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EXISTENCE: AN UNHOLY TRINITY

An Account of Indeterminate Existence

by

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Abstract

EXISTENCE: AN UNHOLY TRINITY

An Account of Indeterminate Existence

by

Salas Sanchez-Bennasar

Advisor: Professor Graham Priest

What is it for something to exist? This dissertation provides an answer to this question by giving a philosophical theory of existence in which the concept of existence in understood as a complex tri-partite notion. The account of existence defended here is arrived at by taking into consideration past philosophical theories of existence, the everyday and scientific uses of the notion, and also philosophical considerations about the nature of reality.

There are three conditions that are central to existence: spatiotemporality, mind-independence, and being a member of the quantificational domain of a true and complete scientific description about the world. To exist is to satisfy all three conditions. It is false that something exists if and only if it for each condition, it fails to satisfy it. And, therefore, we get a third case: if an entity satisfies some but not all of the conditions, then it is neither true nor false that it exists, so what follows is an account of indeterminate existence. For some entities, our best theoretical sharpening of our conception of existence still fails to determine whether they exist or not.

After arguing for each of the three conditions thoroughly, I strengthen the case for my theory of existence by explaining the consequences of its application. I provide several examples. Finally, I focus on the development of a philosophy of mathematics that takes into account that, given our theory of existence, it is neither true nor false that mathematical entities exist.

ACKNOWLEDGMENTS

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Chapter 0: Introduction

What is there?

Quine, "On What There Is" (*From a Logical Point of View* 1)

What is there? Quine claimed that the answer is very easy: Everything. But I don't think that's correct. Some things don't exist. People, trees, Venus and electrons exist. But Indiana Jones, Vulcan and phlogiston don't exist. And what about numbers and other mathematical entities? What about abstract entities? And intersubjective entities, like money or countries? These questions easily force one into the question: What is existence? What does it mean for something to exist? That is the starting point of this dissertation. The account of existence defended here is arrived at by taking into consideration past philosophical theories of existence, the everyday and scientific uses of the notion, and also philosophical considerations about the nature of reality. The result is a philosophical theory of existence that is an improvement on previous attempts, for it combines valuable insights of many other theories together with current use into one complex account.

I argue here that existence is best understood as a tri-partite notion: to exist is to satisfy all three conditions. It is false that something exists if and only if for each condition, it fails to satisfy it. And, therefore, we get a third case: if an entity satisfies some but not all of the conditions, then it is neither true nor false that it exists, so what follows is an also account of indeterminate existence. These are the three conditions for existence:

a. *Theoretical Commitment*: Something is a theoretical commitment if and only if it is part of the quantificational domain of a true and complete scientific description of the world.

b. *Spatiotemporality:* Something is spatiotemporal if and only if it is in space and/or time.

c. *Mind-independence*: Something is mind-independent if and only if it is such that its existence (if it exists) and nature do not depend on what any mind judges it to be.

In this introduction I explain in broad strokes how I think about existence, doing my best to motivate the general results. I specify how the dissertation argues for the theory and give a quick run-down of chapters, in order to give the reader a clear roadmap of what's to come.

0.1. Motivating thoughts

There is something peculiar about the question "Do numbers exist?". Ask the layman and she will probably brush off the question altogether. A common non-philosophical impression is that it is the wrong kind of question to ask about numbers—it is met with bafflement more than anything. Ask the mathematician and you might get a similar reaction: the mathematician says that of course they

are real, but also when prodded for more detail, some sort of formalism is often asserted. They are nothing but what we make them to be, we give the mathematical symbols some handling rules, and that is what numbers are. We need not expect the mathematician to have a sophisticated philosophy of mathematics, but it is nonetheless telling that those who deal with numbers professionally cannot give a clear account of the sort of entity they are handling.

This tension is inherent in philosophical answers to the question, too. If numbers did exist, what would they be like? Abstract entities, understood as mind-independent, non-spatiotemporal entities, are a special kind of entity and thinking of them as existing is problematic. The sort of uncontroversial entity that we take as existing is spatiotemporal, causally connected, we can see it and touch it (sometimes)—we understand that kind of existence. We try to think of a number existing by modeling it in that kind of uncontroversial existence: numbers, if they exist, must exist just like the tree outside does, but not in space and time. The problem is that this seems to take away what we do understand about existence, what we are left with is mysterious. The queerness of numbers makes it tempting to say that they cannot exist.

On the other hand, using mathematics to understand the world is mind-blowingly successful. Mathematics makes science and technology possible, and it helps us understand and discover things about reality. Surely, the platonist says, this means that numbers and other mathematical entities must be something real in order for the applicability of mathematics to be as it is, for if they don't exist, if they are nothing, then how can they be so useful? These two observations about mathematical entities pull us in opposite directions, and so the debate in the philosophy of mathematics goes on.

The proposal here is that to solve this tension we must realize that existence need not be bivalent. If we open the possibility of a third value in the application of the concept of existence, there is room for it to be neither true nor false that mathematical entities exist. It is not true that they exist, for they are not spatiotemporal: the nominalist is right that there is no good way of thinking of numbers as existing. But the platonist is also right that we must take mathematical entities seriously and that the applicability of math is striking enough to mean something about the existence of mathematical entities: it is *not false* that numbers exist. It is intuitive insofar as it allows us to reconcile what otherwise seems an insurmountable tension in the philosophy of mathematics. And not just in philosophy, but also outside of the discipline, for this position explains away the reaction of the non-philosopher when asked about the existence of numbers.

The overall strategy consists in developing an account of existence capturing the most valuable intuitions about existence that can be found in the literature. This account is presented as a new philosophical explication of existence, based on our common concept of existence, but only as a starting point. I bring in philosophical arguments as to why it is better to think of existence as a complex, tri-partite concept instead. It is a notion of existence that is meant to be inclusive of several insights and thus better than any of the more restrictive understandings. The outcome of the theory is that for some entities, among which are numbers, it is neither true nor false that they exist.

0.2. Structure

In order to incorporate these three aspects into one conception of existence, this dissertation covers many different topics; existence is a broad subject matter. But so as to keep in sight the main project of completing this account, at times we must move on and just touch upon certain topics that

should ideally require more careful consideration. In those situations, the aim is to draw out the issues and alternative positions with regards to particular issues, leaving as a further exercise the complete arguments for the line taken. The case for the main view is provided, though, and it is developed in five chapters.

Chapter 1

After setting up the problem of the nature of existence and clarifying the general methodology for the dissertation, the first chapter takes up two projects, the NeoFregean and the Quinean conceptions of existence. They both have something in common: the attempt to specify a clear criterion of ontological commitment that when applied to optimal contexts, allows us to draw conclusions about existence and the world. After arguing that the NeoFregean project is not satisfactory, I argue that we should take Quine's criterion with a pinch of salt, for it is really only a criterion of ontological commitment, and the only way in which it can be seen as a criterion for existence in Quine is by foregoing a strict separation of truth and best science—Quine thinks that we cannot step outside of our best scientific attempts to reconsider whether the ontological commitments of those sciences exist.

Nevertheless, I argue that included in the concept of existence there should be a version of the Quinean criterion such that everything that exists is part of the quantificational domain of a true and complete scientific description of the world. This condition of existence is necessary but not sufficient for the existence of an entity. We can say it is necessary because we have restricted the condition to true and complete descriptions of reality, and, furthermore, we focus on entities that do not fall outside the boundaries of what we can know, making this condition a restricted one. It is not

sufficient because quantifying over something is not a necessary condition for ontological commitment of a theory, as we will argue. We separate the existential quantifier from its traditional existential import and we allow for figurative talk of entities, without thereby committing ourselves to the existence of those entities.

Chapter 2

The second condition for existence is that of spatiotemporality. Everything that exists is in space and time. This condition is closely related to the classic Eleatic Principle of existence that has it that only those things that have causal powers exist. I argue in this chapter that the notion of causal power is best dropped for that of spatiotemporality, for we do not need them both. Spatiotemporality is necessary but not sufficient for existence. Spatiotemporality is necessary for existence, that is, it is not true for any non-spatiotemporal entity that it exists. I argue for this by mounting a case for nominalism about abstracta (understood as the view that it is not true that abstract entities exist), since abstracta are precisely those entities understood as non-spatiotemporal. The main argument is a version of Ockham's Razor, as applied to philosophical theories of the nature of mathematics and mathematical practice. This condition for existence, however, is not sufficient; there are intersubjective entities that are spatiotemporal, in that they are in time, but of which we do not want to say that it is true that they exist.

Chapter 3

I move on to argue for the third and final condition for existence in this chapter. The condition of mind-independence requires that all things that exist are mind-independent. Something is mind-

independent if and only if it is such that its existence (if it exists) and nature do not depend on what any mind judges it to be. Mind-independence is compared to objectivity, and the relation between the two notions is somewhat explored. But the focus is on mind-independence and the point is to argue that, just as for the other conditions, it is necessary but not sufficient for existence. The necessity of mind-independence is argued for by building up a case for realism, which is the view that there is a mind-independent reality and that it is to a certain respect as we think it is. In the process of doing that, I point to weaknesses and problems with idealist views, which have it that the reality that we think we know is mostly mind-dependent. Mind-independence is not sufficient for existence, though, and I give some examples of entities that are mind-independent but of which it is not true that they exist.

Chapter 4

Once the arguments for each of the three conditions for existence have been presented I proceed to show how the application of the theory works. As I have it, it is true that an entity exists if and only if it satisfies all three conditions; it is false if and only if for each condition, it fails to satisfy it; and it is neither true nor false if it satisfies some but not all of the conditions. This has some uncontroversial consequences: people, rocks, trees and electrons exist; it is false that fictional entities exist. This chapter also gives several examples of entities for which it turns out that it is neither true nor false that they exist, for it is not just mathematical entities that have indeterminate existence. Intersubjective entities, for instance, like countries, money or laws, also are such that it is neither true nor false that they exist.

The second half of the chapter is dedicated to reviewing some objections that may not have come up in the previous discussion. Among other things, I survey some views against indeterminate existence, and I consider a challenge to the view of fictional entities that I embrace in this text.

Chapter 5

Finally, and only after the theory of existence is fully developed, I move on to argue that it is neither true nor false that mathematical entities exist. Mathematical entities are part of the theoretical commitments of science, they are not spatiotemporal and they are mind-independent, thereby satisfying some but not all of the conditions for existence. As any satisfactory philosophical account of mathematics, this one must account for mathematical practice and the applicability of math.

I consider two alternative accounts of mathematics. One is to think of mathematics as being true without thereby requiring the existence of mathematical entities. This means that even if it is neither true nor false that mathematical entities exist, math is true, and mathematicians are investigating truths about mathematical entities. The applicability of mathematics is explained because mathematical entities are tools that we think about for better organizing and describing the physical world. The other alternative is to argue that since it is neither true nor false that mathematical entities exist, the truth-value of mathematics cannot be true. I consider the possibility that math is neither true nor false. The applicability of mathematics is accounted for in a similar way as before, but mathematical practice is best understood as the study of hypotheticals: the mathematician is engaged in investigating what it would be like if numbers were just as the theories say they are, even though they don't exist.

Chapter 1: The Linguistic Condition

By a kind of necessity of language, my expressions, taken literally, sometimes miss my thought; I mention an object when what I intend is a concept. I fully realize that in such cases I was relying upon a reader to meet me halfway—who does not begrudge a pinch of salt.

Frege, "On Concept and Object" (Geach and Black 54)

The aim of ontology is to describe reality, broadly, that is, to tell which kinds of things exist; but disagreements abound. One way of tackling the ontological question (maybe the most fundamental way) is to wonder about the nature of existence. What is it for something to exist? Are there any characteristics that all existing entities share by virtue of their existence? There have been several attempts at analyzing existence as equivalent or at least closely connected to some condition or other. The most important of these attempts are considered in turn in what follows. This chapter focuses on two criteria, the Quinean and the NeoFregean conditions for existence. They have something in common: they both attempt to give a condition for existence partly in terms of either a theory, or a

language, and for this reason I treat them together in this chapter. The Quinean thinks that a complete or total scientific theory of the world is a good guide for what really exists. The NeoFregean thinks that our use of singular terms in true contexts is a reliable guide for the existence of objects. This chapter criticizes the NeoFregeans and defends a very constrained version of the Quinean criterion, but first I set up the main strategy for the analysis of the concept of existence.

1.1. The Concept of Existence

Our concept of existence is a mess. It is a common concept: it is used in our descriptions of reality and continuously in everyday life. Still, it is one of the least understood concepts. And yet, to paraphrase Frege (*Foundations* iii), is it not a scandal that our science should be so unclear about the first and foremost of its concepts?

1.1.1. The Problem of Being, Existence and the Concept of Existence

Traditionally, metaphysics is considered the study of being, that is, what things are like, what essential characteristics the world, entities, properties, etc. have. Traditionally put, metaphysics is the study of being as such. Ontology, on the other hand, is the study of what there is, of what exists; that is, it is the attempt to figure out whether there are any properties, or moral values, or numbers. These two enterprises are connected, however, for in order to argue for what there is, many times we must first determine the nature of the entities. Some think that only things that exist can have being, in which case, in order to determine what metaphysics is to focus on, one must first make a decision about what reality is, that is, what exists and what doesn't, which is just the ontological question. Ontology, therefore, can be seen as a branch of metaphysics.

One of the traditional problems for metaphysics is what is called the Problem of Being, that is, how to identify the shared characteristics of being. Being is a slippery notion and it is many times explained via the structure and content of several sorts of sentence involving the verb 'to be', for as the famous Aristotelian dictum says 'Being is said in many ways' (Ross V.7 1028a 10-15). Frege separated three of those ways. We thus have the 'is' of identity, the 'is' of predication, and the existential 'is', exemplified by these three statements, in that same order:

1. The author of Waverley is Walter Scott.
2. Sir Walter Scott is Scottish.
3. I think, therefore I am.

In 1, the 'is' of identity can be substituted by the identity sign, if we were to formalize the statement. In 2, that wouldn't work, for we want to say that Walter Scott is of a kind, the Scottish kind. In the third statement, I am asserting that I exist. It is less of a common use in English than it is for other languages, but here I have chosen the classic Cartesian statement as an example of this third kind, to show that it is an accepted use.

The Problem of Being is the problem of explaining what it is for something to be something: everything that is is unified by being, and the problem is to characterize that. Some identify being with existence, whatever has being, exists- "How can something have being and yet not exist?" they ponder. So being is just what is expressed by the third kind of statement separated by Frege. The flipside of this problem, however, is the Problem of Nonbeing. For if all that has being (and which one can therefore predicate things about) exists, how can one deny at all that anything exists? Quine

(*From a Logical Point of View* 1-2) wrote, as an explanation of this riddle: "Nonbeing must in some sense be, otherwise what is it that there is not?" For this reason, in this dissertation, we will keep being and existence separate; we want to be able to talk about entities for which it is not true that they exist directly and without absurdity. The question that this project answers, then, is about existence, not being.

With regards to the nature of existence, philosophers like Hume, Kant, Frege and Russell all claimed, each in their own words, that existence was not a real or determining property of objects, that is, that existing or not existing is not something that changes any of the qualities of the object. Frege and Russell, in particular, specified this position by identifying the predicate 'exists' with the particular quantifier.[1] Thus, 'exists' is taken to be a second-order predicate equivalent to saying that the first-order predicate in question has at least one entity falling under it. This has become the orthodox view among analytic philosophers: all there is to 'exists' in language is the existential quantifier. And existence as a property, therefore, is nothing but a fact about the first-order property: that the latter is instantiated. This, again, means that there is nothing about existing things that identifies them as existing. This position, therefore, deflates the problem of existence as a metaphysical problem and turns it into a logical problem.

Many have thought, along similar lines, that the question over the nature of existence is one of those wrong-headed, philosopher questions: we should not be looking for an analysis of existence, we should just look at what sort of thing we are committed to accepting, and forget about deeper, misleading proposals about what existence really is. Once the issue of the syntactic analysis of

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[1]But see Priest ("The Closing of the Mind") for an interesting historical study of how these authors got to adopt such a convention.

existential expressions in the language is solved, there is no further question—so the thought goes. Thus, the strategy is to worry purely about recognizing the ontological commitments of a theory and then decide by any means available whether we should accept the theory as true or not, without taking existence to be anything other than whatever the theory we believe is true commits us to. This is a reasonable attitude, and it gives us a way of deciding which entities we are committed to accepting; the ontological question, however, may be understood as deeper than that, or at least different. We may have a very good theory of ontological commitment but still be wrong about what exists: it all depends on whether the theory we are accepting is true or not. The question of ontological commitment is not about reality, but about a theory, which may or may not be true of reality. And so the two questions are different; it should not be so easy to dismiss the question over existence.

Thus, I believe we can ask the question about the common nature of the things that are said to exist. We can say something about existence. The approach is as follows. First of all, the concept of existence is just like any other concept. In some simple (if not simplistic) way of understanding how this works: a concept is the meaning of the word that denotes it, which depends on how we use the word. So, use determines what we mean by 'exists'. This is the motivation to provide an account of our concept of existence based on our use of 'exists' and other cognates, as a community, to talk about what there is in the world.[2] However, philosophers are well aware that how communities use terms need not be the most reliable way to get to a reasonable, satisfactory concept. In fact, I argue later (in 4.3.4) that the English use of existential expressions wavers between two related meanings, so 'exists' is polysemous between an ontologically loaded sense and an ontologically light sense.

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[2] I have in mind the linguistic community that is best known by me, the English community, and I would also add the Spanish and Catalan communities, which have very much the same uses and issues. Here, though, I will just speak of the English community.

Nobody thinks, e.g., that they are adding to the furnishings of the world when they assert a statement like 'There is a chip on my shoulder'. What follows focuses on the ontologically interesting use of existential expressions. But even if we concentrate on those uses, the community of speakers does not provide a sharp enough delimitation of the meaning of 'exists'. Situations like this are the reason why philosophers provide theoretical sharpenings, improvements on our common concepts, to make them consistent with other fundamental beliefs about the world. Thus, I propose a mixed approach. We will attempt to give a philosophical theory of existence, based on the common concept of existence that everyone uses, not just philosophers, but not limited only to that, as we assume that that concept must be improved. The refinements will come from philosophical arguments and intuitions about how the world is and will take precedence over common every-day use, when in conflict.

What the previous paragraph argues is that we can theorize about the concept of existence. I claim, further, that a theory of the concept will tell us something about existence itself, and that in turn directs us to what exists. I think that it is the same to ask 'What is it for something to exist?' and 'What it is for 'exists' to apply to something?' Thus, we can draw conclusions about existence itself from the concept of existence. The main thought is that whenever we think about existence, we are thinking about existence by means of the concept of existence, so what existence is (when we talk/think about it) is very much connected to the concept of existence, which is the meaning of 'exists'. It is also true that we can, and as philosophers do it often, reflect on our concepts and decide to change them according to our beliefs about the world. But, again, we cannot express what we think real existence is, without using the word 'exists' and, therefore, some version of the concept of existence. Even during this self-reflecting analysis of what our concept of existence should be, the concept is very much central to the discussion.

To be more precise, let's say there are several, related concepts, E_1, E_2, E_3, etc. One (at least) is the pre-theoretical concept determined by use. The others are the philosophically sophisticated possible refinements of that concept. The discussion about existence can be seen as the discussion as to which of the possible sharpenings is more satisfactory. There is, I believe, an overarching notion of existence that unifies the specific concepts of existence as all versions of the concept of existence and not some other concept. The common core of all these E concepts is what makes them all versions of the concept of existence; that core is determined by the use the community makes of the existential expressions. But be this as it may, we cannot think about existence in any of its aspects or versions without using some sort of concept of existence. And thus, in this very straightforward sense, thinking about the concept tells us something about existence. In what follows, therefore, I will give a theory about the concept of existence, and in the process, of what it is for something to exist.

The idea is very much like that of explication for Carnap. I am giving a philosophical explication of the notion of existence. Here is Carnap explaining explication:

> The task of making more exact a vague or not quite exact concept used in everyday life or in an earlier stage of scientific or logical development, or rather of replacing it by a newly constructed, more exact concept, belongs among the most important tasks of logical analysis and logical construction. We call this the task of explicating, or of giving an explication for, the earlier concept ... (8-9)

By explicating the notion of existence the way that I do, I claim that the replacement is a better concept, more suited to the purposes of philosophical enquiry for the reasons that I give in defending each of the conditions. So, again, I take as the starting point the pre-theoretical concept of existence that we use in everyday life, and in non-philosophical enterprises. I refine it taking into consideration philosophical reasons and overarching metaphysical desiderata. I claim that, given the arguments presented for each of the conditions, this sharpening provided in this dissertation is more philosophically satisfactory than other contendents. This is, therefore, a substantial thesis about how we should think about existence.

One may still wonder if it is not just a merely verbal disagreement: One who believes, for instance, that existence is captured by the Eleatic criterion that to exist is to have causal powers, may say to me that, if it is all the same, she will keep identifying 'exists' with 'it has causal powers' and that she will just take my more complex notion to be something else, 'exists*', and I can do the reverse for her notion. It is just a matter of our choice of words, then, isn't it? No, because my point is stronger than this opponent takes it to be: my philosophical arguments for defending my theory of existence support also the claim that my understanding of existence is closer to the ideal—a philosophical notion that meets far more of the demands in place. It is the most useful one for the philosophical purposes of theorizing about reality, juggling several methodological beliefs, pre-theoretical impressions and deep-seated principles about how things are. Therefore, it is not a matter of just stipulating which notion is to be picked out by the word 'exists', but a matter of philosophical and theoretical virtue. The aim in what follows is to provide arguments that show that the tripartite notion of existence is the most virtuous of the possible explications.

1.1.2. Conditions for Existence

Philosophers have advocated different conditions as conditions for existence. This is a list of some (not all) of the criteria that have been considered:

C_1: x is the referent of a possible genuine singular term used in a true statement.

C_2: x is a value of a variable quantified over in our best theory about the world.

C_3: x is spatiotemporal.

C_4: x is causally efficacious.

C_5: x is mind-independent.

These conditions are attempts to pin down the content of the concept of existence. The aim in this dissertation is to argue that most of them have some role in the overall meaning of 'existence'. Once understood correctly, these conditions will be tidied up into three broader conditions, all of which have to be met by something for that thing to exist. Furthermore, in order for some entity to determinately not exist, it has to fail all of these three criteria. The space left in between is occupied by those entities that fail some and meet some of the criteria, and it is neither true nor false that they exist—it is the gap in which existence is indeterminate.

In order to argue for this understanding of existence I avail myself of certain expressions and distinctions. Let me I clarify upfront a couple of these assumptions. Firstly, let me stipulate that I am embracing a three-valued logic for the application of the concept of existence: an existential claim can be true, false or neither true nor false. This means that when I say that something is not true, I mean that it can be false or it can be neither true nor false. When I say something is not false, all I mean is to exclude that alternative, leaving it open whether the statement is in fact true or neither

true nor false. That is, I am taking negation to be exclusion negation (instead of choice negation, which identifies not true with false, and not false with true). Secondly, I am going to think of the concept of existence as expressed by a predicate, E, and not a quantifier, so the quantifier, by default, has no existential import. In order to remind the reader of this separation I will not talk about the existential quantifier, but instead of the *particular* quantifier, by which I mean the traditional so-called existential quantifier but without existential import. My reasons for all of this should be clear by the end of the dissertation, but for now, let it be explicit that this is my use, unless otherwise noted.

In this chapter, I deal with the first two conditions in the list above. At first blush it may appear as if C_1 and C_2 are different from the rest of candidates. They both have the appearance of criteria for ontological commitment, which is not the same thing as a criterion for existence. They also both make use of semantic notions, best theory for the Quinean, and truth for the NeoFregean. The former, C_1 is a condition that relates existence to the linguistic role of singular terms in true contexts; whereas C_2 is a way of identifying, given a theory, what entities the theory is committed to including in its domain. Now, philosophers have defended all the conditions here listed as conditions of existence, not just of ontological commitment. Here in this chapter, I argue that C_1 is misguided, but that C_2, when understood properly, and in combination with the other conditions for existence, does indeed play a role in the concept of existence, even if on its own, it is not sufficient to capture the fully-fleshed notion. Below, I proceed to the development of these two first conditions, starting with, C_1, which is extracted from the NeoFregean philosophy of mathematics, and followed by some serious consideration of C_2, the Quinean criterion. I conclude the chapter by giving the proposal that is the first condition of the concept of existence defended in this dissertation, as a product of the discussion of these two conditions.

1.2. The NeoFregean Project

Bob Hale and Crispin Wright's project, as presented in *The Reasons' Proper Study*, was an attempt to give a Fregean argument for the existence of numbers as logical objects. They thought that Frege was right about the nature of arithmetic but that given the failure of Frege's original way of arguing for his position (Basic Law V is inconsistent, as Russell's Paradox brought out), the arguments needed reassessing. In doing so, they defended a view of existence that will be analyzed in this section. NeoFregeans accept both Frege's logicism and his platonism: They focus mainly on natural number arithmetic, which for them, as for Frege, is nothing more than second order logic and a definition of number. Arithmetic for the NeoFregeans is likewise a body of truths about the natural numbers, which in turn are conceived as a type of abstract object that exists independently of thought. The main aspect that distinguishes the NeoFregeans from Frege is their support for the contextual definition that Frege examined but then rejected. Frege's suggestion, so-called Hume's Principle, is expressed by the NeoFregeans as follows:

$$\text{HP:} \quad \forall F \forall G \ (NxFx = NxGx \leftrightarrow F\text{-}G)$$

That is, for any concepts F and G, the number of Fs equals the number of Gs if and only if there is a one-one correlation between the Fs and the Gs. A one-one correlation is a relation that can be described in purely logical terms, in keeping with the requirement of Fregean logicism:

> F-G if and only if there is a relation R such that each F is R-related to only one G, and for each G there is exactly one F such that they are R-related.

Suppose that $\exists!x\varphi$ means that there is a unique x such that φ, then we can translate the previous

English statement into this:

$$\text{F-G if and only if } \exists R[\forall x(Fx \rightarrow \exists!y(Gy \;\&\; Rxy)) \;\;\&\;\; \forall x(Gx \rightarrow \exists!y(Fy \;\&\; Ryx))]$$

This is equivalent to saying that R pairs off all the Fs and the Gs. This will be the case just if there

are exactly as many Fs as there are Gs, which for the NeoFregeans is the same as their having the

same number. NeoFregeans observe that Frege uses his explicit definitions only in the derivation of

the truths of arithmetic in order to get to the biconditional rejected in *Die Grundlagen* as a definition

of cardinal number, that is, HP. The NeoFregean view is that there is no need for the explicit

definitions: all the work can be done by HP, and thus, the inconsistency that made Frege's system

collapse can be avoided.

As for the NeoFregean argument for the existence of numbers as objects, it is a sophisticated

development of Frege's arguments. They take on Frege's remarks and, according to them, build 'a

strong prima-facie case for admitting numbers as objects' (Hale and Wright 8). Hale and Wright start

by claiming that HP is analytic of the concept of number, but later they refine this view by having it

be a conceptual truth that provides an implicit definition of cardinal number, so it is constitutive of

what we mean by 'number', rather than being a consequence of the concept of number. The

NeoFregeans, thus, do not try to defend its analyticity in Fregean terms.[3] Hume's Principle clearly

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[3] Frege gives a definition of these notions: "The problem becomes, in fact, that of finding the proof of the proposition, and of following it up right back to the primitive truths. If, in carrying out this process, we come only on general logical laws and on definitions, then the truth is an analytic one, bearing in mind that we must take account also of all propositions upon which the admissibility of any of the definitions depends." (*Foundations* 4 §3)

involves more than logic alone, it is not a logical law itself and it is not possible to derive it from logical laws. Neither is HP an explicit definition of the numerical operator in logical terms, so it cannot provide a logical translation for every occurrence of a number expression. Wright and Hale argue that Frege's notion of analyticity is 'unduly restrictive' (12), for there are many examples of conceptual truths that are not considered analytic by Frege's definition, and, according to the NeoFregeans, ought to be seen as such. NeoFregeans, therefore, propose a broader notion, such that a statement is *determinative* of the meaning of the concept in question. That is, the statement in some way implicitly determines the meaning of the word for that concept. Thus:

> Provided that Hume's Principle, though not analytic in Frege's official sense or Kant's, can indeed function comparably as an implicit definition of the numerical operator, the NeoFregean may claim that it is analytic by virtue of being determinative of the concept it thereby serves to explain. (14)

According to the NeoFregeans, HP can be claimed to be knowable a priori, and therefore, unproblematically. This, they claim, allows them to conclude that numbers exist, and that they are objects.

The main Fregean insight about existence is that the syntactic structure of language in true contexts can give us clues about the ontological structure of the world; there is a parallel between syntax and reality when language works well. Frege observed that expressions used to refer to numbers are what he called proper names, that is, singular terms:

In the proposition 'the number 0 belongs to the concept F', 0 is only an element in the predicate (taking the concept F to be the real subject). For this reason I have avoided calling a number such as 0 or 1 or 2 a property of a concept. Precisely because it forms only an element in what is asserted, the individual numbers shows itself for what it is, a self-subsistent object. I have already drawn attention above to the fact that we speak of 'the number 1', where the definite article serves to class it as an object. (*Foundations* 68 §57)

Singular terms are expressions that, according to Frege, can refer only to objects. And since no one doubts the truth of arithmetic, he concluded that numbers must be the objects those singular term expressions stand for. Objects are, for the NeoFregean and Frege alike, what singular terms in their most basic use stand for, if they stand for anything at all. They actually stand for something if there is a true statement in which they are being used as singular terms.[4] Since there are many true arithmetical statements, the argument goes, where expressions of the type 'the number of Fs' are used, these expressions refer, and because they are singular term expressions, they refer to objects. Hence numbers are objects. The basic idea is, Wright tells us, 'that a reference is, as it were, imposed on a singular term by its occurrence in true contexts of an appropriate kind' ("Field and Fregean Platonism" in Hale and Wright 153).

