father's Day" is a nonrigid designator. On the other hand, there is no true reading of (1). How could the pencil kind have been something else? If a kind K could not be another kind in another possible world, it follows that the term referring to K is rigid. According to this rigidity test, it turns out that the term "pencil" is rigid. In sum, the rigidity of artifactual kind terms could be discussed staying in semantics only. Along the lines of RDAE interpretation artifactual kind terms turn out to be rigid in this discussion.

CHAPTER 4

CONCLUSION

These are the three conclusions I have drawn from the discussions made in the previous chapters:

1) Kripke is a natural language philosopher. Kripke's claim that names are rigid designators is an empirical claim.[177] His rigidity thesis is not about how language should work but rather how it works. The same way should be taken on the rigidity of general terms. We should examine the general terms empirically.

When we do an empirical examination we see that general terms refer to abstract entities. We can call these abstract entities "kinds" and call general terms "kind terms". There are several different types of kinds. For example, biological taxonomy kinds (tiger, primate, bee, homo sapiens), colors (red, blue, turquoise), chemical elements and compounds (water, salt, uranium, gold), natural phenomena (heat, hotness, light), philosophical kinds (truth, justice, knowledge, intuition), and innumerous other kinds are abstract entities. We refer to them by general terms.

General terms do not refer to their extensions. If we ask what a statement containing a general term is about, then it turns out that we should assume the existence of abstract entities. For example what is a statement in which "happiness" occurs about? It is evidently not about happy people but happiness. A statement such

[177] Stephen Neale pointed out this me in conversation.

as “All you need is love” is not about lovers but love. The term “love” in this statement does not refer to people in love, it refers to the love phenomenon.[178]

I restrict my examination to general terms which take singular occurrence position[179], in other words which fill one of the argument places of a predicate. I shall not go into the reference of predicates and their rigidity. In my opinion, when they take singular occurrence position, general terms should still be considered as general, because the kinds they refer to is exemplified by individuals. LaPorte and some other philosophers take kind terms as names of kinds and as singular.[180] They may be the names of kinds, but that does not make them singular. Exemplification relation is distinctive here.[181] General terms are different from singular terms in terms of this relationship. A detail should be considered here. Some general terms may have singular occurrence position in different grammatical forms. For instance, “red” and “redness” are different in grammatical forms. “Red” could both play a noun and an adjective role, whereas “redness” could only be used in noun form. Though this difference, I assume that these two terms refer to the same entity, namely the color (kind) of red. Consider these two statements:

(1) Red is my car’s color.

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[178] For further information on kind reference see Francis Jeffry Pelletier (“Generics: A Philosophical Introduction.” In *Kinds, Things, and Stuff*, edited by Francis Jeffry Pelletier (New York: Oxford University Press, 2010)). There are several kind reference examples therein. Some of them are the followings:

The dodo is extinct.
Shockley invented transistor.
The Potato was first cultivated in South America.
Underlined terms in these sentences evidently refer to kinds.

[179] To repeat, this term is suggested by Inan (“Rigid General Terms and Essential Predicates”).

[180] LaPorte, “Rigid Designators for Properties,” p. 330.

[181] Pelletier (“Generics: A Philosophical Introduction,” p. 5) emphasizes that exemplification is a primitive concept.

(2) I could feel the redness spreading over my face.

Though they could not replace each other in some contexts, "red" and "redness" in these statements refer to the same entity, namely the commonality among all red things. In my opinion the source of the problem is the bipartite usage of color terms such as "blue", "green", "red". They are primarily adjectives but in some sentences they can be used as nouns. This is looseness of English or in which language a similar problem appears. It does not seem appropriate to me to distinguish references of these two terms.