This is how they set up the argument:

We start from two ideas. First: objects, as distinct from entities of other types (properties, relations or, more generally, functions of different types and levels), just

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[4] But for instance, the truth of 'Ghosts do not exist' would not be useful in proving the existence of ghosts. Wright replies to this thought (*Frege's Conception* 25-8) by arguing that the contexts are not properly true or content bearing.

are what (actual or possible) singular terms refer to. Second: no more is to be required, in order for there to be a strong prima-facie case that a class of apparent singular terms have a reference, than that they occur in true statements free of all epistemic, modal, quotational, and other forms of vocabulary standardly recognised to compromise straightforward referential function. For if certain expressions function as singular terms in various true extensional contexts, there can be no further question but that those expressions have reference, and, since they are singular terms, refer to objects. The underlying thought is that -from a semantic point of view- a singular term just is an expression whose function is to effect reference to an object, and that an extensional statement containing such terms cannot be true unless those terms successfully discharge their referential function. (Hale and Wright 8)

So, there is a link between language and ontology; the structure of language can be guide to what there is in the world. There are two steps in the argument that ought to be separated: the link between syntax and semantics, and between semantics and reality. That is, their first claim is that there is a direct relation between syntactical function and the semantic function of a singular term expression. The second step, from semantics to reality, is done via a true statement where the relevant singular term appears.

1.2.1. Syntax to Semantics

The first half of the argument to the existence of something, the step from syntax to semantics, implies that there is a connection between the formal structure of the language and the meaning of those expressions. They argue that there is a direct link between the syntax of a sentence and what makes the sentence true, such that we can tell what sort of entity will be the reference of certain

expressions just by knowing what syntactic role they have in a sentence. Thus, the NeoFregean requires that there be a way of recognizing all and only those singular terms that do refer to objects, i.e. they have to give a criterion for picking out the genuine singular terms, those whose syntactic role is a reflection of their semantic role. This criterion will have to be independent of the fact that genuine singular terms refer to objects: the criterion for recognizing which singular terms actually refer to objects cannot be their referring to objects.

Frege thought that language can be a guide to ontology. For Frege, it was clear that in most cases the syntactic structure of a sentence was a sign of the objects and concepts involved[5]. Frege presupposed that a proper name (a singular term in modern terminology) always refers to an object, for instance. The NeoFregeans do not want to make this an assumption of their theory, so they must argue for a way of recognizing those singular terms that do actually refer to an object. Bob Hale, in his paper "Singular terms" (Hale and Wright 31-71) attempts to give such criteria. Hale, as a Fregean, wants to find a way of recognizing singular terms in virtue of features of their use, that is, their behavior in complete sentences. The proposal is divided into two conditions that an expression has to satisfy if it is to be considered as a genuine singular term, and thus refer to an object. The first part of the test applies only to substantival expressions. Hale calls singular substantival expressions those expressions that can be substituted by a proper name (in the ordinary sense) without loss of grammaticality. It is worth noting that Hale does not want to assume that only substantival expressions can refer to objects:

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[5] Fregean concept, that is, ontologically robust, not psychological concept, but rather much like a property.

We may not simply assume, as we should then be doing, that this … quite superficial syntactic division coincides with the difference in semantic or functional role in which we are really interested … . On the contrary, there is in advance no evident absurdity in the suggestion that verb phrases, for example, might discharge that function. (35)

A substantival expression functions as a singular term in a sentential context if and only if it passes certain inferential tests, i.e., if given a statement using the expression in question it is possible to derive certain other statements from it.[6] These inferential tests have the aim of separating from within the class of substantival expressions in general, those that function as genuine singular terms from those that, even if they have the grammatical form of a singular term, do not. These are expressions that express generality, even though they can be substituted by a proper name, e.g. 'everything', 'something', 'a philosopher', etc. (33). This inferential test, though, fails to set aside, as non- genuine singular terms, the various kinds of non-substantival expressions (predicates and other incomplete expressions) which do not stand for objects. As a consequence of this, he adds a second condition for singular-termhood, which is based on the Aristotelian notion of a contrary, and the fact that any quality has a contrary, but primary substances do not. This, translated from Aristotelian jargon is the thought that for any given predicate there is always a contradictory predicate, that is, a predicate that applies to exactly those objects to which the original predicate fails to apply. But there is no parallel to this in the case of expressions standing for objects, that is, there is no object with exactly the opposite predicates applying to it, or as Hale puts it, "such that a statement incorporating

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[6] This is idea is taken by Hale from Dummett's *Frege: Philosophy of Language.*

the one is true if and only if the corresponding statement incorporating the other one is not true"(40).[7]

These are the two criteria together, in Hale's words (68):

(1) A substantival expression t functions as a singular term in a sentential context 'A(t)' iff

    (I)   the inference is valid from 'A(t)' to 'Something is such that A(it)'

    (II)   for some sentence 'B(t)', the inference is valid from 'A(t)', 'B(t)' to 'Something is such that A(it) and B(it)'

    (III)   for some sentences 'B(t)', the inference is valid from 'It is true of t that A(it) or B(it)' to the disjunction 'A(t) or B(t)'.[8]

(2) Having, by these means, excluded from the category of singular terms all those substantival expressions that are not the genuine article, but are capable of occupying

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[7] Modern mereology disagrees: the complement or negate of an object *a* is the fusion of everything that does not share a part with that object, that is, that is disjoint with that object. Basically, the negate of *a* is the object that is composed of everything not object *a*.

[8] Here, in view of some further counterexamples, Hale adds some further specification for the inferential tests to be satisfactory and avoid unwanted counterexamples (68):

    (i)   the conclusions of the inferences displayed in (I) and (II) are neither of them such that a point might be reached where a well-formed request for further specification may be rejected as not requiring an answer
    (ii)   the displayed occurrence of t in 'B(t)' of condition (II) itself meets condition (III)
    (iii)   the displayed occurrences of 'A(ξ)' and 'B(ξ)' in (II) and (III) are essential (…)
    (iv)   'B(t)' neither entails nor is entailed by 'A(t)'

An essential occurrence is explained by Hale (67):

A(ξ) occurs essentially in Φ only if there is no sentence Φ* which is logically equivalent to Φ and which is further such that it contains no expression B(ξ) that is synonymous with some expression C(ξ) occurring in Φ, of which A(ξ) forms a part.

sentential positions where genuine singular terms can stand, we then apply the following further necessary condition:

A(t) functions as a singular term in A(t) → ¬Σα Πβ ((α,β) ↔ ¬(t,β))

This last clause should be understood thus: Where 'Σα' and 'Πβ' are used as substitutional quantifiers, the substitution class for α comprising all and only those expressions that can replace t in C(t) preserving grammaticality, and the substitution class of β, all and only the expressions that can replace C( ) in C(t). This way, any combination of elements of each of the two classes will be a well-formed sentence. Hale also adds on yet another subcondition to this second clause:

…the β substitution class comprises all expressions grammatically congruent with 'A( )', except any that fail our stage (1) tests.

That is, the possible opposites to 't' must change the truth value of all contexts β that have the same grammatical form as 'A( )', and satisfy condition (1).

Now, if successful, these criteria allow the NeoFregeans to know what kind of entity would be referred to were the statement to be true, only by looking at its syntactic structure. That is, once a singular term expression comes out as genuine under their syntactic criteria, then there is no question as to its referring to an object, assuming that it stands in a true context. This is quite a claim, for it seems to allow for ontological enquiry to be reduced to syntactic analysis of true statements, i.e. once the syntax of a sentence is clear, there is no further room for ontological enquiries into the nature of the entities that the sentence refers to.

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But, in any case, the success of these multi-clause, complex criteria of genuine singular-termhood is doubtful. Each of the many subconditions is introduced in order to avoid some of the counterexamples, which gives the test an ad hoc air that makes it quite unattractive. Williamson agrees with this, and in his review of *Abstract Objects* (Hale) the analysis of singular termhood is described as of the type "to which many of us react with the thought 'Only lack of ingenuity will prevent me from finding an intuitive counter-example to this'" ("Review of *Abstract Objects*" 487).

Furthermore, the second clause appears to require that we know what the reference of the expression in question is in order to decide whether the expression satisfies the condition or not, de facto requiring that we know if the terms is a genuine singular term in order to apply the very test that is meant to tell us that. The clause, in a nutshell, requires that we evaluate the truth-value of a substitutional quantifier claim: we must be able to compare the possible truth values of all statements where 't' might appear with the outcome of substituting 't' by any 'α'. And we must decide whether there will be such an opposite for 't'. But the suspicion is that there is no way of determining whether there is an opposite to 't' other than by knowing what 't' stands for and realizing that if it is an object, because of the nature of objecthood, it cannot have such an opposite. For instance, suppose there is an expression whose reference is completely unknown to us, say 'xyz'. This expression either will be a singular term that has passed the inferential tests, or a non-substantival expression. We cannot assume that an incomplete expression, just by being incomplete, cannot effect reference to an object. So pure grammar will not be sufficient in order to decide whether 'xyz' passes the second test. We will need to consider statements where it appears, and decide whether: if 'A(xyz)' is true, there is a term α that will make 'A(α)' false, for any A( ). How can we determine that without knowing what 'A(xyz)' means? Again, if we do not know what 'xyz'

stands for, the only information that we have is its syntactic structure. Hale should explain how we are to decide whether 'xyz' is a genuine singular term or not, without presupposing a reference for 'xyz', and therefore knowing beforehand whether 'xyz' stands for an object or not. He, in fact, acknowledges the semantic aspect of the second stage of the test:

> The feature of singular terms to which it appeals, in contrast with any purely grammatical distinguishing mark, bears a discernible relation to their semantic function. A given object's possession, or lack, of a certain property has, in general, no tendency to restrict the possibilities for possession, or lack, of that property by other objects. Given that the characteristic function of a singular term is to convey identifying reference to a particular object, the absence of 'contradictory' singular terms may be seen as the reflection, at the level of language, of this fact. (40)

The cases for which we do not have previous intuitions are those for which the criteria will be informative, but those are the ones for which we won't be able to successfully apply the test. Therefore, the support for the link between syntax and semantics is lacking.

1.2.2. Semantics to Existence

Now, take the second step of the argument. NeoFregeans claim that if a true sentence contains a genuine singular term, where a genuine singular term is such that its function is to effect reference to an object, then the object to which that singular term refers exists. NeoFregeans put forward HP as the relevant truth about numbers. It is worth noting that even if the first part of the NeoFregean arguments failed to convince their opponents, i.e. if they didn't succeed in giving sufficient and necessary conditions for genuine singular termhood, the NeoFregean point about the existence of

numbers would hold, if they argued for the genuineness of the singular terms involved in HP. That is, of course, if HP is true. Thus, it is the main point of the NeoFregean project that HP is true. As mentioned earlier, there are two versions of NeoFregeanism with respect to this issue. Initially, in Frege's Conception of Numbers as Objects, Wright thought that HP was analytic of the concept of number in the sense that HP provided an analysis of our ordinary pre-theoretical understanding of what it is to be a number, by re-explaining the content of number identities into one-one correlations. This view of HP had it that we know HP a priori by reflecting on our concept of number. This version was eventually substituted by the thought that the truth of HP is stipulated: HP is an implicit definition of number whose truth is stipulated.[9] The truth of HP is stipulated, and hence it is a priori. Once the NeoFregeans consider its truth to be established, they proceed to point out that the linguistic practice that is determined for the expressions involved in HP by its stipulation corresponds to the ordinary arithmetical language. Hence, they conclude that HP is about the same objects as ordinary arithmetical statements and that they have argued for the existence of numbers. But here we are focusing on the general strategy for arguing for the existence of something and not the particulars of the argument for platonism in the philosophy of mathematics.

The NeoFregean criterion for the existence of x, the link between language and the world, can be summarized as follows:

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[9] One criticism that the NeoFregeans faced was that their notion of implicit definition is not the usual one, thus giving themselves certain liberties with it that are not open for the orthodox notion of implicit definition. One of the main issues with this is that HP does not have the same ontological commitments on the left-hand side than on the right-hand side, so claiming that the two sides are just the saying the same in different ways (carving up the content in a different way) is suspicious, especially since it is precisely the ontological commitments of the left-hand side that are a stake. Straightforward contextual definitions do not carry surprise ontological commitments like this. See "Implicit Definition and the A Priori" (Hale and Wright 117-150).

NF: If x is the referent of a genuine singular term used in a true statement, then x exists.

A lot of the work, of course, is being done by the notion of genuine singular term, which has been dealt with in the previous section. Here, let us assume for the sake of further argument, that we do have a way of determining which singular terms are genuine. Does their appearance in a true context assure us of the existence of their referents? The counterexample that seems most pressing is talk of non-existent entities. For we talk about non-existent objects and say true things about them without intending to imply their existence. If I say Indiana Jones is a fictional character, it does not follow that Indiana Jones exists. However, given the definition of genuine singular term provided by Hale and reviewed in the previous section, 'Indiana Jones' may fail the test of genuineness. Take the first subclause of the first clause:

1.I.: The inference is valid from 'A(t)' to 'Something is such that A(it)'.

Arguably, then, the context '…is a fictional object' is not a context in which this inference is valid. I think however, that this presents us with a dilemma that comes to show that the project is faulty, for the same reason that we criticized the criteria for singular termhood in the previous section. In order to argue that the inference in question is not valid we must assume that 'Something is such that A(it)' involves an existential quantifier, that is a particular quantifier with existential import. But the criterion for genuine singular-termhood is meant to be purely syntactical, which prompts the question: assuming that the quantifier is existential, how are we to know whether the inference is valid without knowing beforehand what 't' refers to and what the context 'A(…)' means? This is, again, the same objection that was presented at the end of the last section. But are we to build into our syntax that the quantifier carries existential force? It seems that if the criterion is to be purely

syntactical there should be no presumption of existence, particularly, since natural language fails to have such a strict existential quantifier. But then, if we remain neutral on the quantifier, the inference does indeed follow: Something (Indiana Jones, a nonexistent entity) is indeed such that A(it). And in that case, Indiana Jones is a fictional entity is a true context in which 'Indiana Jones' is a genuine singular term, which would imply according to the criterion for existence, that Indiana jones exists. But, sadly, he does not exist.

In conclusion, I think that the NeoFregean attempt to bridge the gap between language and the world in purely syntactical terms is brave but hopeless. Language, even just true statements, cannot be the only guide to what exists, the world itself must come in. We use language to talk about nonexistents, we attempt to talk about things that we think exist, but we're sometimes wrong about, and ultimately, the only way to determine if a term is a genuine singular term is to bring the world in. It is not enough to assume the relevant statements are true, because we require further knowledge about how things are and what we want to commit ourselves to in order to draw metaphysical conclusions.

Next, I want to consider Quine's account of ontological commitment and existence. Quine has many more followers than the NeoFregeans, but the spirit of the NeoFregean and Quine is similar in important respects: they both think that there is a semantic component to the notion of existence (be it true statements, or our best scientific theories).

1.3. The Quinean Condition

The Quinean condition, C_2, is the condition that states that to exist is to be a value of a variable quantified over in our best theory about the world. This is a view that has become the orthodoxy for many, whether or not its advocates are really aware of the implications of the view. Here I first attempt a faithful rendering of Quine's views, before going on with the assessment of said views. I argue that Quine's position, understood as a metaphysical position, is insufficient for our purposes, and propose a refinement of his view, which in turn is argued to be necessary but not sufficient for existence.

Quine's understanding of existence is built upon a criterion for ontological commitment of a theory. For this criterion to apply to a discourse, Quine has the initial requirement that it be regimented into first-order logic, but let's just note that in passing. His idea is that a theory T will be committed to Ps if and only if 'There is an x such that Px' is a theorem of the theory.[10] In the traditional wording: t is a value of a bound variable, in this case t is a value of x such that '$\exists$x Px' comes out as true under this interpretation. Now, this is purely a guide to the ontological commitments of a theory and it is independent of the truth or appeal of the theory, it is just telling us, if we were to believe the theory, the things that we would have to be committed to accepting as existing. Thus, in "On what there is', he makes remarks like this:

> Now how are we to adjudicate among rival ontologies? Certainly the answer is not
> provided by the semantical formula "To be is to be the value of a variable"; this
> formula serves rather, conversely, in testing the conformity of a given remark or

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[10] See also Azzoni (*Deflating Existential Consequence* 50): "[W]e take commitment to be recognized by implications of the form ($\exists$x) Sx, where Sx is any formula with a variable x free. That is, if ($\exists$x) Sx is deducible from D', then D' commits its believers to Ss."

doctrine to a prior ontological standard. We look to bound variables in connection with ontology not in order to know what there is, but in order to know what a given remark or doctrine, ours or someone else's, says there is; and this much is quite properly a problem involving language. But what there is is another question. (15-6)

Quine insists here that his position is a realist one (what there is is another question). But sometimes it seems that Quine's position can be read also as a criterion of existence, depending on the passage. Quine may be seen as giving a criterion for existence, not just ontological commitment in statements like this:

To be is, purely and simply, to be the value of a variable. In terms of the categories of traditional grammar, this amounts roughly to saying that to be is to be in the range of reference of a pronoun. (13)

One way to understand these two points coherently is as follows. There is, on the one hand, the condition for ontological commitment, and that is applicable to any theory or discourse; but, on the other hand, we can take that guide of ontological commitment and apply it to the theories that we actually believe, and the outcome will be our ontological commitments, which are those things that we believe exist. Quine shortens that sometimes to "those things that exist", leaving out the "we believe". In this passage we can see Quine's explanation of this identification:

Our acceptance of an ontology is, I think, similar in principle to our acceptance of a scientific theory, say a system of physics: we adopt, at least insofar as we are

reasonable, the simplest conceptual scheme into which the disordered fragments of raw experience can be fitted and arranged. Our ontology is determined once we have fixed upon the over-all conceptual scheme which is to accommodate science in the broadest sense; and the considerations which determine a reasonable construction of any part of that conceptual scheme, for example, the biological or the physical part, are not different in kind from the considerations which determine a reasonable construction of the whole. (17)

According to Quine, therefore, choosing an ontology is the same as choosing a 'over-all conceptual scheme'. If we are to interpret Quine as giving us a way of figuring out our ontological commitments, then we ought to look at the best theory of the world for that is our guide for what exists. This theory is to be understood as science "in its broadest sense", a scientific refinement of ordinary knowledge, in the form of a regimented theory (in first-order logic). Another quotation along the same lines:

[I]t is within science itself, and not in some prior philosophy, that reality is to be identified and described. … [A]ll ascriptions of reality must come rather from within one's theory of the world; it is incoherent otherwise. ("Things and Their Place in Theories" *Theories and Things* 21)

I believe the thought is that since we are restricted to considering ontology from within science, figuring out the ontological commitments of our best science is equivalent to figuring out what we must believe exists, and therefore, and so long as one asserts as existing what one believes, that is what exists as far as we are concerned.

In order to figure out which are the ontological commitments in question, we look at the over-all picture that is painted by science. That is the best available choice at any point in time. The best theory available is clearly the best approximation to the truth that we have as of now, but science changes and what we think is true right now is very different to what people in, say, five hundred years will think. Thus, intuitively speaking, it would appear that the criterion for existence will need something stronger than whatever most comprehensive scientific theory is accepted at any point in time. Prima facie, then, the theory that is the best candidate to reflect reality in a faithful way would be an *ideally finished* theory, the best theory consistent with all (possible) observational data, this is the theory that could reasonably be a guide for existence. Or an even safer suggestion would be just to specify that the ontological commitments of a theory can be identified with what exists, so long as the theory is *true*.

But this is not Quine's view. Quine was a naturalist and he thought that we must look to science in order to answer all our questions about reality, we should not base our beliefs on pre-theoretical intuitions, nor think that there is a way of finding out about the world that is independent from science, understood broadly and as an improvement (not a departure) from ordinary knowledge. It is a consequence of this general methodology that anything we know is captured by our best scientific theory. According to Quine, the truth predicate is immanent to a theory, that is, truth is just relative to a theory, the theory that we believe, which is the best theory that is available at each time. Quine distinguishes immanent from transcendent linguistic predicates (*Philosophy of Logic* 19).[11] An immanent linguistic predicate is defined only for a particular language; a transcendent predicate is

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[11] See also (Harman).

defined for languages in general. So, his view about truth is such that it makes no sense to ask for the truth of a theory or a conceptual scheme from outside of the theory.

Whatever the best theory available (the one we take to be true) says is the case, is true in the theory, and we cannot coherently ask for more truth than that, but this is not just a relativist position, for according to Quine:

> Have we now so far lowered our sights as to settle for a relativistic doctrine of truth —rating the statements of each theory as true for that theory, and brooking no higher criticism? Not so. The saving consideration is that we continue to take seriously our own particular aggregate science, our own particular world-theory or loose total fabric of quasi-theories, whatever it may be. Unlike Descartes, we own and use our beliefs of the moment, even in the midst of philosophizing, until by what is vaguely called scientific method we change them here and there for the better. Within our own total evolving doctrine, we can judge truth as earnestly and absolutely as can be; subject to correction, but that goes without saying. (*Word and Object* 24-5)

Since our enquiries for truth are relative to a theory, and we must believe, absolutely, what the most satisfactory science tells us is the case at a time, ontological commitment can be equated to existence: belief in a theory implies belief in its ontological commitments and serious belief in t is accompanied by the assertion of the existence of t. So, in this naturalistic sense, there is nothing more to existence than what the theory says exists: there is no independent way of knowing anything about existence, so that's all existence is. In what follows, I argue that the Quinean criterion, for

existence as it stands, is not sufficient and it is only necessary when understood with certain modifications.

1.3.1. Against the Sufficiency of the Condition

There are three arguments for the insufficiency of the criterion as it stands, each taken up in the following subsections.

1.3.1.a. Quine

Quine himself, a few years after *Word and Object*, pointed to an argument against the sufficiency of this criterion: the so-called argument from the underdetermination of theory by evidence. In "On Empirically Equivalent Systems of the World" he acknowledges the following possibility:

> Suppose again two rival systems of the world, equally sustained by all experience, equally simple, and irreconcilable by reconstrual of predicates. Suppose further that we can appreciate their empirical equivalence. Must we still embrace one theory and oppose the other, in an irreducible existentialist act of irrational commitment? It seems an odd place for irrational commitment, and I think we can do better. It is the extreme situation where we would do well to settle for a frank dualism. Oscillation between rival theories is standard scientific procedure anyway, for it is thus that one explores and assesses alternative hypotheses. Where there is forever no basis for choosing, then, we may simply rest with systems and discourse freely in both, using distinctive signs to indicate which game we are playing. ("On Empirically Equivalent Systems of the World" 328)

The possibility that Quine is contemplating here, that of two equally simple systems, both of which are comprehensive in their accounting for all experience, may not be a very likely possibility. But in supposing this extreme situation to be the case, Quine is clarifying the notions of existence and truth that he has in mind throughout. Given that, for him, truth is immanent to a theory, there is no coherent talk of truth other that truth-in-a-theory, and by adopting a theory, we take it to be true. It is only because of this unorthodox position that he can recommend this "frank dualism". We can bounce from one theory to the other, taking each of them to be true in turn because truth has been equated to belief and in such a way that it does not even preclude juxtaposing incompatible beliefs. As Quine himself says, truth just becomes acceptance of whatever 'game we are playing', as we read in the quote above. In that same vein, I suggest, we may think of existence for Quine as existence-in-a-theory. For taking a theory to be true is enough for the existence of the ontological commitments related to that theory, so existence is as fickle as truth. Existence is also immanent, and thus, ontological commitment becomes existence in the Quinean system.

Quine's system can accommodate this situation, so I am not claiming that this objection undermines Quine's system. But it brings out the implications of Quine's position, and I think these implications stretch out Quine's notion of truth and they show its weaknesses. Truth for Quine is not what we normally take truth to be, even if he claims that it can be taken to be a realist position, as when he writes "The saving consideration is that we continue to take seriously our own particular aggregate science" (see above quotation). Here, a more robust notion of truth will be adopted, one where even if there may be two incompatible and yet equally satisfactory systems of the world (given theoretical criteria), the two cannot both be true. The world is how it is and that is one way, not two. We may not have the theoretical tools to pin it down completely; however, this inability does not imply a

dualism in reality, only, at most, in our beliefs. That is, assuming it is possible that there would be two incompatible but equally satisfactory total theories, and assuming that we take the world to be in one way and not two incompatible ways at the same time, an entity being the value of a bound variable in one of these theories cannot be sufficient for existence.

Whatever the notion of truth at play, here's a thought that lessens that strength of this argument against the sufficiency of Quine's criterion. It may be indeed possible that there be two inconsistent but empirically equivalent, completely equally satisfactory total theories, such that no extra amount of data could settle which of the two theories is preferable. But the important question is whether this is more than a formal possibility, by which I mean, a possibility that is at all relevant in any context, even philosophical ones. There is an analogous case that is much discussed and many times dismissed along similar lines. Why do many epistemologists not worry about the possibility that one may be a brain in a vat? For many reasons, but one important one is that the chances of that possibility ensuing, given the complexity and richness of our common-sense theory of the world-as-external, are arguably so low that it is reasonable to dismiss them, even when doing epistemology. So, we can count ourselves as knowing, fallibly, that there is an external world even if we do not have completely and absolute certainty that we do. It is epistemologically ok to discount possibilities as irrelevant if eliminating them would be requiring more than is reasonable out of a subject for her to have knowledge. Analogously, and if the possibility is truly that improbable, one can argue that even if it is possible that there may be an inconsistent but otherwise equally satisfactory total best theory, the chances of it are so low that it does not constitute a real counterexample for the sufficiency of the Quinean criterion. That said, there are other reasons why this criterion is suspicious as a stand-alone criterion for existence, which are considered in the following section.

1.3.1.b. Other Arguments: A Plausible Best Theory?

Even if we are reasonably allowed to ignore the possibility of two incompatible total theories of the world, there are other reasons to question the Quinean criterion. One set of issues arises from the notion of the total science. Quine takes the best available science as the science that we ought to take as a guide to existence, this the main prescription of his naturalism:

> [T]he naturalistic philosopher begins his reasoning within the inherited world theory as a going concern. He tentatively believes all of it, but believes also that some unidentified portions are wrong. He tries to improve, clarify, and understand the system from within. He is the busy sailor adrift on Neurath's boat. ("Five Milestones of Empiricism" 72 qtd. in *The Indispensability of Mathematics* 23).

This theory represents what things are like, but only to the best of our knowledge at a time. But, is this enough for a criterion for existence? It appears that not so, for science is revised and corrected and changed all along, so it is likely to change in the future. As Quine says, we believe that some parts are wrong, so how can we say that to exist is to be the value of a variable quantified over in such a science? The Quinean responds that since we have no other means of knowing anything about the world, this is what we ought to take as existing, even if with a pinch of salt, given the fallibility of science. That is, what we take to be true is the best we can do, until we find out otherwise. But, and this is connected to the argument in the previous section, given that truth is immanent to a theory, truth is truth-for-T, and thus, if the criterion for ontological commitment is applied to the theory that we take to be true, it is a criterion for existence only insofar as we also take existence to be necessarily intertwined with our belief in that theory.

Let's now try to make this stronger. Take truth to be more robust, as traditionally understood: what is true is independent on how we think of it; the fact that we believe something to be true does not make it true. Truth is objective. I will not argue for this notion of truth, but I will point to one advantage of using this robust truth instead of Quine's immanent truth: Quine's immanent truth is dangerously close to believing to be true. There is a striking tension between saying that our belief in whatever best theory we can is fallible and at the same time having us assert those beliefs as true, while maintaining that truth is not mere belief-in-truth.

So, can we have a Quinean criterion for existence (not just ontological commitment) if we take truth to be robust? In order to make the ontological commitments of a scientific theory be a good guide for existence, the theory, ultimately, would have to be true, in the traditional sense. One way to attempt to describe such a theory is to think about an idealized version of science as we know it. If we think of the best science as something more than just whatever is available, and it will be the theory most likely to be true. It will have to be a somewhat idealized science, a science completed to an ideal degree, and covering all possible observational data. Only an ultimate science, a total theory of the world, is stable enough to be a reflection of real existence, for what truly exists does not change when the current theory corrects a previous theory.

In order to attempt this modification of the Quinean dictum, we can revise the criteria that make a scientific theory more attractive than another theory, and consider what an idealization of these characteristics would be like. These criteria are thought to track the likelihood of a theory to be true, so if we think of a theory that satisfies them all to the greatest degree, that will be the theory that is most likely to be true, and therefore the one that should be a guide to existence. Firstly, a theory must be empirically adequate, that is, it must agree with all of observational data. So, the best science

possible will incorporate all possible empirical data. A theory must also be consistent with other accepted theories, which the best theory will be, since it is a total theory, which means it comprises all scientific knowledge. Given two theories, the theory with the most simple statement and ontological commitments is preferable to the less simple and/or parsimonious one, other things being equal. So, the best theory will have to be the most simple and the most parsimonious, other things being equal. It is also important to consider the explanatory power of the theory, so a theory should explain its predictions and do so with a minimum number of theoretical devices, and the best theory will do this to the greatest degree. Furthermore, the more fruitful a theory is, the better: if a theory can successfully predict novel entities and phenomena that makes it more appealing than otherwise. And lastly, we can compare theories according to their formal elegance; even if this is more contentious, some believe that there are certain aesthetic considerations at play in choosing theories. If so, the best theory will be elegant to the greatest degree, other things being equal.[12]

This is a list of ways in which the idealized theory excels and is better than the rest of theories available. But this leaves very many questions unanswered, for instance, is this theory possible? In principle, it is such that we can never have access to it, for there will forever be more science to come to potentially correct the previous theory. But, even so, does it make sense to think of all observational data possible? What is all possible observation data? It seems like a worrisome notion that verges on demanding that the theory incorporates as much data as there are ways of perceiving all things in the world, which is an unreasonably high bar to reach. Furthermore, can a theory be clearly the most appealing in all respects so that the choice is uncontroversial? There is not a straightforward way to evaluate the attractiveness of a theory, for all the features that we mentioned

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[12] See Colyvan's *The Indispensability of Mathematics* (78-9) for a list of these features of appealing theories.

in the previous passage play a role, in no specific order. The aim is some sort of equilibrium and it is hardly obvious that the choice will be clear. In conclusion, I think the notion of the best theory in this idealized sense is hard to wrap our heads around, it is at best confusing, and at worst, vague and confused. But without it, we are stuck with the best available theory and that cannot be a guide to real existence (not immanent existence), given its fallibility and unfinished character. So, Quine's criterion of ontological commitment should not be taken to be a criterion for existence, not if we take existence to be robust and not dependent on the theory.

Now, a final alternative modification to this criterion that solves these issues is to have the condition for existence be the following:

> x exists if and only if it is a value of a bound variable in the true total theory of the world.

This is not really very Quinean, but it circumvents the epistemological confusions of the Quinean proposal. No theory of truth will be provided here, but the thought is about the intuitive idea of truth as not depending at all on our beliefs, the state of science or any epistemological notion. Truth is about some sort of match between any language and reality, and it is transcendent to any particular language, as opposed to Quine's notion. I think this is the best that can be extracted from the Quinean idea about ontological commitment, and it circumvents the two arguments against the sufficiency of the condition given up to here. Even still, this non-Quinean modification of the Quinean dictum is not sufficient for existence (even if it is argued in the final section that it is, however, necessary). In order to see why, see the argument in the next sub-section, which cuts across all possible modifications considered until now.

1.3.1.c. Other arguments: Indispensability

The final group of arguments against the sufficiency of the Quinean criterion takes up a different issue. The question now is: even if we have some way to think of a complete best theory, would the quantificational commitments of this theory be a sufficient guide for existence? For this criterion to be sufficient it would mean that given the complete theory of the world, only things that exists would be part of the commitments of the theory. But some have indeed argued that the Quinean condition is not sufficient because, even in true contexts, we quantify over things that we need not be committed to. That is, even if we modify Quine and stipulate that we are focusing on a true and complete theory of the world, the condition for existence fails to be sufficient.

The Quinean condition for the existence of something is sometimes strengthened slightly and put in terms of indispensability. We are committed to the existence of those entities reference to which is indispensable to the theory. This is still a naturalist position, and in that sense, those things that our best theory is committed to, are those things that exist, and there is nothing else to the issue. But, this refinement makes room for the fallibility of science and it frees us from commitment to all apparent ontological commitments. We need only accept those that are indispensable. The thought is that those things that the theory cannot do without are those that are most likely to really exist. Reference to indispensable entities is going to have to occur in the complete science, so long as they are, indeed, indispensable.[13]

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[13] See, for instance, Quine's *Word and Object*, and Putnam's *Philosophy of Logic*.

Another way to motivate the focus on indispensability can be found in Quine's push for intellectual honesty. We must accept as existing those things that we cannot but use to describe the world. (This, again, is focusing on ontological commitment, on what we have to believe exists. It is not focusing on the criterion as a criterion for existence, but the issues that follow arise also if we restrict ourselves to true theories). There are, however, some serious tensions within the Quinean system when it comes to these issues. Some philosophers today criticize its viability. They argue that the Quinean criterion is not sufficient because we quantify over things that we need not be committed to, even if indispensable. Quine himself had a double-standards doctrine for certain uses of language that would apparently commit us to things he did not think could exist. Thus, talking about references to intentional attitudes, which he famously thinks are not to be taken seriously, he writes:

> Not that I would forswear daily use of intentional idioms, or maintain that they are practically dispensable. But they call, I think, for bifurcation in canonical notation. Which turning to take depends on which of the various purposes of a canonical notation happens to be motivating us at the time. (*Word and Object* 221)

If what we want is to be "limning at the true and ultimate structure of reality", he goes on, no reference to intentional attitudes should be allowed… even if, in order to express certain things, we are obliged to use them, in particular, in order to "dissolve verbal perplexities and facilitate logical deduction". Or here, again:

> What is involved here is simply a grading of austerity. I can object to using a certain dubious term at crucial points in a theory….but I can still use and condone the term

in more causal or heuristic connections, where less profundity of theoretical explanation is professed. (210)

So, every day speech indulges in talk of propositional attitudes, modality talk, or talk of meanings, none of which are to be taken seriously, according to Quine. Even if this is not to say that the best total theory will have these problems, it is unlikely that Quine would have wanted to claim that ordinary speech is straight up false. So, he appears to be leaving open the possibility that a discourse be committed in appearance to certain entities, which don't exist, and the discourse not be straight-up false. And note that this is not constrained by the possibility of a paraphrase:

> I would [not] undertake to limit my use of the words 'attribute' and 'relation' to contexts that are excused by the possibility of …paraphrase...consider how I have persisted in my vernacular use of 'meaning,' 'idea,' and the like, long after casting doubt on their supposed objects. True, the use of a term can sometimes be reconciled with rejection of its objects; but I go on using the terms without even sketching any such reconciliation. (210)

Just like Quine thought that we may have to quantify over propositional attitudes but are not committed to their existence, some have argued that other entities for which the Quinean argument has been used need not exist just because reference to them is indispensable. The most common example of this kind of position is a reply to the Quinean argument for the existence of mathematical entities. The argument goes like this:

1. If our best total theory of the world contains bound variables whose values are some sort of entity, then we are committed to those entities existing.

2. Whatever entities we are committed to in our best total theory exist. (This is C_2)

3. The use of mathematics in our best total theory is indispensable.

4. The mathematics used in our best total theory ranges over mathematical entities.

5. Our best total theory is true.

Therefore, mathematical entities exist.

This argument depends on the sufficiency of the criterion for existence, which is basically what premise 2 states. It is because it is sufficient for something to be the value of a variable in our best theory for it to exist, that indispensability in our best total is evidence that mathematical entities exist. If it were possible that the best theory were not true, then the criterion fails, this is the possibility entertained in the previous paragraph, and the reason to take the best theory to be an idealized, completed theory. If it were possible, on the other hand, that the truth of the theory does not commit us to the existence of mathematical entities, then, the criterion is not sufficient either.

Philosophers like Balaguer (*Platonism and Anti-Platonism*) and Yablo ("Go Figure" and "The Myth of the Seven") and Azzouni (*Deflating Existential Consequence*) argue with more or less success that there are ways around ontological commitment, even in cases of indispensable reference, and even if we assume the contexts are true. I will not go into the details of the arguments here, as they will be taken up again in Chapter 5, when the focus will be fully on the existential status of mathematical entities. But their arguments have a common core. Just as with propositional attitudes, sometimes we have independent reasons against the existence of something, be they general considerations about the fundamental nature of reality, or deep qualms about how the entities can be analyzed in a

non-mysterious way. In the case at hand, these philosophers think that numbers are likely not to exist, for they are abstract, non-causally efficacious entities that should be considered suspicious, if not impossible. Each then has to give an account of how it is that reference to these entities makes its way into our most developed sciences. The thought behind these positions is that mathematics is a very useful tool, a tool that is indeed necessary for us to be able to state truths about the world, which is nonetheless purely physical. We require mathematics, just as sometimes we require metaphors to express certain things, and just like with metaphors, we make use of the expressions because of their expressive power but we do not thereby mean to be taken literally. Therefore, I conclude, the Quinean argument for the sufficiency of his criterion for existence is not sound. And it is Quine himself who opens the door to undermining the sufficiency of his criterion.

1.3.2. The Necessity of the Condition, Qualified:

For the condition to be necessary, it would have to be the case that for all existing entities, a complete system of the world would have bound variables whose values are those entities. There would be no entities that exist that are not the value of some variable quantified over in the canonical expression of our best, completed science. Let me first spell out what this means for Quine, proceed by considering a criticism and conclude the section with a compromise position-- Quinean in spirit, but an attempt to avoid the most radical aspects of the original view.

From within the Quinean system, this position is very much intertwined with his views about truth and his naturalism, as has already been repeatedly noted. Remember that for Quine, the truth of our best theory is presupposed—from a naturalistic point of view, we have no theory-independent way of thinking of truth, because truth is immanent to the theory. There is no extra-scientific way of thinking about the world, so nothing exists (or rather, we cannot coherently think of anything else

existing) outside of what the best theory available tell us. This is a position that is motivated by Quine's epistemological constraints, and his disdain for purely philosophical enquiries, that is, his naturalism. Now, can Quine say in any sense that his condition for existence is at all necessary, when he himself warns us of the fallibility of the guide he proposes? I think not, and so, Quine's original proposal never was thought as a necessary condition for existence in a robust sense.

Consider here, however, whether we can separate the condition from its epistemological packaging and make it a robust metaphysical condition for existence, as many pretend it is. Suppose then, that truth is objective, and separate from belief-of-truth. Can we come up with a theory such that all existing things are part of its ontological commitments? This, as it stands, paints a pretty arrogant picture of human capabilities, assuming some sort of realism: why should we think that we are capable, in some sense, of knowing about all existing entities? Why should there not be some entities that escape our awareness? At first blush, then, this is problematic: if we maintain that existence is different from ontological commitment, just as truth is different from belief-of-truth, there will forever be a gap to bridge between theory and reality. However much we idealize the best total theory, ontological commitment is not existence, so there may be existing things not quantified over and things that are quantified over that do not exist.

The main thought against the necessity of the Quinean condition is reminiscent of the problems at the core of the NeoFregean condition for existence as pointed out in the previous section. That is, they both attempt to reach conclusions about existence in an objective, robust sense, from features of best theories (for the Quinean) or true contexts (for the NeoFregean), which are descriptions of reality, not reality itself. The weak point of this kind of position is, as we just rehearsed, the difficulty of specifying in a non-trivial way the conditions on the language or theory such that it will indeed

reflect reality and only reality. I concluded in the last section that the NeoFregeans' strategy is deeply flawed. In the case of the Quinean position, his insistence that we believe the best available total account of the world that is provided by science, ties his criterion to a time in history and given the fallibility and incompleteness of science at any point, it cannot be a reasonable requirement for an entity to exist that it be part of the ontological commitments of such a theory. To put the same point in more general terms: the crux of the issue is whether we should accept the possibility of unknowable things or not. That is, is it possible, or at all reasonable, to think that there are entities that exist and we cannot ever know about? The defender of the Quinean criterion thinks is it not possible, or at least that it is not a salient possibility. In the next and final section, I propose a modification of this condition that does in fact make sense to think as necessary for existence, even if not sufficient.

1.4. The Present Suggestion: The Linguistic Condition

In this dissertation I argue that there are three conditions for existence all of which are necessary, none of which are sufficient. One of these conditions is indeed a version of the Quinean criterion. I claim that it is not sufficient, but it is necessary for an entity, t, to exist to satisfy the following:

> LC: t is part of the quantificational domain of a true and complete scientific description of the world.

This aspect of existence, the linguistic condition (LC) is different from the classic Quinean criterion in a couple of ways. Firstly, it does not specify how the ontological commitments of a theory are

determined: the criterion remains neutral about ontological commitment and requires only membership in the domain of quantification. I want to leave room for quantification over nonexistent entities, and therefore, quantification of the respective variables is not equivalent to ontological commitment. We can differentiate, therefore, between ontological or existential commitments and what could be called theoretical commitments, which are those entities that the theory requires as values of their bound variables. Being a theoretical commitment leaves it open as to whether we must take that entity as existing or not- only the theory takes it as existing. So the linguistic condition for existence can be summarized:

LC: t is a theoretical commitment of a true and complete scientific description of the world.

Secondly, there is an explicit reference to the truth of the relevant scientific theory, eliminating the need for the dubious notion of an idealized total science. This is still somewhat problematic, for we may never be in a position judge the truth of certain parts of our theory. Now, though, even if we will never have total access to this theory, we can think about what it would be like to have it and we can speculate about the aspects of our current scientific theories that will most likely be maintained in a true description of the world. So, I will leave it at that: thinking about the true scientific description of the world is an exercise in speculation.

Why is this science still useful, if we will never have total access to it? I think that thinking about it, even if only at a speculative level, is insightful because of the relationship between science and reality. Scientific research is such that it is the most likely to track reality, so it is one of the best tools we have to figure out what exists and what does not. This is, of course, a kind of naturalism, but not as

strict as Quine's, for here we recommend looking at science, but not science alone. Thinking about science and about which of our scientific theories is most likely to stand the test of time, must be part of the process of ontological enquiry. But it is acceptable that our theory of existence incorporates the fact that we may not ever know about everything that exists, it should in fact be taken as an advantage of the account.

It is also important to realize that the complete scientific description of reality is to be understood broadly, including common sense theories, like our informal theory of macro-physical entities; we also accept in this description sciences other than physics, e.g. economics, psychology, semantics, etc.[14] We want to capture the richness of a full description of reality and since the condition is not taken to be sufficient, we can be lenient. Furthermore, because of the insufficiency of the condition, we can also leave it open as to whether there may be more than one such description of reality, even if they are not consistent with each other in terms of their theoretical commitments; there can be more than one truthful way to fully describe reality, given the description alone does not suffice to settle whether some entities exist or not.

This condition for existence has epistemological tinges, as it is a modified statement of the naturalist position, which is an epistemological recommendation. But it does not make the whole concept of existence epistemological, because we are strengthening the Quinean idea by requiring the actual truth of the theory for it to play a role in existence. So other, more general, philosophical considerations also have a role to play in our concept of existence, not just science.

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[14] Even though I assume that the application of each of the conditions for existence is not vague or indeterminate, it is possible and compatible with the theory that the application of some of the conditions is vague. For instance, if one were to think that there might be a borderline case of a scientific theory, a theory that is not quite a fully developed science, it is arguable that it would create vagueness in the application of this first condition for existence.

The arguments for the necessity and insufficiency of this condition for existence have already been rehearsed in the discussion of the purely Quinean criterion. But let me revisit them in order to argue for the insufficiency and the necessity of the linguistic aspect of existence as just presented. First of all, being a theoretical commitment of a true completed theory is not a sufficient condition for the existence of something because even in such a scientific theory we may have to make reference to entities that, although the theory commits us to them, they do not really exist. Fictionalist positions in the philosophy of mathematics argue precisely this: maybe mathematics is indispensable for us to give a satisfactory scientific description of the world, but even still, we can think of math as a useful fiction and nothing else. Furthermore, if we successfully argue that the other two aspects of existence are necessary for something to exist, that will constitute an argument against the sufficiency of this first criterion.

Now, LC is necessary for existence. As remarked above, denying its necessity is the same as accepting the possibility of unknowable entities. Some entity may be unreachable to us either physically or conceptually. We could argue that the likelihood of an unknowable entity is something to be dismissed. If something is physically unreachable, it must be a causal island, some entity that is not connected to anything else, for if it is part of a casual chain, we will have the means to attain knowledge of it, especially if we suppose some sort of complete science. The claim therefore is that these causal islands are barely possible. It is logically possible that some entity exists such that it is disconnected in principle from us, just as it is logically possible for me to be a brain in a vat, or for

my life to have started one second ago. Arguably, this is not something we should be too worried about.[15]

This reply may seem unsatisfactory: can it be so easy to dismiss the possibility of unreachable entities? And what about conceptual islands, that is, entities that lie outside of our cone of light, outside of the things that we can hope to grasp? Thinking that there is nothing that we cannot know about paints a very optimistic picture of our abilities: why think that out understanding and perceptual abilities are limitless, or that their boundaries are broad enough to capture the entirety of reality? There may well be unknowable truths, which was precisely the whole reason behind a more robust notion of truth than Quine's. Surely, the realist goes on, even if our concept of existence could not apply to something, it is possible for that ineffable entity to exist.

One may insist, however, that claiming that an entity is conceptually impossible for us to grasp is to claim that our conceptual abilities are insufficient for understanding reality. This may seem worrisome as a possibility. Realize that the project here is to give an analysis of the concept of existence: I am giving a theory of the best concept of existence. But the concept will be ultimately a concept that *we* use, it is our concept. So if something truly falls out of our conceptual scheme, it will not exist, in the sense that our concept of existence will not apply to it. Again, by the very description of the counterexample to the necessity of the criterion, we know that the supposed existing entity cannot exist, for our concept of existence does not apply to it. It is in a sense impossible for us to claim that something falls outside the conceptual limitations of our intellect—

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[15] Here it becomes clear that the necessity and possibility that we are considering are to be taken as stronger than logical possibility, for it is not enough that something is just barely logically possible. We may call the interesting modalities metaphysical.

by saying it we are conceptualizing about it. This need not be taken as an idealist position, but rather, as an interpretation of what it means for something to fall outside our conceptual cone of light.

But instead of becoming tangled in the discussion over the role of the conceptual framework in the nature of reality, the realist can give as an alternative the following thought. Even if there could exist certain entities that we could not understand or say much about, the true and complete scientific description that is relevant in the condition for existence would be such that it would say something about every entity: We can say certain things about these incomprehensible entities, even if it is just that we don't know much about them. The realist is very much aware of the limitations of our position and the extreme complexity of the universe, therefore the relevant scientific description of the world would have to acknowledge those limitations. The theory, in this case, must include a disclaimer: as far as we can get our head around, the world is thus and so. Furthermore, there are things that we can say about everything in the universe, whether something is within our grasp (causal or conceptual): the laws of nature hold for those entities, they are part of the universe, etc. If this is conceded, one could maintain that the true and complete scientific description of the world would have every existent entity in their domain of quantification, without resorting to any anti-realist concessions and without thereby assuming we know much about all those entities outside the limits of our abilities.

Note that, given that the condition explicitly requires that the description be true and complete, the cases that would possibly fall out of the description would be special cases- cases such that even if the description is thorough, they are outside of it. This issue brings out the tension in the condition posed by the requirement that the theory be *complete* (a total theory, Quine would say). This cannot mean that the description does not leave out any entities- for that would be question-begging over

the necessity of the condition. So, 'complete' must mean complete to the extent that we can make it complete. Claiming that, nonetheless, no existing entity will in fact be left out, while maintaining a realist position, requires a delicate *tour de force*. I have put forward the thought that the complete and true theory will say certain things about all entities in the universe—there will be some (maybe indirect) reference to everything.

Admittedly, however, the rabid realist can always come back and insist that there may be other, unimaginable, inexpressible kinds of entities that will always be left out, no matter how much the complete theory is developed. Begrudgingly, we can do one of two things. One is to limit the necessity of this first condition for existence to all those entities that are not inherently unreachable for us. This is less dramatic than it may appear at first, for anything that we actually worry about, and all the entities that we can imagine exist or not exist are still subject to this condition—only those things that we cannot think about are left out. The linguistic condition for existence is necessary for the existence of anything … we can think of. So, the first condition could be restricted. On the other hand, we can bite the bullet and give a somewhat idealist reply: no entities exist that are in principle outside of our comprehension. This is an inexpressible thought- we can only use our concept of existence and by hypothesis, this concept cannot apply to those entities. So, it is not true that an entity could exist and be beyond the limits of our conceptual grasp. In what follows, I will maintain the realist spirit and insist on the immense reach of the necessity of the linguistic aspect of existence. But I hereby acknowledge the small caveat—the restriction to those things we can indeed talk about.

This concludes the analysis of the first condition of the concept of existence, the scientific aspect of existence, which must be satisfied by anything that is to truly exist, even if certain things that do not

exist may satisfy it, too. The following chapter deals with another aspect of existence, equally necessary for something to exist, and that is the spatiotemporal requirement.

Chapter 2: The Spatiotemporality Condition

Stranger*: I suggest that everything which possesses any power of any kind, either to produce a change in anything of any nature or to be affected even in the least degree by the slightest cause, though it be only on one occasion, has real existence. For I set up as a definition which defines being, that it is nothing else but power.*

Plato, *The Sophist* (247c-248a)

In this chapter I take up two closely related conditions for existence: anything that exists is spatiotemporal and anything that exists is causally efficacious. I argue that, in order to sharpen our concept of existence, we are better off focusing on the former condition, which is indeed necessary for determinate existence, but not sufficient for it. That is, the spatiotemporal and causal conditions should be combined into the spatiotemporality condition alone: If x exists, then it is spatiotemporal, that is, it has spatiotemporal properties. Something is spatiotemporal if it is something that is in

space-time (which is not the same as saying that something exists, for we are not saying that being spatiotemporal implies existence- it is necessary for existence but not sufficient for it, as is argued later on in this chapter). The chapter is divided into three sections. Firstly, I argue that the causal efficacy condition can be subdued under the spatiotemporal condition. Once we can focus on the spatiotemporal aspect of existence, it is proposed as a necessary condition for existence. Claiming that it is necessary is the same as saying that nothing that is not spatiotemporal exists. Thus, I defend this claim by arguing for nominalism (the view that it is not true that abstract entities exist): the best argument for this is a version of Ockham's Razor. The third and final step in the chapter is to argue that this condition is not sufficient for determinate existence. There are other necessary conditions that need to be fulfilled for it to be true that something exists.

2.1. Causal efficacy v. spatiotemporality

In this section I argue that causal efficacy can be dropped for talk of spatiotemporality alone. For: 1. Everything that is causally efficacious is spatiotemporal; 2. Everything that is spatiotemporal is causally efficacious; and 3. For methodological reasons, spatiotemporality is a preferable notion to adopt than causal efficacy. I will take each of these three claims in turn.

Firstly, though, let's clarify the basic notions:

> Something is spatiotemporal if and only if it is in space and/or time.

There may be temporal entities that are not spatial, but any spatial entity is also temporal.[16] Thus, a physical object is spatiotemporal, but so is a heartbeat, and a thought (if a thought is nothing more that a brain state, then it is spatial and temporal). I restrict the definition of spatiotemporality to being in *our* space and time, that is, the actual space and time that we inhabit and that we take seriously.[17] Abstract entities are not spatiotemporal in this sense, they do not occur in time, and certainly they are not spatial under the orthodox understanding of abstracta. Fictional entities are not spatiotemporal either; say for instance, Indiana Jones, even though he is described as having spatiotemporal properties, like holding a bullwhip, or wearing a leather hat, it is not true that he does have these properties. It is only true in the story, or true in some other possible world, that he has them. Here, in the actual world, he is just a fictional entity, alas, so he is not to have spatiotemporal properties. What about possible entities? Take for instance, the possible man at the doorway, he is not spatiotemporal either, for he is not located at the doorway, he is nowhere. If he were to be actual, then he would become spatiotemporal. But as a possible object, he is not spatiotemporal. Other possible worlds are only possibly spatiotemporal- they are not spatiotemporal with respect to the actual world, just as possible worlds.

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[16] Here I hope to talk of space and time in a scientifically neutral way. I don't mean to contradict science, I would like to make assertions about space and time such that they can be said to be true even if physics is so much more specific and sophisticated. Without going as far as to say that my claims about space and time are necessary of space and time, I would like to think that they are encapsulating features of space and time that can be accepted independently of the theory of special relativity, or whatever theory comes next.

[17] But see Newton's "De Graviatione" (136): "4. Space is a disposition of being *qua* being. No being exists or can exist which is not related to space in some way. God is everywhere, created minds are somewhere, and body is in the space that it occupies; and whatever is neither everywhere nor anywhere does not exist. And hence it follows that space is an effect arising from the first existence of being, because when any being is postulated, space is postulated. And the same may be asserted of duration …" This alternative spatiotemporal condition for existence only required that something exists is it is *related* to space and time in some way. This is broader, and it would allow us to argue, for instance, that God is spatiotemporal in the relevant sense for existence.

The notion of causal efficacy is much more muddled than this. I start by considering the most natural notion of causal efficacy. Something is causally efficacious if it has causal powers, that is, the ability to participate in causal chains, to enter into causal relations with other entities.[18] Prima facie, therefore, something would be causally efficacious if it is a main player in a cause-effect relation; so an entity is causally efficacious if it is the kind of thing that can be either a cause or an effect (even if it may be causally efficacious otherwise, too). In order to clarify this (before we can go on to evaluate this way of understanding causal efficacy and proceed to argue that it is connected in the right way to spatiotemporality) we must first say something about the nature of causal relata: what kind of thing is a cause or an effect?

2.1.1. The Nature of Causation

With regards to the nature of causal relata, I here consider the two main views on the topic. The later aim will be to argue that however it is we understand causal relata, the connection with spatiotemporality is unavoidable. One is that the relata are events,[19] the other that they are facts.[20] Events are things that happen: thunderstorms, weddings, fights, awakenings, etc. I will here take events to be particular entities, spatiotemporal, concrete occurrences, sometimes called immanent, too.[21] But events are not just like physical objects, here are some standard differences between events and physical objects: events occur or happen or take place, whereas objects don't, they just

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[18] This should not be taken as a strict definition of causal efficacy, but as a suggestion of how the notion is understood. See Oddie "Armstrong On The Eleatic Principle And Abstract Entities" and Colyvan's "Can the Eleatic Principle be Justified?" for a closer discussion of all the issues relating to the notion and how it connects with existence.

[19] See Davidson's "Causal Relations" and Lewis' "Causation".

[20] See Bennett, *Events and their Names*; Mellor*, The Facts of Causation.*

[21] See Casati's entry on plato.stanford.edu/entries/events. There are as many views on events as there are philosophers interested on events. Some think of events as concrete, some see them as abstract just like facts. Some think that events are repeatable at different times, some deny that. I take here what I think is one of the most orthodox positions, that they are concrete, as I am interested in drawing a contrast with facts.

are somewhere. Physical objects have mostly clear spatial boundaries, they occupy space. In contrast, the spatial boundaries of events are unclear, and instead, their temporal boundaries are easier to identify. Some say events cannot move, whereas objects can, but if one is a four-dimensionalist about physical objects, that difference dissipates: an object is a spatiotemporal worm that does not move either. Nonetheless, objects and events are also very closely related, for events are constituted by objects instantiating properties in time. For instance, if there is a puppy and he is chewing the leg of the chair, the event of the puppy chewing the leg of the chair occurs where and when the puppy is doing the chewing.

Now, with regards to facts, there are many different understandings of what they are. Some think that facts are obtaining states of affairs, or that a fact is an entity in which objects exemplify properties. And for others, a fact is a true truth-bearer, a true proposition.[22] Here, I will take a fact to be that which makes a statement, a thought or a proposition true, along the lines of the first kind of view just mentioned. So, it is true that it is raining because of the fact that it is raining. But in any case, I want to separate facts from events: Facts are not events, even if for each event, there is the fact that that the event is occurring, e.g. the fact that the puppy chews the chair is not the same as the pup's chewing of the chair, even if they are closely connected. The contrast between facts and events includes that facts are not spatiotemporal, they are abstract—not immanent, but transcendent. (This does not mean, however, that we cannot still argue for the connection between causal efficacy and spatiotemporality if we take causal relata to be facts, as will be argued later).

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[22] The notion of fact is also very rich and there are several discussions to be settled about it, but here I will try to stay out of that mess. For instance, some will think that there are negative, disjunctive, conditional facts, for they are the facts that make negative, disjunctive, and conditional propositions true, respectively. Others think those are not real facts. See Mulligan's entry on plato.stanford.edu/entries/facts.

Another important difference between facts and events has to do with their individuation. Events are coarse-grained, that is one and the same event can be described in relatively different terms. Thus, the event of the pup chewing the leg of the chair at time t is the same event as that same puppy chewing the leg of the chair relentlessly at time t; or that of the white, 3-month-old puppy chewing the leg of the chair at time t; etc. On the other hand, facts are much more fine grained. The fact that the puppy is chewing the leg of the chair is not the same fact as the fact that he is doing so relentlessly, and this is because those facts will make different propositions true. The proposition that the puppy is chewing relentlessly is not made true by the fact that the pup is chewing, *simpliciter*, but by the fact that he is chewing relentlessly. This is all very much related to events being concrete and facts being abstract. A concrete object, say a table, can be picked out in many different ways, by pointing, the use of a pronoun, a more or less specific description, or a name. That is, the individuation of concrete objects is coarse-grained. Not so for abstracta, for we have no way of knowing which object we are talking about other than by the description we use (the definition of the name), so that description must be determinate, precise, unambiguous. There is no pointing with your finger to abstracta, as there is with many (if possibly not all) concreta.

So, what are the relata of causation? The orthodox view is that they are events. The main reason for this position is that causation happens in the world, therefore, causal relata must be things in the world, they are concrete entities. Facts are not spatiotemporal, so they cannot really cause anything, so the position goes. But it is not just the puppy that causes the destruction of the wooden leg; it is the chewing puppy. The puppy could be just asleep under the chair without causing any harm. So, it must be the event, the chewing, that is the overall cause.

The opposing view has it that causal relata are facts. Both Bennett and Mellor argue against the main argument for the concreteness of causal relata given in the previous paragraph by claiming that the causal relata themselves need not be concrete, so long as there is some concrete entity connected to the relata in the right way. Thus Bennett writes:

> That rests on the mistaken assumption that causal statements must report relations between shovers and forcers. I grant that facts cannot behave like elbows in the ribs, but we know what items do play that role — namely, elbows. In our world the pushing and shoving and forcing are done by things — elementary particles and aggregates of them — and not by any relata of the causal relation. (Bennett 22)

This argument against the view that relata are events lends support for the alternative, which is that causation happens in the world of facts. At first blush, this seems counterintuitive. Isn't the whole point of figuring out causation to understand what happens in the world? But on further thought, we can understand what happens in the world -we can observe what the regularities are- and still not have to attribute any special oomph to anything physical. It is only pre-theoretically that we think of the cause as connected to the effect in a power-like way, but maybe that is not necessary. In either case, however, the plausibility of the view should also be assessed according to its theoretical advantages, instead of only the intuitive appeal of the general view.[23]

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[23] For instance, in "The Singularity Affecting Facts of Causation", Mellor attempts one such point: According to Mellor, causal relata cannot be events (which are concrete), because sometimes the cause or the effect are negative events, that is, the absence of an event, and thus not a particular. Negative events cannot be particulars, he claims, because there are no negative particulars (207-8). The example that Mellor uses involves Don, a climber whose rope breaks. In one version the rope breaking causes Don to fall to his death. But it can also happen that even if the rope breaks, Don does not fall (he manages to hold on), and thus he does not die. Don's not falling and Don's not dying are causally related, but Mellor claims, cannot be events, for not-falling and not-dying are not

I won't pretend to settle the murky debate here. Instead, I will proceed to argue, in the next section, that whichever view one takes about the relata of causation, it is the case that everything spatiotemporal is causally efficacious and vice versa. It may be thought that we should also cover the different trends on views about the nature of the relation of causation, not just the relata. The aim here is to talk about causally efficacious entities, and so they are going to have to be entities that are able to enter in this relation of causation, hence the importance of figuring out what this relation is, or so the thought goes. There are two main trends in the literature, one kind of account thinks of causation as a process of physical producing; the other argues that causing is raising the probability of something happening.[24] Let me just point out a couple of things about this. Firstly, and even if I don't have the space here to build a real case for this impression, I think that the literature assumes that the things that can enter in this kinds of relation are in space and time, be it as raising likelihood or as physically producing something. All examples and comments are about physical entities and the standard case for a serious study of causal relations is taken to be physics, which deals with the physical world, which is in space and time.[25] But secondly, the reason to bring up causal efficacy is that it is put forward as a condition for existence of entities, and here I want to argue that there is no

concrete entities: they don't exist. This argument, however, can be resisted. One possible reply to this is that these supposedly negative events are not really the relevant relata. The relata are indeed particulars, for the cause is not Don's *not falling*, but Don's *hanging on*, and the effect is not Don's *not dying*, but Don's *surviving*. Mellor is convinced that this is not the way to look at this, because there are no negative events (208). But it is unclear why (if negative events are so suspicious, and Don's survival "is simply" his non-death) we should take his non-death to be the real thing instead of accepting that negative events are not really what is doing the causing, but that there must be positive events involved, since, one could insist, causal relata must be concrete particulars.