As I mentioned in Chapter I, Kripke is not clear on what general terms refer to. As far as I can see, Kripke only briefly mentions this subject at one place. In the following passage he seems to hold that general terms refer to kinds: "We can say in advance that we use the term 'tiger' to designate a species, and that anything not of this species, even though it looks like a tiger, is not in fact a tiger."[182]

A question might be raised regarding the ontological status of kinds as being abstract entities. This is not my topic here, but I am inclined to think the following: These are not Platonic ideas or everlasting entities.[183] Abstraction is a concrete human activity. When it is required, abstract entities are created and again when it is required, people refer to them. In time, if nobody refers to a kind and there remains no trace of it, it means that this kind is vanished.[184] Fictional entities in mythology and literature are likewise abstract entities. These are also products of concrete human activities. For instance take the following statement:

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[182] Kripke, *Naming and Necessity*, p. 121.

[183] Even mathematical kinds could be considered as human made abstract objects.

[184] Though I am not in favor of it, one can also defend a Platonic ontology in which abstract entities are everlasting and people grasp them by abstraction. This ontology would not be a problem for my position on the rigidity of general terms.

(3) Raskolnikov is one of the most famous literary characters.

The term "Raskolnikov" in this statement does not refer to something nonexistent, but rather it refers to a fictional entity.[185] That is why this statement is meaningful and has a truth value. In my opinion the abstractness of kinds and fictional entities could be explained in the same way. I completely agree with Kripke in his way of explaining ontology of fictional entities in the following passage:

> It is important to see that fictional characters so called are not shadowy possible people. The question of their existence is a question about the actual world. It depends on whether certain works have actually been written, certain stories in fiction have actually been told. The fictional character can be regarded as an abstract entity which exists in virtue of the activities of human beings, in the same way that nations are abstract entities which exist in virtue of the activities of human beings and their interrelations. A nation exists if certain conditions are true about human beings and their relations; it may not be reducible to them because we cannot spell them out exactly (or, perhaps, without circularity). Similarly, a fictional character exists if human beings have done certain things, namely, created certain works of fiction and the characters in them.[186]

In sum, abstract entities should not be taken as a different category of being. As how concrete objects come to existence from concrete human activities, abstract entities could also come to existence in the same way. There is only one level of being which contains concrete and abstract objects.

2) Discussing the claim that general terms refer to kinds, a question appears. How do general terms refer to? As I discussed in Chapter I, there are two main answers to this question. First one maintains that all general terms have a descriptive content, and they refer via this descriptive content. According to this view which we can call "general term descriptivism", a general term like "gold" is semantically equivalent to

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[185] This is the Kripkean framework. Frege and Russell hold different views. According to Frege (p. 157) terms of fiction and mythology are nonreferring terms. Hence the statements in which they occur would not have truth values. On the other hand Russell ("On Denoting," p. 491) claims that these statements are merely false statements.

[186] Kripke, *Philosophical Troubles,* p. 63.

a uniquely identifying description like "the most precious metal" and this description is the means of reference. On the other hand, the other answer, namely the rigidity thesis, objects the idea that kind terms (names of kinds) are equivalent to some descriptions via which they refer to. In Chapter II, we saw how differently this thesis could be interpreted. According to the interpretation I support, the difference between terms such as "gold" and "the most precious metal" is that the former one rigidly, but the latter one nonrigidly refers to the gold kind. The term "gold" refers to the gold kind in all possible worlds in which this kind exists, whereas the description "the most precious metal" could refer to another metal kind like silver in another possible world. This conclusion holds for all kind terms including natural and artifactual ones. A kind term and a description referring to the same kind could not be semantically equivalent. This conclusion of Kripke is a very radical one. His rigidity thesis allows us to conclude that kind terms are rigid, and they could not be synonymous with any descriptions including scientific (rigid) ones.[187] In other words the meaning of a kind term could not be given by any description or cluster of descriptions. Kinds have properties[188] [189] but these properties are not the meanings of terms that refer to kinds. As descriptions could not give the meaning of singular terms referring to concrete objects, they could not give the meanings of kind terms

[187] Kripke, *Naming and Necessity*, p. 138.