[24] For a list of the different positions, see Schaffer's entry: plato.stanford.edu/entries/causation-metaphysics.

[25] Another way to make a similar point, even if by bringing yet another set of murky notions, is to remind ourselves that one way of defining abstracta is by what Lewis (*On the Plurality of Worlds*) called the Way of Negation, that is, abstracta are those entities that are *not* causally efficacious, *not* spatiotemporal. Thus, one common kind of entity that is considered not causally efficacious happens to be also not spatiotemporal. (God is a case that will be taken up later in the chapter).

point in keeping that condition, for we can do all (or at least most) of the work with the notion of spatiotemporality. So, the focus of attention is on what kinds of entities are causally efficacious, and on whether or not those entities are also spatiotemporal. That debate is the debate over the nature of causal relata, not so much about the nature of the relation itself. Instead of delving deeper into the issue of the nature of the causal relation, I move on to argue that we can make do without the notion of causal efficacy.

2.1.2. Everything that is Causally Efficacious is Spatiotemporal

Firstly, let's argue that everything that is causally efficacious is spatiotemporal. I want to proceed by arguing that it doesn't matter whether we take events or facts to be the relata of causation, this conclusion follows. Suppose, then, firstly, that causal relata are events. The orthodox view of events has it that events are immanent, situated in space and time, and therefore, spatiotemporal. So, if we go with the view that the event is what is causally efficacious, then it is also spatiotemporal, according to the orthodox literature on events.

Something is causally efficacious if it has causal powers, that is, it can participate in causal chains, it can enter into causal relations with other entities. As we have it in the view we are considering, events enter into causal relations as causal relata. But the idea of participating in causal chains is much more vague. Given that this condition wants to be used as a mark of existence, what can it mean? Or rather, what kinds of things does the defender of the Eleatic principle have in mind as causally efficacious? I don't think they mean to defend only events as existing. Think about the puppy chewing the leg of the chair, isn't the puppy causally efficacious here? That is, isn't it the puppy participating in the causal chain in the right way for it to count? In a very natural way of

thinking about causation, therefore, the puppy also is causally efficacious, as it is responsible for the chewing.

The view that events are causal relata can incorporate this insight, though: An event has constituents. The event of the puppy chewing the chair has the puppy as a constituent. If an object is a constituent of an event, it is also spatiotemporal: the constituent of a spatiotemporal event is spatiotemporal. Suppose then that we modify our understanding of causally efficacious, to include the constituents of events:

If an object is causally efficacious, it is either an event or constituent of an event.

If this is correct, we can also think of constituents of events as causally efficacious and, still, it follows that if something is causally efficacious, it is spatiotemporal.

Suppose, on the other hand, that causal relata are facts. Defenders of the view that causal relata are facts agree that each causally effective fact has a particular connected to the fact, an object that makes the fact be a fact about the world.[26] Factual causal relata are about the elbows that do the pushing and shoving that Bennett mentions—the things in the world (that is, the physical world). See Mellor, too, who thinks relata are facts, but claims that these facts must have immanent truth-makers, he calls these facta. So, for the defenders of this kind of view, even if the relata per se are

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[26] Other views about facts, e.g. Russell's *The Philosophy of Logical Atomism*, have it that facts have parts. For instance, the fact that John loves Mary has John, Mary and the relationship of loving as parts. This has been considered a bit strange by some, since a fact is not a concrete entity, in this case, it is a true proposition, but it is claimed to have concrete parts. The notions of part and whole here should not be taken as the classical mereological notions, but a *sui generis* fact-related part-whole relation.

not spatiotemporal, they will always have a particular, a spatiotemporal entity, which will be connected to it: the factum corresponding to the fact is spatiotemporal. Now, if we take only the cause or the effect to be causally efficacious, it does not follow that causally efficacious entities are spatiotemporal, for facts are not spatiotemporal. But as we have just suggested in the case of events, taking only the cause and the effect as a whole to be causally efficacious does not really capture the intended notion of causal efficacy, for other participants in the causal chain can have causal powers.

Let's consider again the notion of causal efficacy as a candidate for a criterion for existence. I doubt very much that the proponents of such a view had facts or events in mind as the existents that they were arguing for. I think the criterion of causal efficacy is meant to capture the thought that existing things have some sort of power to affect other things: everything that exists has causal powers. This means that if we are to take causal relata as facts, and causal efficacy as a criterion for existence, it cannot be that the cause itself is to be taken as the only causally efficacious entity. If we want to capture the spirit of the Eleatic criterion, we must drop that part of the definition. The modification would be:

> *Causal Efficacy*: An entity is causally efficacious if and only if it is either a cause or an effect, or it participates in a causal chain as a component of the causal relata or the factum of the causal relata.

If one thinks that events are causal relata, then it is the components of the event that are causally efficacious. If one thinks facts are causes and effects, then we borrow the Mellorian notion of a factum, as the immanent pusher that is connected to the fact. If this is right, then it follows that, whatever view one has about the nature of causal relata, if something is causally efficacious, it is

spatiotemporal. For every fact that is a cause or an effect has a factum, an immanent object, a thing in the world that makes the fact be connected to the physical world. So, once we understand the notion of causal efficacy correctly in the context of the Eleatic principle, the right conclusion follows. The same thing holds if causal relata are events instead: those who think that everything that exists is causally efficacious are not providing an argument for the existence of events. Events are a rather special case. Events are still causally efficacious because the way in which they are related to the cause or effect in question is by being identical to it. An event is a constituent of itself, the greatest constituent. Thus, I propose that this is a charitable reading of the notion of causal efficacy at play in the Eleatic principle.

Here is a further way of arguing for the same point, call it the argument from change. This is a general argument and it does not depend on the nature of causal relata. It is based on the insights that causation involves change: In a causal instance, a change brings about something. If we are to take an entity to be causally efficacious, therefore, it must be that it can be subject to change, for that is what it takes for an effect to be brought about. But non-spatiotemporal entities are supposed to be unchanging, eternal, etc. So, if something can bring about causal change, it must be spatiotemporal.[27] In conclusion, in this section I have argued that we need not decide what the nature of the causal relation is, nor do we need to take sides in the debate about the relata of causation. We have provided reasons to believe that whichever view one takes on the relata of

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[27] This argument is in Armstrong, *Universals and Scientific Realism* (128), as quoted in Oddie, in talking about abstract entities, Armstrong writes: "Are these entities capable of acting on particulars or are they not? … None of these extra entities is ever taken to change. In typical cases of causation, however, one change brings about another change."

causation, we should understand the notion of causal efficacy at play in the Eleatic criterion of existence such that if something is causally efficacious, then it is spatiotemporal.[28]

2.1.2. Everything Spatiotemporal is Causally Efficacious

Secondly, I claim that everything spatiotemporal is causally efficacious, that is, has causal powers. Assume that an entity is spatiotemporal; will it also be causally efficacious? My argument here is along the same lines as in the previous section: taking into account what the main positions are about causal players (that they are either events with spatiotemporal components; or facts with correlated facta which are in the world), it is unlikely that anyone would disagree that if something is spatiotemporal, it is causally efficacious. It seems that given the alternative views about which entities can be participants in causal chains, no spatiotemporal entity is barred from being part of such a chain, therefore being causally efficacious. By being spatiotemporal, an object is the right kind of thing to be related to a causal chain in that way, whether the relata of causation are facts or events. And if someone is to disagree with this, the burden of proof is on them to give us a counterexample.

One possible counterexample is that of a casually isolated object. But even if an object may be, in fact, causally isolated, I do not think that this is the same as an object which is necessarily causally isolated, and that is what we would need for the object not to be causally efficacious. For indeed, there may well be an object which at some moment in time is not connected to any causes or effects,

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[28] Consider briefly the case of God, by which I mean the God of the big three monotheistic traditions (Islam, Judaism and Christianity). God seems to be a candidate counterexample of the view that everything causally efficacious is spatiotemporal, for the orthodox view about God is that God is not spatiotemporal, but has the power to affect causal chains, by way of miracles and generally affecting how things are. One possible response to this is that even if one can maintain the existence of God coherently, one should be wary of giving God the power of affecting the world at any point, as some philosophers have argued, according to the naturalist spirit. See, for instance, Hume, 114-16.

but we do not want to say that that objects stops having causal powers for that reason, it is still the kind of thing that is related to a cause or effect. As a contrast, think of a standard example of causally inefficacious entities, abstracta like numbers: they are so because there is no possible way they can be involved in the cause or effect of anything.

Another possible counterexample comes from considering space and time themselves. If we think that space and time are composed of spatiotemporal points, regions, etc., aren't we committed to saying that, since a spatiotemporal point is spatiotemporal, it is causally efficacious? What is the nature of space and time and do we take them to be spatiotemporal? Let's see what follows from each of the alternative answers to this question. There are two main views as to what space and time are like, call them 'substantivalism' and 'relationism' (Dainton 2-3). Substantivalism has it that space and time are entities in themselves, over and above the things in space and time. Relationism is the view that space and time are nothing over and above things being related to each other by spatial and temporal relations, all there is is the things in space and time. Suppose we take a substantivalist view of space and time, then space-time points exist, they are the components of space and time. Since the view claims that they exist, in order for this to be compatible with our overall theory of existence, we have to say that these points are spatiotemporal, indeed. (Remember that we want to say that for something to exist it has to satisfy all three conditions, including that of spatiotemporality). But then, if we were to take a substantivalist view of space and time, and given that we are arguing that if something is spatiotemporal, it is causally efficacious, it follows that we would be committed to saying that those points are causally efficacious. If one believes that space and time are entities in and of themselves, this is not such a problem. And in fact according to the theory of relativity, spacetime regions are causally active, indeed. On the other hand, if one were to defend relationism, then our theory of existence also accommodates the insight: if space-time points

are only placeholders for real things to be located in, then there is no sense in which they are spatiotemporal, they are not in space and time. They are only coordinates, nothing substantial. They are not spatiotemporal, and so not it is neither true nor false that they exist.

In summary, we have no conclusive argument for our conclusion, but we do have a pretty strong case, and so I think it is reasonable to claim that if something is spatiotemporal is causally efficacious.

2.1.3. Dropping Causal Efficacy

Suppose then that spatiotemporality implies causal efficacy and causal efficacy requires spatiotemporality. Does this mean that the two notions are equivalent? Not quite, even if they may be co-extensional, they are different notions for they bring up different issues and difficulties. As is clear by now, the notion of causal efficacy is much less simple than it seems. Firstly, there is disagreement as to what the relata of causation are. Secondly, the notion of causation, not just that of the relata of causation, is in need of clarification: what kind of connection is there between the cause and the effect? Is there a physical connection at all or are we just expressing an explanatory link that serves our purposes? This is the subject of enormous disagreements and some propose that we make do without causation altogether.[29]

The notion of spatiotemporality, of course, is also subject to different interpretations, depending on how space and time are understood. But I think that, overall, having as a condition that something be in space and/or time is a more appealing requirement than having them have causal powers. Ultimately, we can revert to science and have space and time be whatever physics tells us it is. For instance, even though I have been separating space and time here, it is most likely better thought of

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[29] See Russell "On the Notion of Cause" and Price, 2007.

as spacetime, without there being a real distinction between spatial and temporal dimensions. I will maintain the layman's talk of separating space and time, because that's how we think of in everyday life, but I don't think anything I've said so far would be made untrue by changing the discourse to a more scientifically kosher style. Therefore, my conclusion is that, if we accept the arguments that causal efficacy and spatiotemporality imply each other, then we have methodological reasons to drop talk of causation and stick with spatiotemporality alone.

For the sake of argument, however, what if causal efficacy and spatiotemporality are not actually coextensive? In that case, in fact, I think we also have reasons to drop causal efficacy in our study of existence and focus on spatiotemporality instead. If only those things that have causal powers exist, then basically we are requiring that there is causation in the world, for things to exist. But do we really want to have causation be a necessary feature for the world to exist? This would mean that Hume was wrong about causation, a priori, for he said that a world with regularities but no causation was not only possible, but also indistinguishable from ours. If the Eleatic principle is correct, it follows that Hume's a-causal world is impossible.[30] But it seems that even if Hume might be wrong, it is not because he is offering an impossible scenario. With this observation, I conclude the defense of the claim that the most promising condition for existence is spatiotemporality and not causal efficacy. Thus the focus for the rest of the chapter will be on the spatiotemporality criterion: an entity satisfies the criterion if and only if it is spatiotemporal.

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[30] See Oddie, 290. See also Colyvan, "Can the Eleatic Principle be Justified?", for several more arguments against different formulations of the Eleatic principle.

2.2. Everything that Exists is Spatiotemporal

In this section I argue that spatiotemporality is necessary but not sufficient for the existence of an entity. The claim is, thus, that everything that exists is spatiotemporal, or equivalently, that there exist no non-spatiotemporal entities, or abstracta. I start by drawing some distinctions. I continue by arguing for a version of Ockham's Razor in support of nominalism and conclude from there that there exist no non-spatiotemporal entities, or that everything that exists is spatiotemporal.

The first distinction worth making is between abstract and concrete entities. Explaining with clarity the contrast between 'abstract' and 'concrete' is less easy than it would seem, given the extended use of this notion in the literature. Lewis, in *On the Plurality of Worlds*, separated four ways in which the literature has attempted to define these terms: the Way of Example, the Way of Abstraction, the Way of Conflation and the Way of Negation. The Way of Example proceeds by giving examples of both kinds of entities, so "concrete entities are things like donkeys and puddles and protons and stars, whereas abstract entities are things like numbers" (82). This method is at most giving a list of all known concrete and abstract entities, but if this is all there is to it, it does not give us an explanation of what abstracta are, and we have no way of knowing in which list we should include the next object that we wonder about, at least not if the list is all that we have about the distinction. Even if it is not a full explanation of abstractness, this is the method used by most philosophers.[31] It is incomplete, but it is certainly helpful, assuming an intuitive understanding of the distinction.

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[31] See Burgess and Rosen, *A Subject with no Object*, 13: "There can hardly be doubt as to which of the Ways is most popular. It is the 'Way of Example', which introduces the notion of abstractness by a short list of paradigm cases. That was the procedure of Goodman and Quine at the beginning of their joint paper: 'We do not believe in abstract entities. No one supposes that abstract entities— properties, relations, classes, etc.—exist in spacetime; but we mean more than this. We renounce them altogether.' That has been the procedure of most of the other nominalists whose work we will be surveying."

The Way of Abstraction has it that abstract entities are abstractions from concrete entities. This is how these entities were historically approached, by way of defining the mental process of abstraction and having abstracta be the entities that are reached by abstracting from particular entities and processes, making them therefore mind-dependent, the product of our minds. This is an outdated notion, as those who accept the existence of abstracta want them to be mind-independent entities. The way of Conflation has also its own set of difficulties. It identifies the distinction between abstract and concrete with some other distinction, thereby conflating the two. Lewis thinks that this way is defensible, but Burgess and Rosen, in *A subject with no Object*, argue that it is problematic to pretend that we provide an explanation of what abstracta are if we claim they are just like something else, say, sets, or properties. This is a way that implies denying that there are really such things as abstracta. So, for instance, if we were to conflate numbers with sets, we would be vulnerable to the following criticism:

> It is one thing, however, to claim that any other abstractum can be eliminated in favour of an ersatz set-theoretic entity, and quite another to claim by way of clarification of the notion of abstractness that to be an abstractum just means to be a set. Such a claim is hardly plausible—and is seldom made—even in the case of the reduction of numbers to sets. (19)

The last and most substantial way of accounting for the nature of abstracta is the Way of Negation, so called because it proceeds by enumerating the ways in which abstracta are not. They are not

spatiotemporal; they are not causally active; they are never indiscernible from one another.[32] This works pretty well in the case of the most usual examples of abstracta, like numbers, sets, or propositions. But there are several problems that arise with less common abstracta, for instance, sets of physical entities, like the set that has as its members my desk and my computer. Isn't this located in space and time? What about minds? Are they abstract because they are not in space? Or are we to conclude by definition that there are no minds? What about God, if we take it that God can affect the world, does this make God concrete? So, this strategy also has its limitations; without pretending to solve all the issues with the notion of abstractness, I will constraint my argument to those pure, most uncontroversial abstracta, which do satisfy the definition of the Way of Negation. I think it is the only way that manages to give some information about the nature of abstracta, even if there may be problems with its application in certain fringe cases.[33]

In contemporary philosophy, the position against the existence of abstracta is called nominalism. But originally the term 'nominalism' referred to another anti-realist position, one to do with the following distinction instead. There is a difference between particular and universal entities: universals are those entities that can be instantiated by more than one entity. Particulars, on the other hand, can instantiate universals but they cannot be instantiated. So, for instance, every red entity instantiates the universal redness, but each red thing cannot be instantiated by anything else, it is just located at a unique spatiotemporal region. Concreta are particulars but not all particulars need be concrete; the number 2, for instance, is a particular number, but it is not concrete. Nominalism about universals is the position that there are only particulars; that universals understood in this way,

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[32] This is Lewis' characterization (83). Burgess and Rosen (20) differ slightly, saying that abstracta satisfy the following: (i) lack of spatial location; (ii) lack of temporal location; (iii) causal impassivity; (iv) causal inactivity.
[33] See Burgess and Rosen, 13-26, for an extended discussion of all the issues that arise from these strategies for definition.

as entities that can be instantiated at several places at the same time, do not exist. Realists about universals, on the other hand, take properties, relations, or kinds to be universals. These universals can be seen to exist outside of the things that instantiate them (this is the classic Platonist position), but not as a further concrete object, for their instances are related to the universals in a way that is inconsistent with their being spatiotemporal, or causally efficacious, that is, they are not concrete. There is another sort of realism about universals: some think that universals are in the particulars, even if they are in several particulars at the same time; thus, it is not impossible for universals to be fully located at multiple locations at the same time. Defenders of the trope theory of universals[34] have such a view, which has it that universals are in fact concrete entities, since they are in space and time and they are causally efficacious.

Now, the case for the necessity of the spatiotemporality condition is the case for nominalism about abstracta. This is the claim that there exist no abstract entities, be they particulars or universals, but my arguments will mostly focus on abstract particulars.[35] Since arguing for nominalism about abstracta is the same as claiming that everything that exists is spatiotemporal, providing such an argument is my aim in the remainders of this section. The claim, again, is that it is not true that non-spatiotemporal entities exist, which does not necessarily preclude us from saying that some entities are non-spatiotemporal. We can still claim that some entities are abstract- but they just don't exist. That is the nominalist position that I will be defending; it is a position on the existence of abstracta. This section provides an argument in support of nominalism, namely Ockham's Razor.

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[34] See Maurin's entry on plato.stanford.edu/entries/tropes for a selection of sources.
[35] Some call tropes 'abstract particulars', but I here mean it in the sense just specified, non-universal entities that are not spatiotemporal, e.g. numbers.

2.2.1. Ockham's Razor

Ockham's Razor is a principle of theoretical virtue, that is, it is a recommendation as to which theory is most likely to be true given a choice, and assuming that the theories diverge in the relevant way. Most of the time, the evidence that one has does not eliminate all but one possible theoretical explanation. We are normally presented with a choice of theories, all of which may fit the evidence to the same degree, but only one of which can be true. Ockham's Razor is a principle of simplicity. Simplicity is taken to be an indisputable virtue of a theory. But there are two sorts of simplicity: structural simplicity or elegance (the number and complexity of the hypotheses), and ontological simplicity or parsimony (the number of kinds of entities that the theory says there are). The version of Ockham's Razor to be analyzed here has to do with parsimony and in its most usual formulation it prescribes the following:[36]

> Do not multiply entities beyond what's necessary to explain the phenomena.

Other things being equal, a theory that does not multiply entities is preferable to one that does. The nominalist argument is that it is possible to explain phenomena without being committed to abstract objects, and thus we shouldn't postulate their existence. This section evaluates some of the nominalist applications of this principle, followed by a couple of objections and a final thought about the force and importance of Ockham's Razor.

Ockham's Razor, thus, has a very similar flavor to Quine's indispensability argument, but there are important differences between the two. Quine's principle focuses mostly on scientific theories and

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[36] The reference to Ockham's is not meant to be a historical point. This principle, as I state it, is common knowledge in the philosophical literature, regardless of its tenuous connection to Ockham.

his proposal is that we should be rationally committed to the existence of those entities that science cannot do without: those that are necessary to explain the phenomena. Ockham's Razor has a broader application, since it does not focus on world views, but on any explanation of a phenomena, and it says something related: do not commit yourself to entities that you don't really need. Only be committed to those that are, in a sense, indispensable. So Quine's principle is the converse of Ockham's Razor (and vice versa). Quine's claim is: If it is indispensable, then you must believe it exists. Ockham's principle says: believe in its existence only if it is indispensable, or, equivalently, if you believe in its existence, then it is indispensable. The conclusion that follows in each case from the negation of indispensability is different. For Quine it just means that his criterion does not apply, it leaves the question open. In the case of the Razor, however, the conclusion is that, by Modus Tollens, you must not believe in the existence of something that is dispensable.

Another observation worth making is that this principle is not supposed to be a fool-proof way of choosing between theories, for, indeed, it really applies only if other things are equal, or, in other words, it is meant to be one more consideration in favor or against taking a theory to be true, so many times it will not be conclusive, for other things will not be equal, or there will be opposing considerations. Things can be not-equal if there are other ways in which one theory is preferable to the other, in terms of elegance, predictive power, etc. In these cases, again, the Razor is indecisive, even if it counts in favor of one of the theories. But there are other kinds of cases that can make the application of the Razor inconclusive: Take the following example,[37] for instance: Suppose two theories, T_1 and T_2, both of which explain phenomenon P. T_1 explains P making reference to entity a, but not to entity b, where a and b are of different kinds. T_2, on the other hand, makes reference to entity b but not entity a. Since T_1 explains P without reference to b, then that makes b unnecessary

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[37] Arnold Koslow suggested this in correspondence, November 2013.

to explain P, and thus, T_1 is preferable to T_2. But the same can be said about T_2: it explains P without reference to a, which makes a unnecessary, and thus, T_2 is preferable according to the principle of parsimony. So, both theories are preferable? That's a contradiction. In reply, we can say this: in such a situation, the verdict is that no theory is preferable to the other. Instead of understanding the Razor as categorically recommending one theory over the other, we should think of it as a scale, and the consideration of parsimony generally makes the scale tilt towards one of the theories. In the case at hand, however, one tilt counterbalances the other, and so both theories are equally attractive as far as the Razor is concerned.

There are two main strategies to argue that the phenomena can be explained without counting on abstracta. The nominalist claims that either we need not theorize about abstracta in order to do science, or that our talk of abstracta should not be taken seriously, and thus that the best theory, and therefore most likely to be true, is nominalistic. So, we have no good reason to believe in abstracta, and every reason to believe that everything is spatiotemporal. So, the first strategy is to give a way in which the phenomena in question can be explained without any reference to abstracta. This may involve actually producing a reduction of math to logic, where logic is understood as an objectless discipline. It would exclude, by the way, the traditional logicists, like Frege or Russell, for they each proposed a reduction of math to logic where logic was understood as a version of set theory (theory of classes), so they were not nominalists: Numbers as abstract objects did exist, but they were some special sort of set.

The other strategy, on which I am going to focus here, is to argue that even if the theory apparently does postulate such entities, ontological commitments of a theory cannot be read off so easily, and thus that the theory is not really, but only in appearance, multiplying entities. This line of thought

separates quantifying over and ontological commitment, and so it avoids the need to provide a version of all theories without any reference to abstracta. The sort of position that claims that we can talk about abstracta, but treats the discourse as a kind of fiction, or a discourse about fictional, nonexistent entities, is called fictionalism. One can distinguish between the semantic fictionalist thesis that says that the discourse need not be taken at face value or in its literal reading; and the ontological thesis, which is that the intended referents of the terms in the discourse are like fictions, nonexistent. As an example of this latter position, I consider Priest's noneism (*Towards Non-Being*), which does not necessarily have it that talk of abstracta is false, but just that it is about nonexistent entities. Regarding the first kind of fictionalism, the semantic kind, which is the kind most commonly associated with 'fictionalism', I take up Yablo's figuralism ("Go Figure", "Myth of the Seven"), which is a good example of this kind of view. His views will be considered again in the context of the Razor.

The fictionalist strategy together with Ockham's Razor constitutes a strong defense of an anti-platonist position: The point of fictionalist positions is to argue that it is not necessary to accept abstracta as existing to explain whatever phenomena the theory in question is explaining. And if we understand the discourse in a fictionalist way, the discourse can continue to play the role it plays, which is to explain the relevant physical phenomena. The way they will explain this is by giving abstracta roles to play that do not require their existence. Yablo says they are metaphors, and in the same way that everyone understands what we mean metaphorically without committing ourselves to the literal truth of what we say, we can take talk of math, for instance as serving the same sort of role.

Priest claims, on the other hand, that the usefulness of application lies in the fact that mathematical structures are similar to the structures in the world that we use them to explain.[38]

Here's another way of thinking about this: So long as we separate talk of an entity in a theory from acceptance of its existence, one can understand the Razor as ambiguous between two readings. On the one hand, the Razor could be recommending that we should not multiply entities (existing or not) beyond what's necessary; on the other hand, though, it could be telling us not to multiply existing entities. I think that if we accept that we can talk about certain entities without thereby having to be committed to their existence, and if we take Ockham's Razor to be a principle of ontological simplicity, then we ought to understand it as in the second reading, that is, recommending us that we steer clear of committing ourselves to the existence of unnecessary entities.

So, the point, really, is to apply the Razor to the philosophical theories explaining other sorts of discourses. Instead of thinking of some physical phenomena and the choice being between theories about that phenomena, take "the phenomena" to be the fact that we apparently talk about abstracta all over science and in every day speech. The theories that are competing and to which Ockham's Razor may apply are the philosophical theories:[39] should we take the discourse at face value and take

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[38] See chapter 5 for a more thorough explanation of Yablo's view.

[39] Burgess and Rosen, 214-25, give an interesting argument that there are no real applications of Ockham's Razor as regard to abstracta in science or mathematics. According to them, all apparent such discussions can be seen to be disagreements about other aspects of the theories (e.g. ideology, rigor, concrete ontology). I think that even if they may be right about this, the most interesting applications of the Razor happen within *philosophy*, and the theories to choose from are philosophical theories. Why should the mathematician worry about the ontological commitments of her theory? She should be worried about doing good mathematics, not about the philosophical implications of her theory. And the same goes for other scientists. Abstract ontology is not a worry for anyone other than the philosopher, so I am not surprised that scientists or mathematicians don't bring it up.

ourselves to be committed to abstracta or should we adopt a fictionalist attitude? The platonist theory explains the phenomena by claiming that these terms we use that apparently refer to existing abstracta are just like other terms, and they do indeed refer to existent abstracta; and since the statements we use them in are true this means those abstract entities exist. The fictionalist, on the other hand, provides a way of understanding what it is that we are doing when we apparently commit ourselves to existing abstracta that avoids that conclusion. The fictionalist goes on: Since the fictionalist theory requires fewer existing entities, and since we must avoid multiplying entities, given the Razor, we must adopt the nominalist theory to explain our scientific and everyday discourse. Therefore, abstracta do not exist. The point of Ockham's Razor is to express a general methodological preference not to postulate the existence of any entity (most usually abstracta) if it can be avoided. Fictionalism tells us how to avoid it in a less painful way than classical nominalism.

It may be objected that the fictionalist is giving a radical reading of Ockham's Razor. Maybe Ockham's Razor should not be understood as recommending that we do everything in our power to explain the phenomena without the contested entities. This is why the formulation of the razor many times includes the clause that other things be equal, that is, that the two competing theories must be more or less equally satisfactory in other respects. So, if the nominalistic, fictionalist theory is desperate or clearly gerrymandered to avoid commitment to abstracta, that will make it less satisfactory, less theoretically appealing and thus, the razor will not apply. The challenge for the fictionalist, therefore, is to make their position independently appealing. In what follows, I outline two ways in which one can adopt a fictionalist position.

2.2.2.a. Noneism

Noneism is the view that some objects are nonexistent. Philosophers have adopted similar positions regarding nonexistent objects in the past, these so-called Meinongian views have in common that they think one can quantify over things that don't exist. For instance, Meinong himself thought that some entities exist, others subsist, and some others do not exist at all. Russell (during some of his career) also thought that objects that don't exist have some sort of subsistence or lesser being than existence. The noneist[40] claims that nonexistent objects don't have any kind of being, they just don't exist; but some objects are nonexistent, indeed. One important feature of these views about nonexistent objects, and noneism in particular, is that since some objects exist and some do not, existence must be separated from the quantifier: we can say things about nonexistent objects without thereby being committed to their existence.

Nowadays the orthodox view about existence has it, on the contrary, that the particular quantifier captures all there is to existence (and so it is called the existential quantifier), and that, therefore, we cannot quantify over entities that do not exist: to quantify over something is to imply that it exists. The general impression is that Meinongianism is somewhat unintelligible. However, Priest ("The Closing of the Mind") points out that what today is considered pretty much the only reasonable view about existence was only adopted by philosophers in the 20th century, mostly during the second half. So, it is pretty recent and it is not by far as crazy as many think to believe that nonexistent entities are to be taken seriously. Priest identifies Russell (*Lectures on Logical Atomism*) and then, most importantly Quine ("On what there is"), as the authoritative proponents of the anti-Meinongian orthodoxy.

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[40] See Routley's *Exploring Meinong's Jungle* and Priest's *Towards Non-Being.*

Without pretending to be thorough, let me rehearse some of the reasons for the anti-Meinongian spirit of the times. According to Priest, the most historically accurate reason is that mathematicians adopted the convention of using existential expressions for the particular quantifier and that ended up seeping into their philosophical views, even if, if one traces the origins of the mathematical practice during the late 19th and early 20th centuries, there are warnings throughout against doing so. Even still, some of proponents of the anti-Meinongian view attempted to give reasons for their conviction. One of the main arguments is thought to be Russell's: 'Unicorns exist' is not nonsense, we understand it and we know it is false. If 'exist' applied to actual entities, instead of applying to concepts (and thus being a quantifier, a second-order concept), then, given that there are no unicorns, this sentence should be not just false, but nonsensical: suppose that 'exists' applied to actual entities, then if we attempt to apply it to a non-entity (a unicorn) this should be a mistake that would make the attempt ungrammatical (Russell 90 qtd. in *Towards Non-Being* 12-3). Therefore, Russell goes on, we must conclude that 'exist' cannot be just like other predicates, but is a second-order predicate, an existential quantifier. This, though, gives only one way of solving the problem and ignores the possibility of the Meinongian reply: Analyze the sentence as 'For some x, x is a unicorn and x exists'. This maintains the separation of the particular quantifier and existence, and this latter notion is still represented as a first-order predicate.

Furthermore, the Quinean view runs into some problems, for there are certain things that they cannot express. The problem of Nonbeing is an age-old problem that turns the main thought involved in the traditional view against nonexistent objects into a criticism of it: If nonexistent objects are nothing and it makes no sense to speak of them, then what is it that we are doing when we say, for instance, that Odysseus was invented by Homer? Prima facie proper names refer by picking out the object, but what happens when there is no object? Some defenders of the orthodox

view may claim that names that fail to pick out an existent object are not really names, but that should be analyzed as hidden descriptions (the Greek man who endured years of adventures on his way back to Ithaca) or as predicates (the predicate that picks out all and only those things Odysseus). The meinongian/noneist, however, can maintain that all apparent proper names are indeed proper names; they need not defend some hidden logical form of apparent singular statements. Furthermore, some very normal-sounding examples can be considered that are not using proper names at all. Following Priest, again, take this sentence: 'I thought of something to buy you for Christmas, but I couldn't get it because it does not exist'. If the quantifier has existential import, there is no way of formalizing this sentence without it being a straightforward contradiction. The best attempts are dissatisfying: 'There exists something that I wanted to buy you and it does not exist'. Again, if we separate the particular quantifier from existence, we can give a very natural reading of all these statements: 'There is something that I thought to buy you, but it does not exist'. This is not a complete defense of this kind of position, but I think the advantages of adopting one such view are great and together with these preliminary arguments, do indeed constitute a good case for some sort of Meinongian position.[41]

Let's look at a specific position on how to separate existence and the quantifier and how to think of nonexistent entities. I will focus on Priest's account in *Towards Non-Being*, which I will adopt in what follows, for ease of expression. First of all, again, the particular quantifier does not range only over existing objects: to say that something exists, is to say, explicitly, that is has a certain property, E, that of existence, for some objects lack this property. Objects that do not instantiate E, that is, objects that do not exist, will instantiate other properties. In particular, they have the properties (or

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[41] See chapter 5 for a specification of the sort of free logic that I adopt. I separate the existential from the particular quantifier, and incorporate an existence predicate, which has a trivalent interpretation.

exemplify the characteristics) that they are characterized as having. This is the so-called Characterization Principle. This is not to say that all objects that have the properties that are characterized as having have these properties in the actual world: that does not follow from the characterization principle. It requires only that the object have those properties in some world. Those objects that exist, will have their characterizing properties in the actual world, nonexistent objects have most their properties in at least one world, be it possible or, for some, impossible, but just not actual. In the actual world, nonexistent objects will have only certain properties, namely: not-existing, being fictional, being possible (or impossible), being a creation of Philip Roth, or of Virginia Wolff, etc.

There are, however, certain predicates that are existence entailing: If it is true of x that Fx, and F is an existence entailing predicate, then x exists (in the actual world). Whether the predicate is existence entailing depends on the particular characteristics of each predicate. So for instance, 'hitting someone' is existence entailing, but 'being a fictional character' is not.[42] Now, suppose we are talking about Watson hitting Holmes, we must make clear that this does not mean they exist, for in fact, in the actual world, Watson didn't hit anyone: he does not exist. He only hits Holmes in the story. So it is not really true that Watson hits Holmes, it is only true in the story, and we omit to say that explicitly because it goes without saying. The predicate in question will be existence entailing if the statement is true. A nonexistent object can have properties in the actual world, so long as those

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[42] And there may be other general restrictions on existence entailing predicates, for instance one may want to require that none of these predicates are contradictory, so as to not have to deal with explosive existential consequences, assuming one stays within the realms of consistent logic, and does not want to go paraconsistent instead. I can remain neutral in this topic in this context. The point is to avoid situations like the following: Consider the predicate [E(x) and not E(x)]. This implies E(x). So [E(x) and not E(x)] is an existence entailing predicate. But this is contradictory, for it also tells us that x does not exist. (This case is due to Koslow's suggestion)

properties are not existence entailing. So for instance, it is true in the actual world that Sherlock Holmes is a fictional character, but being a fictional character, again, it is not existence entailing, so Holmes being one does not imply that Holmes exists. This view therefore allows for truthful talk about nonexistent entities, without thereby allowing nonexistents to have properties that only existing objects can reasonably have.

This way of understanding nonexistent objects allows for certain entities that may be necessary to explain the phenomena, like mathematical entities, or other traditional abstract objects, to be nonexistent. Abstract objects, for Priest, are nonexistent objects, just like fictional objects. They are abstract, however, because were they to exist, they would not casually interact with us, and that is not the case for most fictional objects (even if some fictional object may well be abstract: the two categories are not exclusive either). For the closest world in which abstracta exist is one in which they are like the Platonist thinks of them: not causally efficacious, which for Priest means they do not exist. In any case, they are nonexistent, but we can still say true things about them (so long as they are not existence entailing).

The noneist can use Ockham's Razor to argue for the nonexistence of abstracta in the following manner. Using abstracta-talk does not mean that we are committed to their existence. There are two ways in which the noneist can avoid the ontological commitment. On the one hand, it can be that math is not true, because it's truth would entail the existence of mathematical entities, but math it is useful nonetheless. On this alternative, noneism (an ontological thesis) is combined with a semantic fictionalist position. Or on the other hand, one can claim that mathematical theories are true when understood properly, that is, separating correctly the existential quantifier from the particular quantifier. But in so doing, we nonetheless avoid the ontological weight of those theories. We can

use abstracta-referring terms in theories, scientific and mathematical, which may well describe the world truthfully, the noneist says, but not require that there be abstract entities to make those theories true: the properties that those objects must have for those theories to be true can all be not existence entailing. Just as we can have a true literary theory that makes the true claim that Holmes is a fictional character, we can have a scientific theory that claims that the number of atoms in a hydrogen molecule is two, without making it so that numbers must exist.[43]

A question is prompted by the position that math is about nonexistent entities but useful: how is it that nonexistent objects are at all helpful in describing the world? According to Priest ("Mathematical Pluralism" 14) the mathematical theory that finds an application in the physical world, applies to the world because the structure of the physical domain of application is isomorphic to the nonexistent mathematical structure. This does not mean, however, that structures exist. One can understand the shared structure in terms of the similarity between the physical world and the nonexistent realm of mathematical entities, without thereby being committed to the existence of structures as entities in and of themselves.[44] Given that Priest has adopted a free logic that does not require the existence of all entities that are quantified over, we can express the isomorphism between the existent things in the world and numbers.

But still, why is it that mathematical structures are isomorphic to the physical structures and we don't get the same kind of isomorphisms with fiction stories, novels and what not? What is special

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[43] See chapter 5 for a development of these two options with regards to the application of mathematics.
[44] Clearly, we should engage here with the arguments that the structuralist gives for the existence of structures, but this would take us too far afield. See Shapiro's *Philosophy of Mathematics*, for a full account of this kind of platonism about structures.

about math? For some of these mathematical theories, the answer is pretty straightforward: the theories were developed precisely with the aim of describing the world. E.g. basic arithmetic or Euclidean geometry. There are, however, plenty of examples of theories that were developed by mathematicians and for mathematicians, so to speak, and that later on were found to have unexpected applications in science or technology. About those, the explanation is less straightforward and it comes down to a matter of probability: "Perhaps, if we develop enough pure mathematical systems, some of them are bound to find application sooner or later" (15). This probabilistic point may be less than ideal, but the fact is that the unexpected application of pure math to the physical world is a tough problem for anyone, so this does not put this view about isomorphisms being at the basis of applicability in any particular peril. The issue will be taken up again in more detail in chapter 5, as our view here will have to answer similar questions.

The noneist has also been faced with the following objection: given that they want to be able to say pretty much everything that the platonist says about abstracta, and they still accept the use that science makes of abstract entities in their theories, it appears that they are just denying the existence of abstracta but not changing anything else. The complaint is that the noneists are just like the platonists, but with the sneaky clause 'but these entities do not exist'. It is an attempt at having the best of both worlds, the objection goes. But this cannot be done, the noneist must choose between either the existence of abstracta (which implies right to use them in their theories) or the nonexistence of abstracta (which implies loss of that right). But this is an "existential" prejudice: the thought that only existent entities can be useful or spoken about in theories is precisely the prejudice that the noneist is arguing against. One of the most important points of the noneist position is that nonexistent entities can have properties. So long as the properties that we are truly attributing to these entities are not existence entailing, the entity having them need not exist.

Overall, noneism's technical implementation of the initial idea about existence, as presented in this last few paragraphs, works nicely and will be adopted in this dissertation. The details of the mathematical case will be taken up again in chapter 5 and our position will be spelled out then in detail.

2.2.2.b. Yablo's Figuralism

The second fictionalist theory that can be defended in order to apply Ockham's Razor and avoid getting rid of talk of abstracta altogether is the position known as Figuralism. Yablo's paper "Go Figure: A Path Through Fictionalism" takes fictionalism to hold "that we "make as if" we are asserting that S and/or believing that S and/or receiving the news that S" (3), that is, he is focusing on the semantic thesis about the commitments of the language rather than the ontological claim that those entities do not exist.

According to Yablo, thus, talk of abstracta (numbers is the example that he deals with, but the story applies more broadly) is a fiction that we use to make assertions. But this fiction is such that it "functions as medium not message" (6). Yablo distances himself from the kind of fictionalism that interprets the claims in question as being a hidden statement about what is true in the fiction. The kind of fictionalism that is being defended analyzes the claims as really asserting that something is such and such, by relying on some fiction, not just stating that a theory or a fiction says something or other is the case. He does not deny that we make assertions when we make use of terms for abstracta, we are asserting things and we can be right or wrong about those claims. When we say that the number of people starving is growing, we are upset because of something about the people

starving, who are very real, not because something that is true in some fiction, in this case the fiction of standard math (6).[45]

Figuralism in mathematics is the view that mathematics is a useful representational tool, but one derives the same expressive benefit from thinking about numbers as really existing or not. They are representational aids, like metaphors. So, we need not infer that they exist just because we need to use them in science. Just as when we use a metaphor to make a true claim, the attitude we take towards the metaphor is not that it is actually true, but that what is really true is the figurative meaning behind the metaphor. Yablo separates real from literal content, where real or conventional content is what the sentence is 'generally understood to say'. The literal content, of course, is the content that a sentence has if we assume it is not pretense, if we take away the metaphorical reading and every singular term that stands in a true sentence refers to something. If we take the literal content, then, science and math do commit us to numbers. But we need not do so.

The full details of this position will be assessed in chapter 5, when dealing specifically with the case of mathematics, but for now, the point is that there is another way of arguing that Ockham's Razor applies and that we have an alternative to accepting abstracta as part of our ontological commitments. Figuralism is an account of what goes on in language when we apparently commit ourselves to such entities. Yablo has the appealing insight that we should think of that kind of talk as representational aids to expressing things about the world. **It is a natural position to take, if one prefers not to commit to abstracta, for it models what is going on in our talk of abstracta with a usual occurrence in language, that of figurative talk or metaphorical talk.** The next

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[45] Unlike, for instance, Field's nominalism in *Science Without Numbers*, which has it that all claims that make use of mathematics are strictly speaking false. Again, see chapter 5 for a more extended discussion of Field's view.

section considers a couple of objections to the application of Ockham's Razor as a defense of nominalism. But I conclude this section having presented several ways in which I think it is plausible to build a case that it is not necessary to postulate abstracta. In fact, I think that the two views can be combined, for they are in some respects complementary: with Priest's account of how we can avoid ontological commitment by separating the existential from the particular quantifiers and Yablo's explanation of why we incorporate talk of fictional entities in language, I think we have a strong combined effort to explain apparent commitment to abstracta away. Thus, barring some other problems with this argument, we better not postulate their existence, on the Razor's recommendation.

2.2.2.c. Two objections

First of all, let's look at an objection to this kind of application of the Razor that can be found in Balaguer (*Platonism and Anti-Platonism*). This objection is based on a presupposition of the Razor that has not been yet discussed. There are three main conditions for the correct application of the Razor: both competing theories that attempt to explain the phenomenon need to explain the same phenomena; one of them must be more parsimonious than the other; and both theories should be comparable in other theoretical respects, that is they should both be equally elegant, correct in their predictions, etc. Balaguer argues against Ockham's Razor putting the burden of proof on the platonist. His main point against the nominalist's use of the Razor is that the Platonists and nominalists disagree as to what the phenomena to be explained are, and so the application of the razor is not decisive.

Platonism and nominalism about abstracta do not both explain the same phenomena, according to Balaguer, because for the Platonist, there are facts about numbers, like that 5 is odd or that there are

infinitely many prime numbers, which the nominalist does not explain, since she denies that they are facts at all, and one cannot explain what one claims is not there to be explained. Now, if we were to go with the noneist line that all these predicates are not existence entailing, then we could maintain that these statements are true of numbers, even if numbers do not exist. So, that position has an immediate reply to Balaguer's point: insofar as we adopt here the tools of the noneist, we can separate existence from other properties and we can take mathematical predicates as not existence entailing. But this is not my main reply to Balaguer's argument.

Balaguer (145-6) considers another possible reply to his own objection, or as he says, "another ploy that fictionalists may attempt here", which is to claim that the phenomena to be explained are not to be taken in a metaphysically substantial way but rather as sensory experiences: both theories must account for the same sensory experiences. He dismisses this because he thinks that sensory experiences do not exhaust all facts to be explained:

> Even if [theory] A accounts for all the sensory experiences that [theory] B accounts for, is more parsimonious than B, and is just as simple as B in all non-ontological respects, it may very well be that A is not superior to B, because it may be that B accounts for more facts than A does and that, because of this, B is superior to A, or just as good as A, despite the lack of parsimony. (146).

The thought behind this is that sensory experiences are too narrow to be the phenomena to be explained: they leave out other important facts that should also be accounted for.

But I think that if we understand 'sensory experiences' in the right way, they are in fact all the evidence that we have, and so to claim that there may be other facts left out of the explanation is analogous to some sort of last resort skepticism that is neither productive nor reasonable. What should be considered information that we gather through our senses? I think it is not just raw empirical data (sense data?), as Balaguer seems to suppose. It is also sensory experience if I observe scientific practice, mathematical practice, everyday discourse and attitudes of the speakers towards that discourse, general impressions about the nature of reality that are the result of accumulated experiences and common sense, etc. The nominalist can explain that the phenomena that the theories are competing to explain have to be this shared and vast amount of information.

The application of the Razor is relevant because, if we remain ontologically neutral about the phenonema (as we should be, lest we beg the question one way or the other), all we have is the knowledge that we can gather uncontroversially about the world. And given all of this empirical knowledge that we have about the world, which I can have sensory experiences of, the question is: which theory explains all of it better? Platonism or nominalim? Again, the existence of abstracta cannot be taken as a fact to be explained, nor can it be dismissed prima facie as the explanation of the phenomena. The phenomena, however, do include what scientists, mathematicians and all of us do and believe, but it cannot presuppose anything about the existence of abstracta. To put it another way, we must remember that we are deciding between two philosophical theories here, and so the phenomena to be explained is not that 3+4=7 or other mathematical truths. The point is that we are trying to explain mathematical practice, the applicability of mathematics, how we apparently use other abstracta in science and everyday life. Understanding this qualification invalidates Balaguer's argument that there is a disagreement as to what the phenomena are: again, there is only a

disagreement if we allow ontological readings about the facts to be explained, but that would make the application question begging. Therefore, the application of Ockham's razor remains valid.

Finally, as a second objection, there is one last remark about Ockham's Razor that it is important to make. The decisive application of the razor assumes that other things are equal with respect to the two theories in competition. That is, they are both satisfactory to the same degree, methodologically speaking. An important objection to Ockham's Razor is that, even if there may be a possible fictionalist explanation of science and everyday language, a theory that quantifies over abstracta will be much simpler and streamlined. (For that is precisely what numbers and sets, propositions, possible worlds and the like allow us to do: say things in a more elegant way). This is a good objection against a logicists who attempts logical reductions of science and math, and provides cumbersome, long-winded formulations that are definitely much less elegant and usable than abstracta-ridden language. But both the noneist and the figuralist leave our common sense uses intact, in the sense that they do not require that we stop using language the way we do. Their suggestion affects only the ontological commitments that we are to take those uses as incurring. The objection thus cannot be that the fictionalist complicates practice: the fictionalist is not a revisionary of our practice.

What does become more complicated is our understanding of language and the use of the words in question. It does not, either, change the meaning of the problematic words, but just whether those entities exist (noneist) and whether we are just using the words as metaphorical (figuralist). Again, the complication is with regards to the relation of the words we use and the ontological commitments of those words. The platonist has got a quicker story, for all singular terms work the same: if they are in a true sentence, they pick out an existent object. Chairs and numbers are the

same in that way. Thus, the objection must be understood properly, but it goes thus: The fictionalist's account of ontological commitment is way more cumbersome than the Platonist account, so other things are not equal, the price of nominalism is awkward complexity.

The fictionalist' motivation is, no doubt, a prejudice against the abstract: how can abstracta really exist? It is not clear what it would be for an abstract entity to exist, they are mysterious and slippery. The nominalist is tempted to think that any theory that makes do without abstracta is methodologically better than a platonist one precisely because of this. But the fictionalist must do something to support her intuitions. Assume, then, that the fictionalist cannot take for granted that a world without abstracta is intrinsically preferable. The position can still be defended on methodological grounds: There are many examples in language in which the surface structure of the sentence makes apparent reference to entities that not even the most platonist of platonists wants to say exist. E.g. Hamlet, Dr. Watson, pangs, ways of approaching an issue, tips of icebergs (in the metaphorical sense), etc. Now, this means that the fictionalist position cannot be dismissed as always inappropriate and, thus, that we need a systematic way of deciding when to take a sentence at face value and when to give another reading or interpretation that avoids the superficial commitments. The interesting disagreements are not about pangs of pain, ends of tethers or tips of icebergs (again in their metaphorical senses); no one thinks those exist. They are about theoretically powerful entities like numbers, which happen to be the ones that are abstract. Does this mean that the successful application of Ockham's Razor does after all boil down to the reasons for or against the palatability of the existence of abstracta? (Gasp.) No, because what Ockham's Razor tells us is that other things being equal, it is better to make do without postulating some kind of entity (abstract or concrete). It just so happens that with abstract entities we have no other way of deciding whether we are looking at a case where the fictionalist attitude is preferable (like in the case of

'Holmes') or the more literal reading is better (like in the case of 'Obama'). This is why the razor is useful here: the fictionalist offers an alternative with fewer ontological commitments. Given that we have no other way of deciding, the Razor applies and supports fictionalism.

This concludes an outline of a defense of the claim that everything that exists is spatiotemporal, that is, that it is a necessary condition for existence that the entity be spatiotemporal. This defense is not based on the strangeness or queerness of abstracta alone. Firstly, the epistemological argument posed an important challenge to the Platonist position, which is the salient alternative position; and secondly, I developed a positive argument on methodological grounds that fictionalist nominalism allows us to argue against the existence of abstracta via an application of Ockham's Razor. Concluding, therefore, that the case against the existence of non-spatiotemporal entities is solid, I move on to argue that this does not imply that everything that is spatiotemporal exists. In fact, spatiotemporality is not sufficient for existence.[46]

2.3. The Criterion is not Sufficient

The main argument for the insufficiency of spatiotemporality is provided by examples of entities that don't exist even if they are spatiotemporal. That constitutes the meat of the case made in this section. But the ultimate motivation is that the concept of existence is a rich, multifaceted concept and spatiotemporality is not enough to capture it. There are other aspects of existence, as is being argued, namely: chapter 1 argued that the entity must be part of the ontological commitments of science, and chapter 3 concludes that it must be mind-independent. The concept of existence

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[46] It is a consequence of this view that, if God is not spatiotemporal, then it is not true that he exists. This does not mean that it is false that he exists, but at most it will be neither true nor false that he exists. Since I am arguing for a theory of existence, my view is bound to have certain consequences on the existence of entities, among which, God.

involves more than one aspect, all of which are central to it, and therefore, if the other two components of existence are necessary, this criterion cannot be sufficient, unless it entails them both. The counterexamples to the claim that spatiotemporality is sufficient for existence provide, thus, an argument for the independence of spatiotemporality from the other two aspects of existence.

2.3.1. Counterexamples

Remember that an entity is spatiotemporal if and only if it is in space and time. A spatiotemporal property is a property that gives spatial or temporal qualities to the thing that instantiates it. There are spatiotemporal but mind-dependent entities, for which, thereby, it not true that they exist, for mind-independence is necessary for existence. Take social constructs, inter-subjective entities that are part and parcel of everyday talk about reality, but whose nature depends completely on what we think them to be: money, nations, states, borders, etc. Focus on states, like New York, or Colorado.

States are the kind of thing that have spatiotemporal qualities. They are temporal: they come to be in their foundation and stop being considered seriously when they dissolve, according to the turns of history. Now, it is essential to differentiate the way in which states are temporal from a temporal circumstance that is true of fictional entities, for instance. There is a sense in which a fictional entity could be taken to be temporal, too: arguably, Sherlock Holmes was created by Doyle at a given time, 1887, in fact. But this is misguided; fictional characters are not spatiotemporal. When an author thinks up a character, she does not intend her creation to come to be in the actual world, with all the properties that her imagination attributes to it. It is all an exercise in make-believe that is intended to stay separate from the world the author inhabits. When a state is founded, in contrast, its members thereby agree to invest the state with powers that make the state very much in the spatiotemporal world: the history of a state starts at a certain point in time. The same goes for the disappearance of

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these entities. A state can be dissolved. We can decide, collectively, to dissolve a state, and the state will thereby stop having properties that make it a state, and will go on only as a memory, maybe then more similar to a fictional entity. We can think of the Roman Empire today, for example, without making the Roman Empire have properties that it was taken to have two millennia ago. On the other hand, Sherlock Holmes, if he is ever to stop being a fictional character, it will be only when all humans stop thinking about him, stop reading stories about him and nobody knows any more who Holmes is. That's because Sherlock Holmes has no spatiotemporal properties, but states do.

One could also argue that states are spatial, as well as temporal. Its borders determine the location of the USA at a given time. Each of its institutions has buildings and its members are actual people. These are very much spatiotemporal. But this seems a bit too simplistic. In a more sophisticated view of the nature of a state, the territory is related to the state, but it's not identical with, nor are the institutions and the people in it. The state is the overarching intersubjective entity but it is not identical to these physical entities. I maintain, however, that even still, states are spatiotemporal because they have temporal properties.

This is not to say this kind of intersubjective entity actually exists. States are best thought of as just some instrument we use to organize our lives, they are not meant to reflect anything other than certain agreements between humans. I think it is a reasonable position to take: if humans were not here, believing things about what states are and what they can or cannot do, states would not be anything. Their being is completely determined by our beliefs about them. I think that denying existence to something that is mind-dependent in such a way is a strong intuition. Spatiotemporality is not sufficient for existence and if the arguments in chapter 3 are successful in arguing that mind-independence is necessary for existence, we have reasons to think that states don't determinately

exist. This kind of example, therefore, suggests that being spatiotemporal is not sufficient for existence.

2.3.2. There are Three Aspects of Existence

The condition of spatiotemporality is not sufficient because there are other aspects to existence; existence is more than being spatiotemporal. If it is true that something must be a theoretical commitment of a true scientific description and mind-independent for existence (a theoretical commitment, for short), as argue in chapters 1 and 3 respectively, then it cannot be the case that spatiotemporality is sufficient for existence, unless the former criteria follow from spatiotemporality. If spatiotemporality is not independent from the other criteria, this means that it either follows from at least one of the two or that the other criteria are a consequence of spatiotemporality. So, total independence requires that all of the following four claims are false:

    a. If something is spatiotemporal, it is a theoretical commitment.

    b. If something is a theoretical commitment, it is spatiotemporal.

    c. If something is spatiotemporal, it is mind-independent.

    d. If something is mind-independent, it is spatiotemporal.

In order for the complete analysis of the concept of existence defended here to be satisfactory, each of the candidate aspects of existence must be independent from the rest. Thus, total independence is a requirement for the three aspects to have a central place in the analysis offered (see chapter 4). For the present purposes, however, what we need to prevent is that if something is spatiotemporal, it is both theoretically useful and mind-independent. I am arguing that the three aspects are not sufficient separately (even if they are very likely to be sufficient together), and each of them is

necessary in itself, not as being a consequence of any of the other two. If they are jointly sufficient, then none of them can imply the other two without thereby being sufficient by itself. (I would like to leave the possibility open that with more scientific advancement we may find some other aspect of existence that is independent of the three that we already know about and that is independently important for existence. I want to steer clear of asserting that this is impossible.) So another way of approaching the issue is to take the counterexample in the previous section as constituting an argument that c is false, and therefore arguing that, assuming the three criteria are necessary, spatiotemporality is not sufficient. The argument is this:

1. Being a theoretical commitment is necessary for existence.

2. Mind-independence is necessary for existence.

3. Being a theoretical commitment or mind-independence do not follow from spatiotemporality. (not-(a & c) above)

   Therefore, spatiotemporality is not sufficient for existence.

Intersubjective entities like states show that something can be spatiotemporal and mind-dependent. We can conclude that spatiotemporality does not imply mind-independence, and a fortiori that it does not imply both mind-independence and being a theoretical commitment. This means that spatiotemporality is independent from the other two criteria in the required way. And hence, we can safely assert that if we have successfully argued in chapters 1 and 3 that the other two criteria a necessary for existence, we know that spatiotemporality is not sufficient for existence. This concludes the defense of the second condition for existence. Everything that exists is spatiotemporal, even if not everything spatiotemporal exists. The following chapter deals with the third and last condition for existence, that of mind-independence.

Chapter 3: The Independence Condition

Objectivity is naturally linked with reality; it is easy to feel that anything has to be located in the objective world in order to qualify as real, and that it must have as its real nature some character which, whether physical or not, can be regarded impersonally and externally.

Thomas Nagel, "Subjective and Objective", *Mortal Questions*, 202.

The final element in a fully fleshed understanding of existence is that of independence: everything that exists is mind-independent. As with the other conditions, independence is necessary but not sufficient for existence, or so will this chapter argue. Roughly, an entity is mind-independent if and only if its nature and existence (if it does exist) are not determined by the way we think about it. More will be said about this notion in the first section of this chapter, clarifying the kind of independence involved and the properties that are relevant to the definition. The second section presents the case for the claim that independence is necessary for existence. In support of this, we will consider the negation of the claim, for thinking about the negation shows, in contrast, the

strength of the condition. I will also review a few representative positions according to which some existing entities are mind-dependent. I will argue that these positions are problematic, thus reinforcing the thought that everything that exists is indeed mind-independent. The last section in this chapter takes up the insufficiency of mind-independence for existence. The section provides a defense of some examples of mind-independent entities, for which it is not true that they exist, and it includes also replies to some objections. Before that, however, I define the notion of mind-independence more closely.

3.1. Mind-independence: a definition

A mind-independent entity is one such that its nature and existence (if it does exist) are not determined by the way one thinks about it. Now, a few things must be said about this definition. First of all, there are two senses of independence that need to be explicitly separated. On the one hand, something can either require a mind for its creation or come into existence without the need of a mind. For instance, a car is mind-dependent in terms of origin, for it would not come to be without the mind of the engineer that designs it, it is anthropogenic. In this sense, a mountain is mind-independent: it comes to be because of forces completely indifferent to humans. But the relevant sense of 'mind-independent' is not about the origin of the entity, but about the way in which it persists existing or continues to have the properties it has. In this second, more interesting sense, a car is actually mind-independent: once it is designed and built, humans could vanish and it would still be there, even if probably no one would drive it. A character from a story, however, needs some sort of mind to know the story, and think about the characters in it, for it to have any kind of properties (not existence), for a character is an imagined person, and as such, it is mind-dependent in the relevant sense, persistence-wise.

Suppose, then, we focus on persistence-wise mind-independence (as I will from now on, unless explicitly stated otherwise). A further observation that should be made about this definition is that it is not meant to presuppose that humans are the only beings with a mind that can think about things in the relevant way. A mind is that which has thoughts and, without pretending to give a definition of mind, one can expect a mind to be capable of some reasoning. In some cases, but maybe not all, a mind also experiences emotion, feelings; it has perceptions, too. If there were to be other kinds of minds, of gods, rational aliens or whatever else, then the definition for mind-independence should include them. Hence, Berkeley's idealism is not an example of an account of a mind-independent world. Everything for Berkeley is an idea in the mind of God, nothing exists or has the properties it has without God thinking about it: everything is mind-dependent. Thus, the modified, more accurate definition should say: A mind-independent entity is one such that its nature and existence are not determined by the way any mind thinks about it.[47]

We must also clarify that the independence in question is about the way in which the properties or existence of the thing in question are not determined by my judgments, not other sorts of mental states. Thus, dependence in terms of origin is not mind-dependence in the sense at hand: it is not my judging the car to be thus and so that makes it be so, but the fact that it has been built in that way. Thinking about it is not sufficient for anything interesting to be true of the car. Another

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[47] This definition of mind-independence has the following consequence. Suppose that one were to have an occasionalist view of the world, by which God is the one cause, and what's normally considered the cause, is just the occasional cause, without the real causal power, the consequence of this is that for the occasionalist, no entity in the world of causes would exist, for it would fail the condition of mind-independence- insofar as the nature and existence of things in the world are the effect of some causal chain. I think that is not a problematic result- if God is really in the world in such a way, the world is dependent on God to the extent that, arguably, only God really exists. Alternatively, our view is incompatible with occasionalism.

example is the way in which someone may be affected by the opinions of others about them. The effect that those beliefs have on their target does not make the target or her properties mind-dependent, since the effect those beliefs have on the person affected by them is not that the beliefs become true of the person. We should also make explicit that, in general, the properties in question are non-intentional properties, for it is clear that, for instance, being judged to be F by someone is a property that an entity will have depending on whether a mind is involved in thinking about it or not, but that this does not make the entity mind-dependent. For instance, my liking my car is excluded from the set of relevant properties.