[188] I think I go further than Kripke by saying this.

[189] I shall not go into the subject of predication to kinds here. The only thing I would like to emphasize here is that though kinds are abstract, properties such as "being yellow", "being metal", "being good" could be predicated of them. For the discussion of this subject see Pelletier ("Generics: A Philosophical Introduction"), Gregory N. Carlston (*Reference to Kinds in English* (New York: Garland Publishing, 1980)), and his ("Generics and Concepts." In *Kinds, Things, and Stuff*, edited by F. J. Pelletier (New York: Oxford University Press, 2010)). This is not a topic of semantics but in my opinion, predication of kinds follows naturally from the interpretation I defend.

referring to abstract entities. For instance let us take the definition of Higgs boson:[190] "The Higgs boson is an excitation of the Higgs field above its ground state." This definition fixes the reference of "Higgs boson" but it does not give the meaning of it, in other words the definition is not equivalent to "Higgs boson". The properties in this definition might have turned out to be false, but we would have still use "Higgs boson" to refer to Higgs boson particle.

One can also give a very simple argument against general term descriptivism. If all general terms were descriptive (i.e. their meanings could be given by some descriptions) and a description always included general terms, then an infinite regress problem would occur. In order to avoid this problem we would need some nondescriptive and basic general term(s). However, if we found such general term(s), this would terminate the claim that all general terms are descriptive.[191]

The claim that the meaning of kind terms could not be given by descriptions is of great philosophical importance. It might be argued that in Socratic Dialogues in Ancient Philosophy, people were looking for the true analysis (i.e. synonyms) of terms such as "virtue", "justice", "courage", "beauty", but their attempt failed every time. The rigidity of kind terms seems to explain the cause of this failure. Assuming these terms are rigid, ideal definitions, or synonyms of these terms could not be something descriptive. Thus, it might be argued that Socrates was trying to find a description which is synonymous of a term like "virtue". That description however

[190] Higgs boson is for now hypothetical particle whose existence is being examined by physicists.

[191] Ilhan Inan, *Dil Felsefesi* (Eskişehir: Anadolu Üniversitesi Yayınları, forthcoming), Chapter I

does not exist. If "virtue" is a rigid term, then a description could not be semantically equivalent to it.[192]

A rigid description could be coreferential with a rigid general term but it does not mean that this description gives the meaning of the term. One might object to this view that the meanings of mathematical kinds could be given by descriptions. For example it could be asserted that the meaning of "triangle" is "a three-sided polygon". I do not think so. These two expressions may be coreferential; however it does not follow from this fact that they are synonymous. They just refer to the same abstract kind rigidly. In my opinion, the production of mathematical kinds is not different of other kinds at all.

One of the conclusions of the discussion made in Chapter II is that in the realm of general terms, only kind terms make necessary a posteriori identity statements possible. The interpretation which takes general terms as predicates first needs another rigidity definition as Devitt gives one for his Rigid Application theory, second fails to show the necessity of these statements. In this interpretation the necessity of theoretical identification statements could not be a consequence of rigidity but some other "robust" metaphysical assumptions.[193] Kripke also supports the view that theoretical identification statements express true identity relation between kinds. Though there are some parts in *Naming and Necessity* which seem to support the other interpretation, the only definition he gives for the theoretical identification does not:

> Let us return to the question of theoretical identification. Theoretical identities, according to the conception I advocate, are generally identities

[192] Inan attracted my attention to this point.

[193] See the section titled "Devitt and Rigid Application" for more details.

> involving two rigid designators and therefore are examples of the necessary *a posteriori*.[194]

Kripke does not explicitly say but one can infer that this definition is possible if general terms refer to kinds. One other textual evidence would be Kripke's famous argument in *Naming and Necessity* in which he criticizes mind-body identity thesis and examines the necessity of "Pain is the stimulation of C-fibers"[195]. Kripke claims that if this statement is true it will turn out to be necessary since two designators flank the "is" of identity in it. Nevertheless, if we take general terms in this statement as predicates it would not turn out to be necessary, if it is true.[196] In that case, Kripke's argument might be useless.