The counterfactual analysis can be made explicit, together with the specification that no judgment be involved in the assignation of the non-intentional aspects or the existence of an entity:

> a is mind-independent if and only if a would still exist/would still have its non-intentional properties were there to be no mind judging it to be thus and so.

This allows us to assess each case by considering the closest alternative to a's nature or existence when there are no minds judging it to be thus and so, which provides a somewhat explicit method to evaluate the independence.[48] Some may think that this makes for a strange possibility: if at some precise moment in time there is not a single human being thinking about say, Odysseus, then Odysseus ceases to have the properties that characterize him in the story. And indeed it does, but it is not so strange. It seems strange because this possibility is very unlikely, so long as there are

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[48] I am assuming an understanding of counterfactuals in line with the Lewisian account (see, e.g. Lewis' *Counterfactuals*), which, while not being the only account available, nor being free of problems, is the most serious attempt at a theory of counterfactuals. Even still, I don't want to delve deeper into this understanding of mind-independence than the above remark, for there is no room here to provide a full account of counterfactual conditionals

humans around, so we assume it does not happen. And even if it did happen, there are plenty of ways in which new humans can start thinking about Odysseus afresh: plenty of books that make reference to his story. It sounds less strange to say that if all humans were to disappear and all human traces of Odysseus were vanished, then Odysseus would cease to be the character from his stories, for the stories would be gone. However, in terms of what's metaphysically relevant, there is no difference between the momentaneous time in which humanity ceases to think about Odysseus, and the permanent state in which it will never do so again.

This analysis, however, must deal with a problematic case. The initially obvious thought that something is mind-independent if its existence or nature does not depend on a mind judging it to be so forces upon us the question: What about thoughts (not Fregean thoughts, but the subjective thoughts that we don't really share)? Are they mind-independent or mind-dependent? If the latter, then thoughts won't have determinate existence. Suppose it is the case that I am thinking that the dog is asleep. The thought would not exist if my mind didn't exist. But does this mean that my thought is mind-dependent, and therefore has no determinate existence, since it depends on me thinking it? One way to go about explaining how thoughts can be taken to be mind-independent is to argue that my thinking that the dog is asleep does not depend on anybody else judging me to be thinking that. So, mind-independence is about the independence from the thoughts or judgments of an observer, say, the scientist who is trying to figure out what there is. But this will not do, for according to this understanding of mind-independence, fictional entities would come out as mind-independent, for the judgments of the observer will not change the properties of the intersubjective fictional character. I think the best way to understand the way in which thoughts are mind-independent is that the thought that I am having does not depend on my thoughts about that thought: if I think the dog is asleep, then that requires no second-order thought about it in order to

be a thought about the dog. So, I need not think "I am having a thought that is thus and so", for the thought to be thus and so. The thought does not depend on my judging it to be. Now, if we eliminate all minds, then thoughts and ideas would not exist, so they are mind-dependent in that special sense- they require minds, but not necessarily the judgment of any mind. The mind is indeed the medium for thoughts, but we should focus on the epistemic sense, as remarked earlier. It is important for the notion of mind-dependence to capture the fact that certain entities take their properties just because we think them to be thus and so.

The same thing can be said about minds themselves: The fact that I think I have a mind does not make it so that I do have a mind. And, conversely, I could never come to realize that I have thoughts, and stick to first-order thoughts all my life, all minded beings could never have a single second-order thought and they would still have minds and all the first-order thoughts they have. Minds being minds is independent of our judgments. Whether there are minds or not, does not depend on anybody realizing that there are.

Now, this is by no means the end of the matter and some have thought that all conscious thoughts require a second-order thought.[49] I don't want to get into that debate here, so I leave it open as an option that thoughts are actually mind-dependent under our definition of mind-independence, in which case, they will not have determinate existence--unless, of course, one denies that thoughts are a separate kind of entity: one could be a reductionist and argue that thoughts are just brain states, and so there is no sense in which they are nothing over and above a physical state, which is easily argued to be mind-independent. Again, this is a controversial position, and even if attractive, I will

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[49] See Carruthers' entry: plato.stanford.edu/entries/consciousness-higher

not spend time here providing reasons in support of it. The main point of this discussion is to acknowledge the issues around the status of the mind-independence of thoughts.

3.1.1. Mind-Independence v. Objectivity

It might be thought that mind-independence should be identified with objectivity. Here I argue that this is not the correct approach. But even if the two notions are not equivalent, might there be a relation between mind-independence and objectivity? The notion of objectivity is itself a complex and controversial notion, which can be sharpened in many ways. Since the main aim of this section is to explore the possibility of a connection between objectivity and mind-independence, I discuss a couple of takes on the notion of objectivity itself: Nagel's theory and Wright's theory. Eventually I conclude that there is indeed such a relation, even if it is much more subtle than expected.

Why not say that everything that exists is objective? Under most understandings of objectivity, it is theories, discourses or statements that are objective. An objective field is a realist field, a field whose object is to be taken as real, as part of reality, not of our making (more about this later). Since existence is predicated of entities or objects, calling an entity objective would be misguided. If we are to call entities, things, objective, or even their properties (instead of the statements about them), then there may be a case to be made that objectivity and independence are indeed equivalent, or even synonymous. But since objectivity is commonly taken to apply to discourses (see the accounts of Nagel and Wright below), I deny that the two notions are equivalent in this simple way. But, of course, maybe we want to defend, instead, an apparently straightforward connection between objectivity and mind-independence:

A statement (or set of statements) is objective if and only if it is about mind-independent entities.

Since I don't want to get distracted by the difficulties in the notion of aboutness, I am going to keep this point at a slightly superficial level. Take first the right to left direction of the biconditional: If a statement (or set of statements) is about mind-independent entities, then it is objective. The statement 'This table is beautiful' is not objective, for arguably beauty is not objective. But this statement is about something that is mind-independent: the table. So this conditional does not hold. The left to right conditional can be criticized on the same grounds: If a statement is objective, it need not only be about mind-independent entities. It is an objective statement that some people are scared of ghosts, but ghosts are not mind-independent. I am assuming that it is not true that ghosts exist, they are invented by humans; as fictional entities, they are something only insofar as some human is thinking about them, fearing them or writing about them. So the connection between objectivity and mind-independence is subtler than initial appearances.

In what follows I take up two of the most important theories about objectivity, to see whether its connection with the notion of mind-independence can be brought to light. I will conclude that even if Nagel's attempt is contrived, Wright's notion of objectivity gives us a rich insight into the nuances of the relation between objectivity and mind-independence.

3.1.1.a. Thomas Nagel

Thomas Nagel famously wrote about objectivity as what he called the view from nowhere. His explanation is left at an illustrative a level, but it is rather rich as an image of what we mean by 'objective'.

> Objectivity requires not only a departure from one's individual viewpoint, but also, so far as possible, departure from a specifically human or even mammalian viewpoint. The idea is that if one can still maintain some view when one relies less and less on what is specific to one's position or form, it will be truer to reality. The respects in which the results of various viewpoints are incompatible with each other represent distortions of the way matters really are. And if there is such a thing as the correct view, it is certainly not going to be the unedited view from wherever one happens to be in the world. It must be a view that includes oneself, with all one's contingencies of constitution and circumstance, among the things viewed, without according it any special centrality. (Nagel 209)

Thus, for Nagel, objectivity applies to viewpoints, and these are objective if they take a step back from any particular observer. This establishes a relation between objectivity and mind-independence: Nagel admits that 'the move towards objectivity reveals what things are like in themselves as opposed to how they appear' (212). Viewpoints that are more purely about the object are the objective ones; those that are embedded in a particular way of looking at the object are subjective viewpoints. According to this, the more objective the viewpoint, the less the perception of the object is affected by the observer, and so the result is an observation closer to the nature of the thing in itself, independent of any viewpoint.

Nagel thinks that, ultimately, we cannot attain a completely objective point of view, but that is not a problem, for the steps that we can take away from the completely personal point of view tell us something about reality, even if not a completely objective reality. This is true especially when it comes to problems to do with free will, personal identity, agent-centered morality, or mind and body, for which it is not possible to separate a human point of view from the core of the matter:

> Perhaps the best or truest view is not obtained by transcending oneself as far as possible. Perhaps reality should not be identified with objective reality. The problem is to explain why objectivity is inadequate as a comprehensive ideal of understanding, without faulting it for not including subjective elements it could not possibly include. … This proposal … implies that there is no single way things are in themselves. (112-3)

I think that linking objectivity to viewpoints does indeed make it difficult to figure out what it would be to have a viewpoint that is not from any one point, one that is purely objective. Although this, with all its Kantian flavor, is not the only possible conclusion.

I think, instead, we should take it as a reductio for the claim that objectivity is about viewpoints. As an interesting comparison, take Berkeley's argument that everything is an idea. His suggestion is that since all the contents of our minds are mental (they are ideas and thoughts), all we can perceive and think about are ideas. In order to account for the apparent objectivity of certain perceptions (for they are independent of our wishes, regular and highly organized), he introduces God, in the mind of whom all ideas endure, and to whom we owe reality as we know it (as ideas). Berkeley's

assumption, in a nutshell, was the connection between the fact that we indeed require ideas and thoughts to think about reality and the reality that we are thinking about. Berkeley did not separate the two. Now, maybe that should be the default position, to identify the way in which we think about something with the nature of the thing itself, but I think that other things being equal, the burden of proof is on Berkeley. There is no reason not to think of ideas as representational, and thus as allowing us a way to think about things not mental, and this position is less destructive of our general beliefs about what things are like: not ideas.[50]

Nagels' mistake is analogous to Berkeley's: It is true that whatever we think about, we must think it from a point of view, and that as hard as we try to make our thoughts objective, those will be from a point of view. Even the most abstracted viewpoint, the view from nowhere, is a view, which involves a perspective. But we need not take that to mean that 'reality should not be identified with objective reality', for we can separate the way we think about something from the thing itself. Or rather, instead of taking objectivity as a way of conceiving of something, we ought to identify objective discourse in a different way, by focusing on the object of discourse and making that the characterizing mark of objectivity: objective discourse focuses on mind-independent entities and has nothing to do with our way of thinking about them, but as we pointed out before, this cannot be the end of it, for there are cases of subjective discourses that are about mind-independent entities. Wright's account, which follows, is an attempt to characterize objective discourse along those lines, connecting objectivity to the mind-independent nature of the object, and avoiding the downfalls of the most simple suggestion.

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[50] More on this argument in section 3.2.1.a, of this chapter.

3.1.1.b. Crispin Wright

In *Truth and Objectivity*, Wright writes about truth, objectivity and realism. The aim of the book is to give a framework for realism/anti-realism debates that avoids some of the issues of the previous discussions:

> I propose a framework for this kind of dispute which both proscribes, as misconceived, certain traditional anti-realist "paradigms" –ways of defining the anti-realist position—and allows that a plurality of distinct, though related, considerations may properly motivate (…) the kind of conception of a discourse to which realists are drawn: a conception which would view its characteristic claims as fitted for representation of aspects of a reality not of our making, and the characteristic intention of those who practice the discourse as being to succeed in such representation. ("Précis of Truth and Objectivity" 863-4)

Wright wants to give a new framework in terms of more sophisticated notions of truth and objectivity, in order to characterize realism as the kind of discourse which is about a reality 'not of our making', that is, mind-independent. Wright gives a multidimensional analysis of objectivity whereby there are several conditions that an objective discourse can satisfy. Not all these conditions are necessary, however. The first condition is such that if a discourse fails it, that is sufficient for its objectivity. On the other hand, if the condition is satisfied, that does not mean that the discourse is subjective, for, at that point, the other three conditions come into play, and a discourse that satisfies any of them is a candidate for an objective reading- not all three conditions are necessary for the

objectivity of the discourse. Therefore, there are different ways in which something can be objective.[51]

The first criterion is Epistemic Constraint, EC, and when the discourse fails it, it is considered objective:

      a. *Epistemic Constraint*: P if and only if P may be known.

So the claim is: if some truth is such that we cannot come to know it, it is completely separated from anything that would make it subjective, so it must be objective. But Wright adds to this: even if EC holds, some discourses may still be objective. This depends on whether or not the discourse satisfies the following extra conditions:

      b. *Wide Cosmological Role*: A discourse has wide cosmological role if and only if statements in that discourse appear in explanations of a number of contingent states of affairs, "other than, or other than via, our being in attitudinal states which take such states of affairs [as dealt with in the original discourse] as object" (*Truth and Objectivity* 196). That is, the discourse cosmological role is wide when we can use it to

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[51] Wright is giving us a model for giving a theory of a complex notion, one where the notion is multi-dimensional, and something can fulfill the requirements without thereby satisfying all of the conditions involved. We could use this as a model for a theory of existence, so as to avoid indeterminacy in the application. I don't have the space for pursuing this thought further, but there are two reasons why I think the path followed here is better. Firstly, having the concept of existence come out as trivalent is, I think, an advantage of the theory: it adds nuance and explains some of our intuitions. And secondly, I think that all three conditions for existence are necessary for existence, so there are not several ways in which something can count as existing.

explain states of affairs that have nothing to do with the discourse or our judging the discourse thus and so.

c. *Cognitive Command*: Wright claims, "[a] discourse exhibits Cognitive Command if and only if it is a priori that differences of opinion arising within it can be satisfactorily explained only in terms of "divergent input", (…) or "unsuitable conditions", (…) or "malfunction" (197). That is, if two people disagree, at least one of them is committing some sort of cognitive mistake: lack of or mistaken information, or an error in interpretation or understanding of the information, be it either because of bad conditions or some other malfunction (e.g. prejudices or mistakes). In short, there is no blameless disagreement in an objective discourse.

d. *The Euthyphro Contrast*: Assuming that a discourse satisfies EC, truth and best opinion coincide, but is P true because it is judged to be so, or is it judged to be true because it is true? For a discourse to be objective, its truths cannot be response-dependent, they cannot fall on the wrong side of the Euthyphro Contrast, that is, they have to be judged to be true because they are true, and not vice versa.

These conditions constitute an attempt to establish that even if all truths of the discourse in question are knowable (that is, the discourse satisfies EC), the subject matter of the discourse may be objective, separate from our judging it to be thus and so, and therefore, a realist discourse.

Thus, the wide cosmological role of a discourse is taken as evidence that we're talking about something that does not depend fully on our beliefs about it; how could the discourse be useful in such disparate topics otherwise? The best explanation for the wide cosmological role of a discourse is not that some magical coincidence makes it such that we can use it in diverse contexts, but that it

is because the discourse is about some mind-independent entity that is connected to other entities and thus to other contexts of discourse. For instance, a statement about a physical fact, say, the orbits and movement of the planets in the Solar System, has a very wide cosmological role. That fact can explain what we see from the Earth when we look into the sky, it can explain the changing of the seasons, the passage of days into nights, it can explain us feeling colder in the winter in the Northern hemisphere, it explains also, in part, the harvest cycle and the shedding of trees, etc. Such broad application, according to Wright, points to the fact that a statement of the workings of the Solar System is an objective statement.

In the same way, if the condition of Cognitive Command is satisfied, that is, where there is no blameless disagreement, the disagreement is to be explained by a cognitive mistake, which suggests that the information and evidence that should be the base of the correct judgment is independent of the knower. For example, if I say that we are in the USA, and you claim that we are in Europe and we are right next to each other, we must check our facts, because it cannot be that we are both right. It is not a matter of personal opinion, as it is, for example, when it comes to preference in ice-cream flavor: you are not wrong in a cognitively relevant way if you think vanilla is better than chocolate. A discourse about preference in ice cream flavor does not satisfy Cognitive Command.

And lastly, with regards to the last condition for objectivity, if a subject matter is response-dependent, that is, if the truth of certain statements truly depends on our response to something, then the discourse in question is not mind-independent. It may be tempting to disagree with this because of the following. Take a good candidate for a response-dependent discourse: color talk. One may think that actually, colors when understood correctly, are mind-independent because they can be reduced to certain wave-lengths, as they are reflected from the surfaces of the objects that have

the colors. But if this is true, then the discourse is not actually response-dependent, for this implies that what determines the color is not the response of the observer but the wavelength of the reflection. A truly response-dependent context is one such that being F is nothing else than being perceived or understood as F by the relevant judges. If color is understood as response-dependent, as it commonly is, then we must agree that the nature of color is not independent of what we think about it, and so a statement of color is subjective because it falls on that side of the Euthyphro Contrast.

In summary, Wright's analysis of objectivity is trying to pin down the way in which an objective discourse is about mind-independent entities, and in general, capturing the notion of objectivity is an attempt to describe the features of those discourses that talk about mind-independent entities, tracking their mind-independent nature. This account defines objectivity not just as a discourse about mind-independent entities, but a special kind of discourse about mind-independent entities. An objective statement is an attempt at claiming something true about the mind-independent reality, as such and not as we perceive it or judge it to be. I conclude, therefore, that there is a relation between objectivity and mind-independence, even if not as simple as it was originally thought. Even if Wright's account has not been properly evaluated, this short digression into the notion of objectivity had the aim of elucidating the relation, if any, between the notions of mind-independence and objectivity. The conclusion, again, is that an objective discourse is usually identified in terms of mind-independence in the sense that an objective discourse will be about mind-independent entities as such, and not as we perceive them of believe them to be. I will leave this topic here, for the focus here is on the entities and not our discourse about them, and that means that we can proceed with the notion of mind-independence.

3.2. Mind-Independence is a Necessary Condition for Existence

This section provides an argument that mind-independence is a necessary condition for existence. The strategy consists in connecting the notion of mind-independence to the realist position about the external world, and the contents of it. The point is this: if mind-independence were not a necessary condition for existence, then some sort of idealism about the world would follow, for there would exist, as part of the furnishings of the world, some mind-dependent entity. By arguing for a realist position about the external world, it follows that mind-independence is necessary for existence. I do not pretend that the case for realism is unavoidable, but the following considerations will establish the realist position and the mind-independence of everything existing as an attractive position to be regarded seriously.

A realist about the external world believes there to be some reality, the world, which is really out there, external. This is the minimum claim of realism, but most realists also believe that this external reality is the way it is whether we believe or not, that is, that not only its existence but also its nature is mind-independent. Thus, someone who thinks that as it turns out, the world is mostly how we think it is, is a realist about the external world; but someone, like Kant, who thinks that we cannot know anything of the thing in itself, is also a realist in this minimal sense: the thing in itself is detached from our cognition. So this minimal realism is not a thesis about the correctness of our beliefs, but about some reality being there that has nothing to do with us. Call this weak realism: there is some reality that is mind-independent; strong realism, on the other hand, has it that this reality is such that we can know it - some of our beliefs about the nature of the external world are true and we have access to the nature of the external world. It is this latter form of realism that is best suited for our defense of the mind-independence of existents, for we are claiming something

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about the inhabitants of the external world, which requires more than just the pure fact of there being an external world.[52]

Now, it is best to separate this kind of realist positions about the mind-independence of the world and the things in it, from a semantic kind of realism. We can adopt the following terminology (*Thinking about Mathematics* 24-33): realism in ontology is the view that we just called realism above, and it has it that reality or the objects in question exist mind-independently. I will call the view opposed to this kind of realism 'idealism': the disputed entities are mind-dependent. There is another way of not being a realist in ontology, which is to deny the existence of the objects in question altogether, like the nominalist does, but that is not a view that is relevant for the dialectics of this chapter. On the other hand, one can defend realism in truth-value, which is the view that the statements of the discourse in question have mind-independent truth-values, that is, their truth or falsity does not depend on the knowers in any way. In what follows, the view that is against this kind of realism will be called 'anti-realism'. In principle, one could be a realist in one of these senses but not the other, although the specifics of each position may make it such that there are consequences that preclude it. In what follows, I will mostly focus on realism in ontology, but will have something to say about one of the most important defenders of anti-realism, that is, Michael Dummett.

If realism in ontology is true, then mind-independence is necessary of existence. The realist thinks about existence in a robust way, in a way that, indeed, takes whatever exists as mind-independent. But not everybody is a realist. The view that some things exist even though they are mind-dependent is idealism. There are several important idealist views both about particular fields of knowledge and in general about the whole of reality. Since these idealist positions claim that mind-dependent

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[52] But see below the section on Kant for further discussion about this.

entities exist, they have a different idea of what existence involves, and so I will argue that they are wrong in order to build my case that mind-independent is necessary for existence. My case will also be strengthened by a positive argument in support of realism in ontology. So, I present firstly a consideration directly in favor of realism based on an inference to the best explanation, and, secondly, I review some of the most important idealist positions and object to them. The general structure of the over-all argument that mind-independence is necessary for existence is this:

1. Realism is supported by an inference to the best explanation.

2. Idealist positions are questionable.

3. Therefore, the case for realism is really strong: Realism is true.

4. If realism is true, the mind-independence is necessary for existence.

Therefore, mind-independence is necessary for existence.

Let us first consider a general consideration in favor of realism about the external world, that is, premise 1 above. I think that we can draw a strong inference to the best explanation that there is an external world and it is more or less like we think it is. This is not a novel argument by any means, we can find an example of it in Berkeley's *Three Dialogues Between Hylas and Philonous*; in it, Hylas confesses:

> HYL. When we see ideas produced in our minds, after an orderly and constant manner, it is natural to think they have some fixed and regular occasions, at the presence of which they are excited. (2nd Dialogue part 1)

I think Hylas is right that this is a most natural step and the most likely explanation of the data that we have. Take all the data we possess, without the assumption that there is an external reality. What is the best way to account for its complexity, appearance, regularity, and structure? Why, that there is a world more or less like we think there is, that is causing us to perceive it so. General overarching conspiracy theories are unlikely to be true, if we are being reasonable. I am not going to spend a lot of time defending this directly, for those who disagree, disagree for unrelated, philosophically sophisticated reasons, and so let's proceed to look at some of those positions.[53]

3.2.1. Some positions against realism

In this section I consider Berkeley, Kant and Dummett as important representatives of positions against realism. In arguing that they are wrong, I strengthen my case that a realist position is more satisfactory, I am arguing for premise 2 in the argument above, and as a consequence of that, we are one stop closer to the conclusion that mind-independence is necessary for existence. Each of these authors has a position that puts them in contrast to the realist position, some with respect to ontology, some with respect to truth-value. But they all are important targets for my argument that mind-independence is necessary for existence, as I will explain in each case.

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[53] This argument in one form or the other can be found in the following sources. It is sometimes called the 'no-miracles' argument, after Putnam pointed out in *Mathematics, Matter and Method* that realism is the only philosophy that does not make the success of science a miracle. See also J.C. Smart's "Laws of Nature and Cosmic Coincidences", where he puts it in terms of a universal cosmic coincidence. Wouldn't it be an incredible coincidence if the world was only *as if* there were the things that established science tells us?

3.2.1.a. Bishop Berkeley

The most dramatic example of idealism is historically relevant, even if no one takes his arguments very seriously nowadays: Bishop Berkeley. As discussed earlier, he thinks that all we can perceive and think about are ideas. Here is the full argument:

> It is indeed an opinion strangely prevailing amongst men, that houses, mountains, rivers, and in a word all sensible objects have an existence natural or real, distinct from their being perceived by the understanding. But with how great an assurance and acquiescence soever this principle may be entertained in the world; yet whoever shall find in his heart to call it in question, may, if I mistake not, perceive it to involve a manifest contradiction. For what are the forementioned objects but the things we perceive by sense, and what do we perceive besides our own ideas or sensations; and is it not plainly repugnant that any one of these or any combination of them should exist unperceived? (*Principles* 4)

In a nutshell: Everything we perceive is an idea, for our mind does not contain anything other than thoughts and ideas. We also say we perceive physical objects, thus, Berkeley concludes, physical objects are ideas. In order to account for the apparent objectivity of certain perceptions (for they are independent of our wishes, regular and highly organized), he introduces God in the mind of whom all ideas endure, and to whom we owe reality as we know it (as ideas). So everything that exists is either a mind or an idea in the mind of God. The only mind that needs not another mind for its existence is the mind of God. This is a version of idealism, for reality consists in ideas. Now, this argument prompts an obvious question, for it appears to conflate two understandings of perception, as the usual reply goes: The contents of our mind can be understood in themselves, as mental

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entities, or as representational of things non-mental. It is in the second sense that we perceive external objects, and it is with regards to mental furniture that all we perceive is ideas. Berkeley was aware of this, and he provided the following argument as a comeback:

> But say you, though the ideas themselves do not exist without the mind, yet there may be things like them whereof they are copies or resemblances, which things exist without the mind, in an unthinking substance. I answer, an idea can be like nothing but an idea; a colour or figure can be like nothing but another colour or figure. (8)

Thus Berkeley insists that we cannot even talk about actual physical objects because the moment we think about them, in order to compare them to our ideas, all we are thinking of is an idea, never the thing itself. An idea can only resemble (or be compared to) an idea, he asserts. It seems that this reply is still unsatisfactory. Surely, it is a logical possibility that all there is is mental, and that either Berkeley was right, or some sort of solipsism is true; I don't mean to deny that. But, even still, the fact that we think thoughts, composed of ideas, does not imply that thoughts and ideas is all that we are thinking about. So, the argument is invalid. As mentioned earlier, it seems that the issue boils down to a disagreement over who owns the burden of proof. Should the default position be the one that starts the argument from our internal data, the ideas and thoughts that we have? Or should the default position be starting with the commonsense view that our ideas are about things outside of the mind? I think that, other things being equal, we should aim to be respectful of one of the most broadly held beliefs, which is that we are in the world, and that the world is as it is mostly independently of what we or anybody thinks about it. If this is right, and Berkeley is wrong, then we have argued against taking all existence to be mental, as he defended.

3.2.1.b. Immanuel Kant

The next philosopher that must be mentioned in this quick overview is Kant. Kant, in his *Critique of Pure Reason*, defended transcendental idealism, which is the view that we have certain a priori principles and concepts which structure and give the necessary framework within which we perceive reality. Even though we must be in contact with the thing in itself for our perceptions (or a posteriori intuitions) to have any content, our perceptions are very much the result of this a priori structure of our cognition, and so all we perceive are appearances:

> We have therefore wanted to say that all our intuition is nothing but the representation of appearance; that the things that we intuit are not in themselves what we intuit them to be, nor are their relations so constituted in themselves as they appear to us; and that if we remove our own subject or even only the subjective constitution of the senses in general, then all constitution, all relations of objects in space and time, indeed space and time themselves would disappear, and as appearances they cannot exist in themselves, but only in us. What may be the case with objects in themselves and abstracted from all this receptivity of our sensibility remains entirely unknown to us. We are acquainted with nothing except our way of perceiving them, which is peculiar to us, and which therefore does not necessarily pertain to every being, though to be sure it pertains to every human being. (A42/B59–60)

So, according to Kant, we are necessarily ignorant of the thing in itself. He is a realist in ontology in the weak sense, but not in the strong sense distinguished above. There is a bare sense in which the world is mind-independent, but the way in which the world as perceived and understood by us is

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mind-dependent, so its properties are not mind-independent. Things as we know them are phenomena, the result of our mode of cognition and they are, therefore, mind-dependent; they would disappear were we to remove our subjective constitution.

Thus, the question over the status of things in the world for Kant can be understood in two different ways, depending on whether we think of the world as the world of noumena or of phenomena. If 'everything that exists' denotes that which is in the world of noumena, the thing in itself, which is the aim of our knowledge (even if we are necessarily left out of it, according to Kant), then that is mind-independent, indeed. In fact, it is because it is purely mind-independent, that we cannot ever know anything about it: as soon as we mold our perceptions to fit the framework through which we can understand things (that is, the a priori structure of our understanding), we lose touch with the real thing, the thing in itself. So, if we understand existence in Kant as the existence of the thing in itself, Kant believes that what exists is mind-independent and he is a realist for the purposes of our argument for the mind-independence of all existing things.

Now, as remarked before, the argument for the mind-independence of existing entities is better run with the strong version of realism, one in which we can actually talk about entities and describe them, the world we know is mind-independent and the properties of the things in the world are also mind-independent. In fact, Kant's radical version of weak realism, by which he claims we are not entitled to make any claims about the thing in itself is problematic as it stands, for there is some strangeness in his saying this. He claims on the one hand that we cannot know anything about the thing in itself, but on the other, this statement implies at least two things about it: that it is there, and that we are not perceiving it, even though our perceptions somehow depend on it being there. So, arguably, his position is untenable. This is a standard criticism of Kant. We could take his claim with

a pinch of salt (reference to Frege fully intended: the situation is similar, they are both attempting to say something that falls on the line between things that we can easily express and things that cannot be said). We can give Kant the ability to say that there is something "out there" that somehow provokes our perceptual content.

But even still, taking Kant's position to be that the noumena is more real than the phenomena is not exegetically accurate. Kant's point was to conclude that we should take the world of phenomena as real, the phenomenal world that we know about and we talk about. He wanted to reclaim the reality of the phenomenal world. Kant argues that we ought to realize that the world (phenomenal world, that is) is partly a product of our cognition, but that nonetheless, that is the world. Talk of the thing in itself is nonsense; all that we can know is phenomena. Reality is phenomenal.[54] Under this interpretation, Kant is an idealist (even if a transcendental one at that). He thinks, for instance, that a tree is a product of our perceptual and conceptual mechanisms and it exists. In this sense, Kant denies that all existing things are mind-independent; in fact, everything is mind-dependent (when taken from the phenomenal perspective, which is really the only perspective that makes sense for us to talk about).

My objection against this position is the following. It is indeed more accurate to read Kant as defending the reality of the phenomenal world. But given that he also, reluctantly, admits that there is a noumena, that there must be something "out there" ultimately provoking impressions in our senses, without which we would have no real knowledge, I think that the insistence that the

[54] Kant things that there are certain ideas that we need, even if they are about entities that are supposedly not merely phenomenal, e.g. God, or the soul. So, to a certain extend he does think that the noumena plays a role, but it is very restricted and we must be aware of the limitations that constrain our ability to talk about these things.

phenomenal world is the real world is dishonest, ontologically speaking. Since we cannot know anything about the thing in itself, we speak mostly of phenomena and we do not explicitly state that we are constraining our claim of existence to phenomenal existence. But this does not mean that the existence or the properties of things are mind-dependent, it is only the phenomenal world that is mind-dependent, not the noumena. When we do ontology, that distinction becomes essential. It may true that, practically speaking, the phenomenal is all we can hope to know, and thus phenomena should be the focus of our energies. But it does not follow that phenomena exist in the most robust way. The thing in itself is more real in a metaphysical sense than the phenomenal world.[55] And thus, in the Kantian system, what exists in a metaphysically relevant way is indeed mind-independent, even if Kant would take issue with this claim.