3) One criticism related to the ontology of kinds is Devitt's criticism of LaPorte of being "a selective realist" which I discussed before. I would like to point out one more thing on this issue, so let me repeat Devitt's criticism here:

> Suppose that among the kinds there is not only the soda kind but also the *different* beverage-my-uncle-requests-at-Super-Bowl-parties kind (which happens to be coextensive with the soda kind in the actual world). [Or, suppose that there is not only the property of sodahood but also the *different* property of being a beverage-my-uncle-requests-at-Super-Bowl-parties. (Let us ignore that my use of 'my' has a different reference from LaPorte's.)] For short, call this kind "BMURASP." Then, in the actual world, 'beverage my uncle requests at Super Bowl parties' would *not* designate the soda kind because the soda kind happens to satisfy a particular description. Rather it would designate the BMURASP kind. Indeed it would designate the BMURASP kind in all possible worlds: it would be rigid. So the semantic issue of whether this term is rigid comes down to the issue of whether the BMURASP kind exists and is distinct from the soda kind.[197]

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[194] Kripke, *Naming and Necessity*, p. 140.

[195] Ibid., p. 144.

[196] Inan ("Rigid General Terms and Essential Predicates," p. 215, fn. 3) emphasizes this point.

[197] Devitt, "Rigid Application," p.141

This criticism is based on the ambiguity of descriptions[198]. For instance if one applies rigidity test to the term "blue", it turns out that "blue" refers to color blue rigidly. There is no ambiguity here. On the other hand, if one applies the test to the term "the color of my car" then she could see that this term is ambiguous. The best way to see this ambiguity is to examine the following statement:

(4) I love the color of my car.

This statement seems to have at least two readings. In the first reading, the term "the color of my car" refers to what it describes. For example assuming my car is blue, it refers to blue. In this reading the term does not refer rigidly. In the second reading, the same term is not taken as a description but rather it is taken to refer to *the color of my car* kind. Since in this reading "the color of my car" refers to the same kind in all possible worlds, it turns out to be rigid. At first glance this ambiguity seems to be a problem for my position. One can reject the second reading in order to eliminate the problem. Nevertheless, I do not prefer this way. I agree that there are at least two readings. In most of the contexts, the first reading would be correct but this does not mean the second reading should be completely ignored. In some contexts people may use "the color of my car" to refer to *the color of my car* kind. I think this ambiguity would be eliminated when we empirically examine the context of the statement and identify to which kind speaker refers to. Are there contexts in language in which people refer to *the color of my car* kind? It is hardly to say so. We can categorize these kinds as "unusual kinds". However, this result is not unchangeable. If people refer to an unusual kind frequently, then it may become usual in time. In sum, I can say that this ambiguity would not be a problem to my position. Difference in

[198] I ignore the rigidifiers Devitt uses here. As I discussed in Chapter II these rigidifiers remove the ambiguity.

meaning and difference in rigidity statuses in two different readings is a normal consequence of ambiguity. The context would determine the correct reading. This discussion also has an ontological dimension. In order to explain this, let us deal with singular terms which seem to be simpler. The singular description "The man who delivers my mail" might turn out to be ambiguous with respect to some ontology. For example in an ontology which assumes the existence of both individuals and roles, this term would refer to either a postman or *the man who delivers my mail* role. The same description would refer to the former nonrigidly, and to the latter rigidly. If we need to refer to roles in language, we should accept that the description "the man who delivers my mail" is ambiguous.[199] The problem appeared here is very similar to the problem for general terms. As a result of an empirical examination, we could hold that in language, we do not refer to roles, so these are also unusual objects. In sum, I could say that ambiguity is a trivial problem for both general and singular terms.

[199] This example was suggested to me by Stephen Neale.

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