3.2.1.c. Michael Dummett

Lastly, let's consider Michael Dummett ("Realism" and "The Philosophical Basis of Intuitionistic Logic"), the most important modern representative of anti-realism in truth-value. Where Kant's idealism is a result of his epistemology, Dummett's anti-realism follows from his views on truth and meaning. I show here that Dummett's views on meaning and truth can be argued against. But I also argue that even if we take Dummett's position as given, there are issues with it that make it untenable.

A common view on meaning is that it is determined by the truth-conditions of the statement. That is, the relationship between meaning and truth is that the meaning of a statement determines what it

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[55] One way of thinking about this is this: the ontologist who concludes that all we know about is the phenomenal world will be disappointed that she cannot study the thing in itself, and her description of the phenomena will always come with a footnote that this is just how things appear to us. The philosopher always wishes for the god's eye view, even if she may well know it is impossible.

would be for the statement to be true. In this traditional view, truth is taken to be independent of our knowing it to be true; and meaningfulness has nothing to do with us ever being in a position to verify the truth of the statement. According to Dummett, however, this disconnect between truth, meaning and verification is misguided: truth is verifiability. Meaningfulness is the same as the possibility of verification: only those statements that have been verified are true (or at least those which would be verified by some idealized body of knowers without time, attention, or memory restrictions); and only those statements that can be proved to be false, are false. Those statements for which we could have no verification or disproval are neither true nor false.

Our aim is to defend the view that existence is mind-independent, that is, that everything that exists is mind-independent. Dummett's views are about language and his notion of truth as verifiability make truth dependent on our understanding and abilities. Even so, it is tempting to make the following argument: If truth is verifiability, then the truth of any existence claim 'S exists' depends on our ability to verify that claim, which means that existence, like everything else, becomes ultimately mind-dependent to the extent that it cannot be the case that anything exists unless we can prove that it does. Now, it is interesting to note that Dummett denied the step from anti-realism to idealism; in arguing against realism in truth-value, he didn't think that we were committed to idealism in ontology. Dummett writes:

> Now certainly someone who accepts the intuitionist standpoint in mathematics will not be inclined to adopt a platonist picture. Must he then go to the other extreme, and have the picture of our creating mathematics as we go along? … This picture is not the only alternative. If we think that mathematical results are in some sense imposed on us from without, we could have instead the picture of a mathematical

reality not already in existence but as it were coming into being as we probe. Our investigations bring into existence what was not there before, but what they bring into existence is not of our own making.

Whether this picture is right or wrong for mathematics, it is available for other regions of reality as an alternative to the realist conception of the world. … We can abandon realism without falling into subjective idealism. ("Truth" 18-9)

Truth is verifiability because of our own limitations and restrictions on meaningfulness and language, not because the world is mind-dependent. Dummett thought that all truths are knowable, and expressible, of course. But he didn't think that this made whatever those truths were about also mind-dependent because the existence and nature of things is separate from language. This is to say, his arguments are about the meaning of 'exists', and the statements around it, but not about existence itself.[56]

We reach a fork here. Either Dummett is right, and we can separate his anti-realist views from an idealist position, or it is not possible to hold such a view. If Dummett is right, then he in fact agrees that what exists is mind-independent, and planets, rocks and electrons would still exist had humans never walked the Earth, and there were no minds to make judgments about them. On the other hand, we can argue that Dummett cannot actually claim that consistently. Here is why. Take the claim 'The world is mind-independent, it would still be the same were there to be no minds'. Now, if Dummett claims that this is true, and truth is verifiability, then he must claim that this is verifiable. But is it? How can we ever be in a position to verify what the world would be like were there to be

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[56] See also Neil Tennant's, "On the Necessary Existence of Numbers".

no minds? We cannot ever be in such a position, by hypothesis. (To paraphrase Nagel, we can never take the view from nowhere). So, Dummett cannot coherently claim that he is a realist in ontology, given his anti-realism. If we take this prong of the fork, we should provide arguments against Dummett's anti-realism, so we can avoid idealism and maintain either way that we have been given no good reasons to doubt that everything that exists is mind-independent.[57] In the remainder of this section I argue against Dummett's anti-realism.

The main argument for his position hinges on the communicability of meaning. Meanings are communicable, which is how we are able to learn languages and new words. But if the classical view of truth and meaning is correct, this communicability fails, which according to Dummett proves, via a reductio, that the classical view is incorrect.

> The meaning of a mathematical[58] statement determines and is exhaustively determined by its use. The meaning of such a statement cannot be, or contain as an ingredient, anything which is not manifest in the use made of it, lying solely in the mind of the individual who apprehends that meaning: if two individuals agree completely about the use to be made of the statement, then they agree about its meaning. (…) An individual cannot communicate what he cannot be observed to communicate: if one individual associated with a mathematical symbol or formulae some mental content, where the association did not lie in the use he made of the symbol or formula, then he

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[57] Note that we could also say the following: Dummett's view does collapse into idealism. Then it follows that the world is not mind-independent, which given our theory of existence implies that the world and its contents do not determinately exist. This is not an incoherent alternative. But it seems to me that Dummett does think that some existential statements are true, against this suggestion, so, overall, his position is not coherent with our understanding of existence and must be argued against.

[58] Dummett's focus is on mathematics in this article, but the argument can be extrapolated to any statement.

could not convey that content by means of the symbol or formula, for his audience would be unaware of the association and would have no means of becoming aware of it. ("The Philosophical Basis of Intuitionistic Logic" 216)

If meaning were to be not something that we can manifest in use, that is, observable, then it would be incommunicable, such is the main point that Dummett is making in this paragraph. Incommunicable meanings are impossible, therefore, meaning is use; the meaning of a statement "determines and is exhaustively determined by its use". Now, let's spell out his argument a bit more: he claims that if a statement's meaning is not communicable, the statement is not really meaningful. But not only this, he specifies that an individual can communicate only what she can be observed to communicate. How can someone be observed to communicate a statement? The test will be to behave in a certain way under certain circumstances, when the statement would be true: by assenting to the truth of the statement when the circumstances are the case, we are observably communicating what we mean, by ostentation- we mean this-happening-right-now. But this requires that we are able to verify the statement, for we must be able to recognize the state of affairs if we are to assent to the statement. Hence, meaningfulness is possibility of verification and truth is verifiability.

This argument raises a number of issues, some of which are very delicate and open a big can of worms that is outside of the scope of this dissertation. But, here are a few comments on ways to resists Dummett's reasoning. First of all, the requirement that the grasp of meaning be manifest, from which the identification of truth with verifiability follows, may be too strong. It may be, as Priest (*Introduction to Non-Classical Logic* 113) suggests, that some aspects of meaning are "hard-wired into us", think for instance of Chomsky's claim that grammar is innate. If this is the case, then there will be no need to make communication that explicit, and some may be assumed understood. In a

similar way, Craig, in "Meaning, Use and Privacy", makes an argument that we need not be able to demonstrate our grasp of sensation-words. If all there is to meaning is what is strictly observable, the phenomenal aspect of our thoughts cannot be transmitted, nor can the way it feels to see things be transmitted. But we presume that we all see things in a similar way. As Craig puts it:

> [W]e naturally assume that other human beings are, in certain respects, broadly like ourselves; these include the assumption that others have, in similar external circumstances, inner states and experiences pretty much like our own. We naturally assume, so the hypothesis goes, that when someone else faces a field of grass in daylight with their eyes open, the green that they see is qualitatively like the green that we see. (553)

So the question, again, is: when I say that the sky is blue, do I mean that it is blue-like-it-looks-to-me or just blue-like-the-color-of-sapphire? The truth is that we assume that when we use color-words we mean to denote the way in which something looks to us. The presumption that we are biologically pretty similar and have very much the same perceptual system is a good basis for assuming that we see things in a comparable way, and thus that it is not unreasonable to attribute to the meaning of color-words some phenomenal content. This content, however, is not observable. It is necessarily private. I think this constitutes a fair counterexample to Dummett's claim that everything in the meaning of the word must be observable.

Another issue is that the requirement that Dummett makes is not just that the meaning be communicable, but that that communication must be observable, in the most plain sense of observable: it requires that we must be in a position to assent to or deny the truth of a statement in

all possible relevant situations, for the statement to be fully communicable, and hence meaningful at all. This seems way too strong. Take a statement like 'Frege had 2 million hairs on his beard.' It is impossible for us to check for the truth of this statement (I am assuming time travel is out of the question). Does this mean that it is neither true not false, since it cannot be verified and truth is verification? This seems way too strong.[59] This is not an argument as much as an observation that we do not think like this about truth- we take statements like these to be either true or false, even if in principle unknowable for us. Instead of going against what speakers consider meaningful, maybe we ought to take that as a given and work our way back to how communication of meaning works.

With Dummett, I conclude this survey of some of the most prominent idealist and anti-realist positions. A case was presented for each of them that they are either better interpreted as being in agreement with the mind-independent aspect of all existent entities, or there are independent objections against the positions. If idealism in general is problematic, then it follows that a realist position is preferable. Given that one of the main claims of realism is that the external world and its contents are mind-independent, the case for the mind-independence of everything that exists has been made. Before moving on, though, in the next section, I take up an objection against my view not from an idealist philosopher, but from someone who thinks that there are no conditions at all attached to our concept of existence.

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[59] Priest (*Introduction to Non-Classical Logic*) gives this other example: "It is not the case that there are unicorn-like creatures somewhere in space and time" (114)

3.2.2. Objection: Azzouni

Azzouni, in *Deflating Existential Consequence*,[60] explains why he thinks that as a matter of metaphysical constraints, there are none on what exists, not even mind-independence, and hence it is not necessarily the case that everything that exists is mind-independent. His claim is that if one were to believe that some kind of mind-dependent object, say fictional entities, were to exist, that there would nothing conclusive to say about "sheer existence" (93) that would make this an impossible option. In a nutshell, imagine a disagreement over the existence of some entities, where the only difference between the two sides is that one believes that they exist mind-independently and the other that they do not exist in any way. He proceeds to argue that there is no way to settle the disagreement. Therefore, it cannot be correct to say that mind-independence is necessary for existence, for otherwise, that would have settled the disagreement.

His way of illustrating this is to imagine two communities, one that takes fictional objects to exist in no sense at all, and a second one that practices fiction in exactly the same way as the first, but takes fictional entities to exist in fictional worlds, which are mind-independent. Call members of these later community fictional realists. The argument is, again, that once we understand the position of fictional realism, we realize that there is no way of adjudicating between the two communities, the realist and the anti-realist ones. Since the entities in question are mind-dependent, fictional entities, if mind-independence was a condition for existence, we should be able to criticize the realists for taking those to exist, but the two views, realist and anti-realist, come out as equivalent. Thus, by reductio, mind-independence is not a criterion for existence.

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[60] See also: Azzouni's "Ontology and the word 'exist': Uneasy relations"

In order to develop this argument, Azzouni separates two possible ways one can be a fictional realist. He argues that one of the possible fictional realist views is not workable, so it can be ignored. The second realist alternative is then put up against the anti-realist position to proceed with the main argument. On the one hand, we can take every fictional possibility to exist already, and each work of fiction, say, picks out at least one of those (infinitely many, really). His issue with this version of the view is that if this were true there is no way to be sure that the work of fiction would actually pick out the fictional entities it describes, even if you assume that there are such fictional worlds. There is nothing in the community's practices that fixes what its fictional terms refer to in such a way that evidence can be brought to bear for or against this (94). Even if the community claims that they are picking out such entities.... they could be wrong. They have no way of knowing what they are picking out or that they are referring at all, or that the descriptions are adequate for those objects, since they are mind-independent by hypothesis, but fictional, so we cannot find them and check, so to speak.

Suppose the fictional realist retorts: There is no danger of not picking out the right fictional entity, because there are all possible fictional entities, for each story or poem or movie, there is that fictional entity and also there are all the possible variations on all of them. This solves the initial objection because reference is successful by default, and each story picks out exactly whatever fictional entity the story describes. But Azzouni thinks this is not a good reply, he thinks that there is no way we can know that all the possibilities are out there. So, his complaint is epistemological: the fictional realist cannot know that what she is saying is the case. So, according to Azzouni, this multitudinous fictional realism is not feasible for reasons epistemological.

Without defending fictional realism per se, I think the main problem with Azzouni's criticism of this branch of fictional realism is that it is based on a misunderstanding of what we do when we give a philosophical theory. The point of theorizing about such entities as fictional or abstract objects is to try to come up with a theory that fits all the data, which we all agree upon, as it is readily available to all. The adjudication will be not according to the fit with the data (that is to a great extent a pre-requisite for being taken seriously), but depend on theoretical virtues like simplicity; its coherence with global considerations about how we take the world to be; and other sorts of comparisons and trade-offs. In this manner, even if it is true that we don't know for sure that there are infinitely many mind-independent fictional entities that we latch on with our fictional descriptions and representations, the point of such a theory is to suggest that there are advantages to accepting such entities, not that we know for sure they exist through our fictional endeavors.[61]

In any case, Azzouni rejects this realist position and goes on to consider the second kind of fictional realism, with which he runs the arguments against the possibility of conditions necessary for existence. The fictional realist in this version claims that fictional objects are brought spontaneously into existence by their authors. The authors create the entities, which then go on to exist mind-independently. The problem with this view, according to Azzouni, is that this fictional realist basically agrees with everything that the non-realist says: the entities are made up by the authors, and all their practices will be the same. The fact that the fictional realists will still assert that the entities exist in a robust sense is 'disingenuous': The two views agree on "all the facts available to adjudicate

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[61] This argument is somewhat analogous to the knowledge argument against the mathematical platonist. One difference, however, is that the platonist claims that we *know* about mathematical entities and that is one of her premises for the conclusion to their existence. The fictional realist is proposing that there must be all these fictional entities already there, as a way to explain fictional practice, but she is not claiming that the authors think they know about their fictional creations as the starting point for her argument.

the matter" (96). So, the realist and anti-realist both take fictional entities to be exactly the same, but one side thinks that they exist and they are mind-independent, and the other side thinks they don't exist in any way. I think his argument is this: he is saying that if mind-independence was to imply existence, we would have a clear idea of the difference between the two views, but since the two views seem to involve basically the same understanding of the practice of fiction, then we cannot say that mind-independence implies existence. Claiming that these entities are mind-independent is not enough to establish a substantial difference between the two views, and therefore, that mind-independence cannot be a condition for existence.

In my opinion, again, the misguidedness here is methodological: It is not surprising that the two theories have a similar understanding of the practice of fiction, for it is that practice that they are trying to explain. One takes phenomena that are already in place and tries to explain them by providing a theory that accounts for the workings. The assumption doing philosophy is that the data we have available are the same for all. In fact, given that we mostly agree on the facts, empirical investigation is many times pointless in philosophy. Therefore having two theories that agree of the data available to adjudicate the matter is not the mark of the emptiness of the issue, but many times it is the mark of a philosophical investigation, especially if we are talking about non-physical entities. Still, this does not mean that there is no substantial issue to be settled. It will still be the case that one theory is better than another, only not on empirical grounds, but methodological, theoretical, philosophical grounds.

Furthermore, even if the two communities are indistinguishable in some respects, people in one believe that these entities exist and people in the other do not. This is a big difference, at least for the ontologist. Some may think here that what Azzouni is claiming is that the dispute is merely

verbal, for the communities disagree only as to whether these entities exist or not and where they to clarify that distinction in their use of the word 'exist' that would be the end of the dispute.[62] Specifying what we mean by verbal disputes is not so simple, but let's take Chalmers account for the sake of argument. He writes:

> A dispute over S is (broadly) verbal when for some expression T in S, the parties disagree about the meaning of T, and the dispute over S arises wholly in virtue of this disagreement regarding T. (Chalmers, 535)

Do the two communities in Azzouni's case appear to fall under this definition of verbal dispute? I don't think so: Azzouni's conclusion is that there is no criterion to be attached to 'exists' because two communities can disagree about nothing but the existence of some entity and there is no way of settling the disagreement. So, the case is set up such that the disagreement is about the application of 'exist' to 'fictional entities', not about the meaning of 'exist'. So, applying the definition above, the expression S is 'Fictional entities exist', and the expression T that would make this verbal is 'exist'. But the parties do not disagree over the meaning of T. They disagree over the truth of S in itself. In conclusion, this example of the two communities does not show that there is no way to argue that mind-independence may be in fact connected in some substantial sense to existence. In fact, I give such arguments in this very chapter.[63]

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[62] On verbal disputes see Hirsch "Physical-Object Ontology, Verbal Disputes, and Common Sense", and Chalmers "Verbal Disputes".

[63] See also Raley's "Deflating Existence Away? A Critique of Azzouni's Nominalism", where she argues that Azzouni fails to challenge philosophical strategies for what exists.

3.3. Mind-independence is not a sufficient condition for existence

Even if mind-independence is a necessary condition for an entity to exist, I want to argue next that it is not the case that it is a sufficient condition. This means that for some mind-independent entities, it is not true that they exist. Determinately non-existent entities (entities for which it is false that they exist) are mind-dependent according to the present suggestion: I claim that an entity must fail the three conditions in order to determinately not exist. But some entities are such that it is neither true nor false that they exist, and some of those are mind-independent. If a mind-independent entity fails to be spatiotemporal and/or it fails to be a member of the quantificational domain of the most satisfactory description of the world, then it constitutes a counterexample to the claim that mind-independence is sufficient for existence, assuming that the arguments I've given for the necessity of these two entities are correct. I will defend, in particular, the view that mathematical entities are mind-independent, and since they are uncontroversially not spatiotemporal[64], they constitute the example that will prove the point at issue.

If the arguments for the necessity of the other two conditions for existence are sound, then they constitute a case for the non-sufficiency of mind-independence for existence. In the previous chapters, I have defended the necessity of the condition that I called the linguistic condition: the basic thought behind this claim is that once we think of a true and complete scientific description of reality that we are going to incorporate into the condition for existence, there is no room left for an entity that exists to fall in between the cracks, unless we take seriously the possibility of a conceptual or a causal island that is in principle unreachable for us. I argued then that we have reasons to dismiss this possibility in chapter 1. I also defend, in chapter 2, the view that everything that exists

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[64] Geometrical entities, like points, lines and planes, are also not spatiotemporal, for even though they are in mathematical spaces, they are abstract-- they are not in space and time as understood in Chapter 2, which would put them in the actual, physical world.

must be spatiotemporal by mounting a case for anti-realism about abstracta, that is, that no non-spatiotemporal entities exist. The main argument for this position is an application of Ockham's Razor. If these arguments are taken on board, again, they constitute an indirect argument for the insufficiency of mind-independence for existence, unless, of course, the other two criteria follow from the mind-independence of an entity. In what follows I argue here that for some entity, it is mind-independent but not spatiotemporal. By giving a strong example of a mind-independent entity that does not satisfy at least one of the other two criteria, the argument is complete that mind-independence is not sufficient for existence.[65]

3.3.1. Mathematical entities are mind-independent

3.3.1.a. Applicability

A mind-independent entity is one such that its nature and existence are not affected by what any mind believes about it. The best evidence that mathematical entities are mind-independent is the applicability of mathematics. Math is applicable to the physical world, this is an unquestionable fact. It is also an amazing fact: how is it that math, a theory about some kind of abstract entities, is so helpful to describe the world? Without giving a full answer to this question here, I put forward as part of the explanation that the entities that math talks about must be mind-independent for math to be useful in describing the world. Note that I am not claiming that they thereby exist: in order for something to exist it has to be spatiotemporal and numbers are not so. I am also not claiming that the mind-independence of mathematical entities constitutes a complete explanation of their applicability, but just that it is part of the explanation. Suppose the contrary: if mathematical entities were mind-dependent, what we believe about them would affect their nature. But if that were the

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[65] Ideally, I would also provide an argument against the inference from mind-independence to theoretical presence. Only in that way would the case be complete for the independence of the other conditions from mind-independence.

case, then if we all believed that 2=3, then 2 would indeed be equal to 3. The world would not have to comply, though, unless we want to say the world is also mind-dependent, so math would not applicable. Therefore, the applicability of math is proof that mathematical entities are mind-independent.

Now, one might be tempted to think that it is not necessary that the identity of numbers should be within the things that could be affected by our beliefs, and so that it does not follow that since we believe in this hypothetical situation that 2=3, that truly 2=3. But if numbers were mind-dependent, then at least some aspect would have to be dependent on our judgments of it. Since any mathematical property of numbers is necessary,[66] any example will work, for they are equivalent for the present purposes. This means that they are not dependent on beliefs. However, the objection goes on, could the properties of mathematical entities not be dependent on the way we conceptualize things? The fact that the earth goes around the sun does not depend on any concept. But maybe the truth of 2=3 can be seen as dependent on our concepts of 2 and 3? Clearly, we could mean different things with '2' and '3' than we do, in the same way that 'the Sun' or 'the Earth' can mean something completely different. This is not the point. The point, I think, is that there are several possible ways of conceptualizing certain mathematical concepts. Take number theory, there are different kinds of number orderings, alternative arithmetics. Isn't it our choice to pick one over the other? Yes and no. We pick the one that seems to work best for working with the physical world. And we study the rest in pure mathematics, until we find an application (or not). But the fact that one of these arithmetical theories is applicable to the world is independent of our choice. We cannot

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[66] I don't want to position myself here as to whether the existential status of mathematical entities is necessary. I must rather say that existence is not a purely mathematical property; it is not internal to the theory that defines the mathematical structure in which we find mathematical entities. This notion of mathematical property also excludes other properties that may be contingent, for instance the property of the number 34 of being the number of years old I will be after February 2014.

decide to make it so. So, mathematical theories are somewhat concept-dependent, that is, each theory picks out a concept and what follows or does not follow depends on the concept that the theory deals with. But this does not take away from the fact some of those theories are applicable, from which we conclude that mathematical entities are mind-independent, as is the world their theories apply to. For I am assuming throughout this discussion that the world itself, to which math applies so wonderfully, is mind-independent. It is the applicability of math to a purely mind-independent realm that is evidence of its mind-independence. One could argue the other way and claim that the applicability of math must mean that the world to which we apply math is somehow dependent on our way of perceiving it, which is Kant's line. But given the arguments on the previous section that everything that exists is mind-independent, I am assuming that the physical world exists and it is mind-independent.

Let's consider another related objection. There are parts of theoretical math that are not applicable, of which some will be have an application some time in the future and others will not. With regards to these ultimately inapplicable parts of math, are we committed to their mind-dependence? I think not. All mathematical entities stand or fall together in this issue. Firstly, we must point out that the physical world to which math applies is contingent; it could have been different. There is a possible world[67] for each mathematical theory that has no application in this world, a world where that theory does apply. But then that means that the theory is possibly applicable[68]. This is important because this is to say that it is not a change in the theory but a change in the world that needs to happen for

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[67] And if we consider dialethic mathematical theories, then some of the worlds to consider are impossible worlds.

[68] If we are dealing with impossible theories, the impossible world where that theory is applicable shows that there is a world where it is applicable; it just so happens that it is an impossible world. Once we take on board impossible worlds, it is not nonsense to talk about something impossible being the case in some world. We just have now two kinds of worlds: possible (which most people think includes the actual) and impossible.

the theory to actually apply. The status of mind-independence or mind-dependence of a theory should not depend on something unrelated to it, like what the physical world is like, even if its applicability is a sign of its mind-independence. Such physical changes, I claim, do not affect the mind-independent nature of the mathematical theory. Therefore, mathematical entities are mind-independent (so long as we assume that the world is mind-independent).

One may retort to this reply, however: On the one hand, I take it that math is mind-independent because it is applicable to the actual world,[69] but then I proceed to say that all math is in principle applicable. But does this not undermine the claim that applicability is evidence of mind-independence? Will any not applicable theory, in any field, be taken as dealing with mind-independent entities just so long as it could in principle be applicable? Not so, for the point is that mathematics as a discipline makes no distinction between theories depending on whether they are applicable or not. Mathematics is homogenous in that respect (in contrast with empirical sciences, which do make a difference between theories that are applicable and those that are not). Therefore, if the applicability of one part of math is a good argument for the mind-independence of the entities relevant to that part of math, it is also an argument for the mind-independence of all mathematical entities.

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[69] Isn't money, clearly mind-dependent, also applicable? Not in the same sense—money is an intersubjective entity that we use in our interactions, but there is no external application of monetary theory to issues non-economical. The striking aspect of the applicability of mathematics is that it applies to the physical, mind-independent world, which has nothing to do with us.

3.3.1.b. Apriority

I now give a second argument for the mind-independence of mathematical entities. I want to rehearse an argument that takes the aprioricity of math as a premise.[70] Math is a priori, then, but what does that mean? I won't give a theory of a priori knowledge here, for that would take us too far afield, but here is all we need to say for the present purposes: If some statement is a priori, it is justifiable independently of experience.

One consequence of this is that if something is a priori, it can in principle be known by any mind, barring specific limitations: the ability of a mind to get to know something a priori cannot depend on perceptions that one mind may have had but not another. That is, no particular experiences a mind has had will determine whether it can know about something a priori. This means that if mathematical knowledge is a priori, then there is no particular mind that mathematical entities depend on, for any mind can know about them regardless of the mind's experiences. Therefore mathematical entities are independent of any particular mind that understands the theories about them, of any individual's history or abilities (among those who can understand, of course). Now, this is not quite the notion of mind-independence that we have been working with. But if an entity is independent of any particular mind, then, does it make sense to say that it would have existed had

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[70] This argument, which takes math's aprioricity as a premise for its mind-independence is in stark contrast with the Kantian argument that has it that since math is a priori, it must be mind-dependent. The main point of departure is that Kant thought that we can have no knowledge of anything non-mental without having an impression, that is, some empirical evidence. In the case of math, that means that it must be the study of the a priori forms of perception, which therefore makes it mind-dependent, insofar as the structure of the a priori is about the mind. I am taking a more flexible view on a priori knowledge here, and I am assuming that we may have a priori knowledge of things non-mental.

there been no minds at all?[71] I think not, so there is a case to be made that being independent on any particular mind is being mind-independent after all.

Some philosophers, however, have taken the argument from the aprioricity of math to the opposite conclusion that mathematical entities are mind-dependent. Take Azzouni again (*Deflating Existential Consequence* 103-4). His argument is the following: If mathematical objects were ontologically independent of us, then we would not be justified in claiming that the statements we take to be true of such entities are true. This is because knowledge of mathematical entities does not satisfy the Nontriviality Requirement (99-100):

> *The Nontriviality Requirement*: If a set of objects are taken to be ontologically independent of us, then we're required to show that all our methods for establishing truths about such objects are licensed as non-trivial.

A non-trivial method of knowledge is explained in by the following definitions:

> *The Reliability Requirement*: The process, by which someone A comes to believe claims about xs, is reliable with respect to xs if and only if given that that process has led A to believe Sx, then (under a broad range of circumstances) Sx, and/or given that this process has led A to believe ¬Sx, then (under a broad range of circumstances) ¬Sx.

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[71] Brower did, indeed, talk about the creating subject, an idealized mind in which mathematics takes place. See Brower's 'Essentially negative properties'.

The Trivial Explanation: A process P is reliable with respect to xs because xs have the property that P is reliable with respect to them.

Thus, failing the Nontriviality Requirement means that the explanation of why the method of knowledge is reliable is trivial, that is, the reason why the method of knowledge gives us knowledge about the entities in question is because those entities are just meant to be as the method has it; the reason why those entities are known is precisely that they are produced by this method- the method is infallible because it is trivially true that whatever conclusions we reach about xs via the trivial method will be true of xs.

A priori knowledge of mathematical entities (and abstracta in general) is suspicious, he claims: "What could be said about us, and how we've come to adopt [an a priori logical system S that generates some truths of mathematics], that could possibly be used to indicate how a priori truths constrain objects that are ontologically independent of us?" (104). Mathematical knowledge is a priori, we take some axioms and work out what follows, developing a theory, without the need to empirically justify any of it. But this, he says, is a trivial explanation: it is true because we came up with it. And we are justified in taking mathematical statements to be true. Mathematical knowledge as it stands, he claims, is explained trivially thus: the mathematical theory is true because we say so. If mathematical entities were really mind-independent, this kind of explanation would not be satisfactory:

If the number 2 is a real object, which is really ontologically independent of us, we need to tell a story about how we know that the number 2 has the relations we need to collections of empirical objects, so that it can be used the way we use it to count. (106).

So, according to Azzouni, if mathematical entities are mind-independent, we cannot justify mathematical knowledge or even the applications of math to the world because we have no way of knowing anything a priori about some entities which are really mind-independent of us. Therefore, mathematical abstracta are mind-dependent.

The meat of his complaint is reminiscent of the traditional argument from knowledge,[72] which has it that the platonist cannot claim that these entities are existent (mind-independent in Azzouni's case). They both conclude that a priori knowledge cannot account for knowledge of any mind-independent entities. But the core of the argument is slightly different; the traditional argument from knowledge has it that the platonist cannot be right because if numbers were to be like the platonist would want it, they become unknowable. Azzouni's complaint is that the way in which we do mathematics (which is how we could gain knowledge, if at all, of mathematical entities) makes it so that these entities must be mind-dependent.

A retort to this thought is the following: there is an alternative explanation as to why mathematical knowledge has an air of what Azzouni calls triviality. It is true that for any set of axioms, we can just work out what follows and any such theory will be a potential candidate for serious study. But this does not mean that the entities in question are not mind-independent. It could be that they are mind-independent and that they are all readily available (even if not existing). Any possible theory in math is about some mind-independent entity that is part of the infinitely many mathematical theories that there are. Especially if we separate mind-independence and existence as I am trying to do, we can say that it is false that these mind-independent mathematical entities exist, but even still

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[72] See also Field, *Realism Mathematics and Modality* 25.

for all possible mathematical theories, we can talk about the entities they describe. The position to be defended here is not that these entities exist, but that they are mind-independent, which is weaker than saying they exist. I think that that is the solution to the challenge: we know about these entities, and we need not check that they are available, for all of them are available. It may seem trivial but since in our case it is not true that they exist, they are cheap. The solution is easy, even if not trivial. Thus, I conclude that Azzouni's argument does not present a good case against the mind-independence of mathematical entities.[73] [74]

This section, in summary, argues with respectable success that mathematical entities are mind-independent. But we have been arguing throughout that for something to exist it must satisfy three criteria and not just one. Mathematical entities do not satisfy the criterion of spatiotemporality. This means that mathematical entities are an example of something that is mind-independent and such that it is not true that they exist. Hence, mind-independence is not sufficient for existence. In order to strengthen my case further, the next section presents some other possible counterexamples to the sufficiency claim.

3.3.2. Another counterexample to the sufficiency claim

The claim that mind-independence is insufficient for existence is the claim that it is possible for an entity to be mind-independent and such that it is not true that it exists. In order to argue for the

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[73] Balaguer (*Platonism and Anti-Platonism*) defends what he calls Plenitudinous Platonism, which is the view that all possible mathematical theories pick out some mathematical entities that exist since all possible mathematical entities exist. The suggestion here is a *Plenitudinous Indeterminism*. See chapter 4 for a further development of this view.

[74] Azzouni's criticism of the first type of fictional realism, see above in this chapter, is also that we have no way of knowing these entities are all really there, so we could predict his retort to our Plenitudinous Indeterminism. But I am not claiming that those entities exist, on the one hand, so the standards should be different; and further, the general methodological complaint that was my reply then still stands in this context.

nonexistence of the following entity, I am assuming the framework of this dissertation, which includes the claim that all three criteria are necessary for existence. So ultimately my case rests on the arguments for the necessity of the criteria. But assume those for the sake of argument. Here is another example of something that is possibly both mind-independent and not true that it exists. I will take an understanding of God here and argue that it is one possible way in which on can think of God. So long as it is a possible position about God, it will demonstrate that it is possible to have an entity that is mind-independent but such that it is not true that it exists (which is not to say that it is false that it exists). This account will appeal to some theists (I will leave the issue open, for it falls way outside the scope of this dissertation to argue for the actual existential status of God). Take God as understood by mono-theistic religions. Suppose someone believes the following: God is a being that is mind-independent, no believer thinks that God is a human creation. But at the same time, God is not spatiotemporal; he remains outside of the physical world (so our believer is not a pantheist). Furthermore, one can also argue that most scientists (when doing science and not philosophy) do not have any use for God in their theories and it is doubtful that God would be a postulate of any complete scientific description of the world. Given our theory of existence, and given this God that our possible believer believes in, it is neither true nor false that God exists. So the point here is that it is possible, and by many believed to be true, that some mind-independent entity does not satisfy the other two criteria of existence (which here, given our suggestion, implies that it is not true that it exist).

Is this a circular argument? It appears that we are using the theory of existence that we are trying to argue for in order to reach the conclusion that it is not true that this possible God exists. But we can argue like this instead: The possible God considered here is not spatiotemporal, not a theoretical commitment of science and it is mind-independent. Given the arguments given about the necessity

of the first and second conditions for existence (being a theoretical posit and being spatiotemporal), it follows (without presupposing anything about the third condition of mind-independence) that it is not true that this possible God exists, which by hypothesis is mind-independent. Thereby, we have another example of how mind-independence is not sufficient for existence.

This concludes the case for the third condition for existence, and with this, we end the defense of the tri-partite theory of existence. In the chapters that follow, I assume such a theory and I proceed to show the advantages of its adoption. I test the theory against several examples, reply to some pending objections and take up in some depth the most interesting application of the theory, that of answering the question over the existence of mathematical entities.

Chapter 4: Application of the theory

But it's a matter of balance and judgement. Some common sense opinions are firmer than others, so the cost of denying common sense differs from one case to the next. And the cost must be set against the gains. Sometimes commons sense may properly be corrected, when the earned credence that is gained by making theory more systematic more than makes up for the inherited credence that is lost. (…) The proper test, I suggest, is a simple maxim of honesty: never put forward a philosophical theory that you yourself cannot believe in your least philosophical and most commonsensical moments.

David Lewis, *On the Plurality of Worlds* 134-5.

Now that we have concluded the defense of our theory of existence, we must move on to see how it fares, for once a theory is set out, one must test it in its application. The first section of this chapter explains how the application of the concept works, that is, what it is for it to be true that something exists, false that something exists and, finally, for it to be neither true nor false that something exists. This explanation is followed, in section 4.2, by a thorough list of possible examples. The second half

of the chapter is a survey of issues, questions and objections arising from the analysis of existence and some of the most obvious applications of this analysis.

4.1. Application

Our theory of existence is meant to be a theoretical improvement on the concept of existence that we plausibly already have. It is not an empirical theory about the concept we in fact use, but in arguing for this theory of existence we have looked at the actual use of 'exists' by speakers. This, together with philosophical considerations about what there is and what could exist, results in our present suggestion, which is that each of the following conditions plays a role in existence. Furthermore, the satisfaction of each of them is necessary for something to exist, but none of them, individually, is sufficient for existence, thus existence is a complex, multidimensional notion composed of a trinity of conditions, each of them different from the others, but joint in the concept of existence:

> a. *Theoretical Commitment*: Something is a theoretical commitment if and only if it is part of the quantificational domain of true and complete scientific description of the world.

> b. *Spatiotemporality*: Something is spatiotemporal if and only if it is in space and/or time.

> c. *Mind-independe*nce: Something is mind-independent if and only if it is such that its existence (if it does exist) and nature does not depend on what any mind judges it to be.

The present proposal is that the application of this concept is tri-partite, there are three possible outcomes: something may fall under the concept, something may fall completely outside the

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extension of the concept, but something may also be neither right in the extension of the concept nor may it be something that determinately does not fall under the concept. This is similar, for example, to the way in which, for some people, it is hard to say they are bald and it is hard to deny it, too. Something has indeterminate existence by it being neither true nor false that it exists. These three cases work in the following way:

T. It is true that x exist if and only if x satisfies all three criteria for existence.

F. It is false that x exists if and only if for each condition, x fails to satisfy it.

N. It is neither true nor false that x exists if and only if x satisfies some but not all of the three criteria for existence.

Now, I have given my arguments for the necessity of each of the criteria, but why think that the concept allows for gaps? We could just say that something exists if and only if all three conditions are met by it and that it does not exist, otherwise. But here nonexistence is reserved for those entities that fail to satisfy all three of the conditions. I have argued that the three conditions are necessary for existence, but what is necessary for nonexistence? The claim here is that the failure of each of the three conditions is necessary for nonexistence. Existence and nonexistence both require the satisfaction of three conditions, which for nonexistence are the opposite than for existence. What I provide is not argument in favor of this; rather, I show how it could work, and it's the direct appeal of the theory that serves as support for it. The result of this theory is that there is room for

indeterminate existence, which accommodates traditionally tricky cases, slippery cases that seem not to fit in a bivalent explanation of existence.[75]

I am claiming here that each condition individually is sufficient for indeterminate existence, if not fulfilled. Each of the conditions gives an entity a status that is not nonexistence. For instance in the case of numbers, being able to say that it is neither true nor false that they exist, explains the difficulties of the strict nominalist. It is not that it is false that numbers exist, it's just that it is not true that they do exist. They are important, useful, fascinating, so it is not true that they don't exist either; they are too useful and powerful for the concept of existence to determinate fail to apply; it's indeterminate whether they exist or not.

Note that I provide no argument that this list of conditions is exhaustive. I present this theory as an improvement on previous accounts of existence, and I have argued for that. But I want to leave the possibility open that some future development in science or philosophy, or human knowledge in general, would bring to our attention a further condition that should be incorporated into our theory of existence. So the application of the concept should be understood more generally thus: if an entity satisfies all conditions, it is true that it exists. If it fail all conditions, it is false. And it is neither true nor false if it satisfies some but not all of the conditions.

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[75] Another possible position is to take each condition as necessary and sufficient for existence and the failure of each condition as necessary and sufficient for nonexistence. This constitutes a glut theory of existence, whereby if something satisfies some but not all the conditions, it is both true and false that it exits. For a complete treatment of this topic, the glutty dual of my proposal should be assessed. Apart from qualms against dialethic positions, I think the gappy theory is a better reflection of speakers' reactions to the problematic cases. But I leave a complete assessment of this for further research.

Even though it is a position that does not seem in line with pre-theoretical conceptions about existence, I believe that in certain respects, the results are pretty uncontroversial. Out of all entities, those for which it is true that they exist are those that are agreed upon by pretty much every non-philosopher: Tables, people, trees, electrons, etc. That is, all those spatiotemporal, mind-independent, theoretical commitments are the usual suspects. Physical entities determinately exist, both those that physics talks about and those that other sciences include in their domains: people, trees, and other mind-independent macro-physical entities. (I here take it that a complete description of the world will include reference to everyday macrophysical objects that may not be the object of study of any specific science, like tables, pencils, and other artifacts).

With regards to nonexistent entities, too, I think the outcome of the present theory is also unsurprising, even if the agreement in this field is not so broad. But fictional entities, as I've been thinking of them, are mind-dependent, not spatiotemporal and not theoretical commitments; so they are nonexistent, it is false that they exist. They are mind-dependent, their nature is dependent on the creator: if the author of, say, Indiana Jones, had decided that he was going to wield a machine gun instead of a bull whip, Indiana Jones would have been carrying a machine gun, without this requiring anything else over and above the decision of the author. They are not in the quantificational domain of a true and complete description of the world: there is no theory about reality that is at all likely to be true that would include Indiana Jones as anything in the world. And they are not spatiotemporal because they are not in space and time.

When it comes to indeterminate existence, things stops being so uncontroversial, mostly because the notion of indeterminate existence is not commonly accepted. In the second half of this chapter, I will tackle the objection that the notion of indeterminate existence is nonsensical. But for now, I will

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proceed by surveying the different possible ways in which it may be neither true nor false that an entity exists, in order to have a better understanding of how the concept is applied before we move on to its defense.

4.2. Indeterminately existing entities

Given that it is neither true nor false that an entity exists if and only if it satisfies at least one but not all three of the conditions, there are six possibilities that we must consider:

	1	2	3	4	5	6
Theoretical usefulness	✓	×	×	✓	×	✓
Spatio-temporality	×	✓	×	✓	✓	×
Mind-Independence	×	×	✓	×	✓	✓

We have six ways in which something may be indeterminately existing, or neither true nor false that it exists.[76] Take case 1, that of an entity that is not spatiotemporal, it is mind-dependent, and it is a member of the quantificational domain of true and complete description of the world. What kind of entity would be like this? If one thinks that mathematical entities are indeed mind-dependent, contrary to the arguments provided in chapter 3 that they are mind-independent, then mathematical entities would fall under this case, and they would still come out as neither true nor false that they exist.[77] Another example of this kind of case would be a response-dependent universal. This would be a strange kind of entity, but the idea is as follows. Suppose one thinks that for each concept there corresponds a universal, and suppose we take a traditional platonist view of universals. Universals, for the traditional realist, are not spatiotemporal, because they transcend their instances; they are in the realm of Ideas, to put it bluntly. Take then a response-dependent concept, like funniness or redness, or moral properties if one where to take that line about morality. Think of the concept of being funny, something is funny is the relevant judges find it funny. The suggestion is to take a Platonist view of the universal Funniness. Funniness, according to this realist, is an abstract entity that is necessary to describe the world so, therefore, this kind of entity would be referred to in a true and complete scientific description of the world. Funniness is mind-dependent to the extent that it is response-dependent, its nature depends on what we find funny—its correct application depends on our responses to the possible instances. But Funniness is not spatiotemporal, for, by hypothesis, it is a universal in the traditional Platonist sense. All I need here is to paint a picture of what this kind of

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[76] This chart suggests a possible understanding of the application of the concept. If we add to these six ways in which it can be neither true nor false that something exists the two limit cases, where it is true and where it is false, then we have a total of 8 possible outcomes. This means we can give a theory of existence in terms of an 8-valued logic (I owe this suggestion to Rohit Parikh). There would, thus, be 6 ways in which something can be neither true nor false and the overall logic for the connectives would be Boolean. For a development of this idea, but just with 7 values (no total falsity), see Priest's "Jaina Logic: A Contemporary Perspective".

[77] This implies, by the way, that the conclusion that mathematical entities have indeterminate existence is independent of the success of the arguments presented in chapter 3.

entity would be like, for I am not claiming they exist, just that they are possible and that at most it is neither true nor false that they exist. I don't need to agree with the realist, nor do I need to argue that these universals actually have a place in a good philosophical theory. All I am showing here is what an entity satisfying the conditions in case 1 would look like. It follows from our theory of existence that it would be neither true nor false that this kind of entity exists.

Now, let's consider cases 2 and 4. They both pick out entities that are mind-dependent and spatiotemporal. An entity is mind-dependent if its nature (and/or continued existence) depends on the way in which some minds think about it. For mind-dependence is about nature or existence, not about origin, it's about the properties we assign to the entity: those properties that we consider that the entity has in the actual world. An entity is mind-dependent if some of its non-relational, non-intentional properties are determined by our beliefs about it.[78] For instance, most of the properties of a fictional entity depend on its author. An entity is spatiotemporal if it is in space and time. So, what kind of entity is both mind-dependent and spatiotemporal? Intersubjective entities (countries, money, laws, borders, etc.) are mind-dependent in the sense that their properties depend on the way the relevant minds think about them, as was already noted in the previous chapter. So, for example, a country is a country because people recognize it as such, there is nothing ultimate or nonnegotiable about a country. It is mind-dependent.

I claim that countries and other such entities are also spatiotemporal, but the way in which they are spatiotemporal can be understood in two ways: we could say that the $20 I own is physically in my pocket, that money is very much spatiotemporal in the straightforward sense of being a four-

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[78] I would say that its essential properties and existence have to be determined regardless of what we judge them to be, but I don't know what essences are, and clarifying this issue would take us too far afield.

dimensional object: the sheet of paper in my wallet. But a more refined view on the subject would be that the piece of paper in my pocket is not the intersubjective entity, but just a physical prop for it, a piece of something we have agreed upon to represent the money I own. Think again about a country: is Spain physically located to the South of France, or is that piece of land the territory of Spain, the land that we connect to the intersubjective entity that is the country of Spain? I think the latter is more satisfactory, even if it is less romantic. This is not to say, however, that a country is not spatiotemporal. It has the properties it has been given by the minds that instated it, and these properties put this entity in the world, at a time at least, if not at a place. The truth in the actual world of statements like: 'Spain is now a monarchy but it didn't used to be during the republican years', implies that countries have certain properties that require their temporality, and thus are spatiotemporal. At the same time, this kind of entity is very useful in explaining human reality; in history, politics and sociology, countries play an important role. So, intersubjective entities of this sort constitute a good example of case-4 entities.[79]

If the reader is tempted instead by the view that intersubjective entities are not spatiotemporal, because really they are not in space or time at all, then intersubjective entities still come out such that it is neither true nor false that they exist. They are not the same as fictional entities: the latter are not the theoretical commitments of any science and, thus, it is false that fictional entities exist. In fact, the result that it is neither true nor false that intersubjective entities exist is, I believe, an attractive consequence of the application of the theory of existence defended here. It is precisely this kind of entity, scientifically serious, but suspicious for other reasons, that indeterminate existence is thought paradigmatically to apply to. Nobody wants to say that countries are mind-independent, but at the

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[79] It could also be argued that there are spatiotemporal intersubjective entities, not just temporal, for instance a trial by jury or a board of chess. I need not commit myself either way, though, for my definition of spatiotemporality employed here is disjunctive.

same time, there is something about countries that makes us not quite want to say they are nonexistent either: in practice we take countries seriously, certainly we act as if they existed. They affect our behavior and our beliefs in very deep ways, they can be part of the reason for wars and revolutions, our quality of live depends on the country we are in, etc. So, indeterminate existence befits them well: it is not true that they exist, but it is not false either.[80]

Here is another possible example for case 4: take thoughts and ideas, understood as psychological entities. We have ideas, we believe things, have opinions, memories, etc. Taken phenomenologically, in the sense in which conscious being can only have their own thoughts and ideas, they are mind-dependent: they require a mind to be thought and to be perceived, felt, believed; and for voluntary thoughts, arguably, the subject has control over the properties and existence of the thought. Furthermore, they are temporal, for they are the kind of thing is in time, even if not space. Thus, they constitute another case of something being spatiotemporal and not mind-independent. Since psychology is a science, arguably thoughts and ideas are part of a true and complete scientific description of the world.

An entity that falls under case 2, on the other hand, would be mind-dependent, spatiotemporal but not a member of the quantificational domain for any kind of science. Can we have anything at all spatiotemporal, mind-dependent, but not useful to science? Suppose we could indeed come up with something that is not an existential requirement of any science and is spatiotemporal, but it is mind-

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[80] Yet some others may think that intersubjective entities should be taken to be mind-independent. The thought is that even if the conditions for something to be, say, a trial by jury, are that people take it to be so, not one specific person can decide what is an official trial by jury and what is not. But the notion of mind-independence here is that even if it is required that the whole of society takes it to be so, the fact that a trial by jury is really a trial by jury is mind-dependent, dependent on everyone's minds. The intuition behind this is that were there to be no humans, no minds, there would be no trials (and not just because the members of the jury are usually humans).

dependent, call this entity Money*, will it not be just like a fictional entity? What is the difference between a fictional entity like Sherlock Holmes and Money*? Sherlock Holmes is not spatiotemporal but Money* is. Why? Suppose I say that Money* is spatiotemporal, because the properties that we give it are such as having a certain value at a certain time; when Money* is created, we proceed to take it seriously. Fictional entities are not even temporal because even though we also created them, the properties that they have in the actual world do not require that they are taken to be in time: Indiana Jones has no spatiotemporal properties in the actual world, only in the story does he really wave a bullwhip. Here, in the actual world, all that is true is that Jones is some sort of intentional object we can talk about, write about, etc. The fictional entity was created at a certain time, but all that means is that the story was written at that time, not that Indiana Jones was taken seriously in any other way. The truth of all this does not imply that Indiana Jones is anywhere in the actual world, just our thoughts about him (in the same way that we think about, say, numbers, but this does not imply their concreteness).

Cases 2 brings out the important difference between a mind-dependent entity like a country and the kind of mind-dependent entity of which we have claimed it is false that it exists. Again, fictional entities are not spatiotemporal. What we find in time is people having beliefs about them, talking, writing, thinking about them, but they do not exist and are not in space and time. Whereas intersubjective entities make it outside of the story, we think of them as being in the actual world, as things we interact with, things that make it into our calculation of what action to take. They are temporal because when we come to an agreement about, say, money, we proceed, from that moment onwards, to think of the money each of us has and what we can and cannot do with it.

Now, we have argued that an entity that is mind-dependent is not necessarily a fictional entity, given its properties, for it can be spatiotemporal, like Money*, whereas fictional entities are not. If it turns out that all of the entities of this kind are useful to science, then no entities will fall under case 2, and all possible entities that are mind-dependent and spatiotemporal will fall under case 4. This is not a problem, for it means only that there is some sort of connection between the three conditions: if something is mind-dependent and spatiotemporal, then it is scientifically present. If all six combinations of conditions are possible, however, that means that the three conditions are independent of each other, and so ideally, we aim to argue that all six cases are at least possible.

An entity would constitute an example of case 3 if it is mind-independent, but not spatiotemporal and not theoretically present in any good description of reality. Under the standard conception of God, God is precisely this kind of entity. As was already suggested in the previous chapter, if we consider the notion of God as understood by common mono-theistic religions, God is a being that is mind-independent, not spatiotemporal, and many scientists (when doing science and not philosophy) do not have any use for God in their theories, and it is doubtful that God would be a postulate of any complete scientific description of the world.[81] If God is how these believers think he is, it is neither true nor false that God exists, under the present suggestion.

 The only remaining possibilities to consider are cases 5 and 6. With regards to case 5, the issue is not so clear: could anything be spatiotemporal and mind-independent but not a member of the quantificational domain of the relevant true and theory? Here is one point in the argument where the original disclaimer admitted to in the first chapter is relevant. Recall that in order to maintain the

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[81] Of course, there are scientist that are creationist, or they have other more sophisticated ways of including God in a scientific description of the world, but here all I need is that some conception of God falls under this description, not that all of them do.

realist spirit, we conceded that the necessity of the linguistic condition for existence is restricted to those entities whose nature does not fall outside our conceptual grasp. So, the reasoning is different, whether we focus on those entities that we can in principle conceptualize and those that we cannot. In the case of entities that are outside of our light cone, conceptual and causal, it's all up for grabs, and I will remain agnostic as to their nature. But surely, as the realist has it, it is possible that some such entities exist. So, they will not constitute an example of case-5, which must be entities for which it is neither true nor false that they exist.

But what about some entity, within our potential grasp, which is spatiotemporal and mind-independent but not a member of the quantificational domain of the relevant true and theory? What would its nature be and is it possible? It is important to realize that, if we think this kind of entity is *possible*, the conclusion that we draw is that it would be neither true nor false that it exists, so here we are not arguing that a case-5 entity exists. Therefore, what we say here is not incompatible with the necessity of the linguistic aspect of existence (within the limits of the restriction), as we argued in chapter 1. What I argued in chapter 1 is closely related. There, I said that if such entities *exist*, they would have to be part of the quantification domain of a true and complete theory of the world. Here, I ask what follows about the existential status of an entity satisfying such conditions.

Introducing the possibility of such an entity is saying that something could be overlooked by science: something mind-independent and spatiotemporal that a true and complete scientific description of the world would not take as existing. One must keep in mind that the science we are talking about here is a complete description, which means that, were these entities to exist, it is not that science has so far overlooked them, but that something about those entities is such that science must overlook them, there is no way that science can reach them. If the entity in question fails the

scientific commitment requirement, it means that even the most exhaustive scientific investigation would not gather any evidence for it.

This kind of entity, however, seems to be outside of our light cone. There are two ways in which we can think of a spatiotemporal, mind-independent entity that science would fail to detect. It could be that there is something that is spatiotemporal and causally efficacious (and hence in principle susceptible to empirical investigation), but such that it is isolated from the rest of the universe, and hence outside the range of any instrument, however powerful or refined. Call it a causal island. Another possible entity falling under case 5 is one for which the isolation is due to our conceptual (instead of perceptual) limitations, that is to say, if an entity was so fine and subtle, so complex and sophisticated, that no human rational mind, however idealized, could grasp its nature or even contemplate it. The unreachability of this entity for us is conceptual, so we can call it a conceptual island.

This means that if we consider the kind of entity that would satisfy the spatiotemporality and mind-independence conditions but not the linguistic condition, they thereby fall outside the restricted version of the linguistic condition. That is, the realist restriction to the linguistic condition makes it so that if something is spatiotemporal and mind-independent, then it is going to be a theoretical commitment of a true and complete description of the world. So, I argue, no entity is a case-5 entity.

Now, if we take the lightly idealist alternative that was considered in chapter 1, that is, to constrain the realm of application of our concept of existence to those things that we can grasp and that are within our light cone, then we can argue that there are case-5 entities. Given that case 5 entities, by hypothesis, they are outside of the reaches of our concept of existence, our concept of existence is

not cut out to apply to them, or fail to apply. They lay outside of the realm of application of the concept we are dealing with. By definition such an entity is never conceptualized by us, so we can never even think about it, and thus, it will never be a theoretical commitment of a true scientific description of the world. I am not claiming that such an entity exists, or even that it can exist, for what is at issue here is whether they are such that it is neither true nor false that they exist. They are possible indeterminately existing entities that constitute an example of case-5 entities. Given the insularity if these entities, given that they are beyond our comprehension or grasp, this line of thought has it that the concept of existence fails determinately to apply or not. We could indeed expect our conceptual framework to fail to give us a clear answer, for they are by definition outside the reach of it. Existence is as much a concept of ours as anything else; even if it tries to match the structure of an external reality to give us its furniture, it is our concept, and so it is subject to the same limitations as every other concept, when confronted with an island. And thus, if we were to take the idealist interpretation of the linguistic condition, conceptual and causal islands constitute a good example of the kind of entity that falls under case 5 and whose existence is indeterminate.

And lastly, we have case 6, which is illustrated by entities that are mind-independent, not spatiotemporal, and are part of the ontological commitments of a true and complete scientific description of the world. Examples of this kind are any abstracta that find good applications in science. The central example of this kind of indeterminately existing entity is constituted by mathematical entities, for they are not spatiotemporal, but they are scientifically useful and mind-independent. The consequences of this view for the practice and status of mathematics will be considered in the following chapter, so I will leave the discussion of this case till then. Other cases of fruitful abstracta are, for instance, linguistic postulations, like propositions, or meanings.

Let me conclude the section by considering a couple of entities that have not come up in the discussion yet. Let's think about the status of values. Values could be taken to be properties and not objectual, in which case, they would be understood not as entities that would exist or not exist in themselves, but only as instantiated. This kind of understanding would put values outside of the scope of our theory of existence, which deals with the existence of objects. But suppose, for the sake of argument, that we take an objectual view of values (for instance, as Plato would have it), and so we can wonder about the existential status of Justice, the Good, the Beautiful, etc. These entities are not spatiotemporal, for they are not to be found as such in the world- in the world we only have imperfect instantiations of them. So, whatever the verdict is with respect to the other two conditions, it is not true that values exist. If we take the purely platonist like, we will say that values are mind-independent and they are part of a description of reality, for there are moral and aesthetic facts that will be included in such description. In this case, and given our theory of existence they would fall under case 6, and it would be neither true nor false that they exist. We could, on the other hand, have the view that these values are intersubjective entities, and so that they are mind-dependent. Then the case for their existential status would be settled only by the theoretical presence condition: can we think of values as part of what a complete and true description of the world would quantify over? Is ethics a science that helps us describe the world? Or is just part of a psychological explanation of our actions and beliefs? If we take the latter view, they are not going to be part of the quantificational domain of a complete description of the world- all the explanation needs to say is that we believe in such things as values, they would be only intensional entities. If such were our view of values, it would be false that values exist.

What about chess pieces? I think the best way to understand chess pieces is merely as physical props for a game-theoretic structure. The pieces themselves, the carved figures on the board, are plain

physical objects that exist just like any other physical object does. The game, the back and forth of moves allowed by the rules of the game, is more like a mathematical entity than anything else. In theory one could play chess merely by explaining each move one takes, and thereby progressively making the game more specific, ultimately picking out a fully determined mathematical structure, when the game finished, and all the possible moves have been decided upon. If this view is correct, chess pieces in the game-theoretic sense are nothing different than numbers or other mathematical entities, and so it is neither true nor false that they exist.

It should be clear by now how the application of the theory of existence works, so I conclude the survey of the possible cases of indeterminate existence and the main presentation of the application of the proposed analysis of existence. In the second half of this chapter, I take up some of the most obvious objections to the analysis and its application.

4.3. Objections and replies

What follows is a list of possible objections and questions that may be posed about the analysis of existence that has been presented.

4.3.1. Indeterminate existence?

First of all, let me acknowledge the straight-up weirdness of the position. The traditional view of existence is that the things in the world exist and the rest, if they can be at all spoken about, don't exist. I am not only allowing for nonexistent things to be spoken about, but I want to differentiate

them from indeterminately existing things. To caricature it: I want a middle stage in between existence and non-existence, like a purgatory of entities. 'What is that?', cries the objection.

But I have already answered the question. By defending my analysis of the concept of existence, I have provided an explanation of what indeterminate existence is. I am asking the reader to think of existence in terms of the theory I have provided, and in that framework, three outcomes are possible, one of which is that an entity has indeterminate existence. To clarify: what the theory presented here involves is a change in the way of thinking about existence. And if we think of the existence question in terms of the application conditions of the concept of existence, then it is an open question as to whether the application of such a concept is going to be bivalent or gappy, or maybe even vague. I have argued that it is gappy. Indeterminate existence is what arises with a gappy concept of existence.[82]

In further support of this thesis, we can observe the following: when questioned, the non-philosopher (and non-mathematician) finds the question over the existence of mathematical entities very strange, and not because she is convinced that they do not exist (or that they exist, for that matter) or she finds the answer obvious. A common reaction is to dismiss the question and proceed to talk about the application of math and say: 'We count things. I don't know what you mean by numbers really existing.' I propose here that the position defending indeterminate existence is a theoretical rendition of this very common pre-theoretical position, and thus, that the strangeness of indeterminate existence may be a theoretically loaded prejudice. In the words of Lewis (see the

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[82] Where I say gappy, I could say trivalent. I don't think there is a philosophically important difference between an application lacking a truth-value and the truth-value being i, for indeterminate. I have been equating the expression 'A has indeterminate existence' to 'It is neither true nor false that A exists' throughout.

quotation under the title of the chapter), it is a theory that you can indeed believe in your least philosophical and most commonsensical moments, so it passes Lewis' test of honesty.

4.3.2. Possible-world semantics

Other philosophers have presented a similar view that maybe existence can fail to be either true or false of some entity. In particular, Balaguer argued for such a view. His main argument is an inference to the best explanation. After comparing the most promising Platonist position in the philosophy of mathematics with the most promising nominalist position, he concludes that there is no way of settling the dispute. The best explanation for this is that there is no fact of the matter as to whether there are any abstracta. In what follows I explain his position briefly, for I think that his account of what he means for there to be no fact of the matter is related to the present account of indeterminate existence. The Platonist position that he thinks most promising is what Balaguer calls Full-Blooded Platonism, FBP, and it is the view that all possible abstracta exist. The nominalist position that is the best opponent to Platonism is fictionalism, which defends the view that we can take mathematical discourses at face value, but that they are all false, for they require the existence of mathematical entities and there are none. Both views agree that all mathematical theories are valid: that given their presuppositions, their conclusions follow; the FB-Platonist thinks they are all true, the fictionalist thinks they are all false.

In any case, without going into the arguments as to why these are the chosen views,[83] Balaguer thinks that there is no way of solving the dilemma. Both views share the same understanding of

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[83] Balaguer argues that FBP is the only viable formulation of platonism, since it's the only version of platonism that solves the epistemological problem of mathematics and that accommodates the existence of multiple reductions in mathematics (*Platonism and Anti-Platonism* chs. 3–4). Fictionalism

mathematical practice. But if the only point in which they really disagree is on the existence of mathematical objects, then it seems that we could never settle the dispute because we have no way of finding out: the nature of abstracta is such that we can only find out about them indirectly, by considering the theoretical virtues and downsides of thinking of them as existing or as not existing. The parallelisms between the two views preclude that alternative, so we are left with the raw metaphysical fact, a fact that we cannot find out about by other means. So, Balaguer concludes, we will never know if there are any numbers or not. A good way of explaining this permanent ignorance is that there actually is nothing to find out, so it is neither true nor false that there exist mathematical entities. Balaguer, therefore, puts forward the claim that there is no fact of the matter as to whether there are any mathematical entities.

His account of how that goes is as follows. He proposes to explain there being no fact of the matter in terms of lack of truth-value (and hence his account reaches the same conclusion as ours).[84] According to Balaguer, the sentence 'Mathematical entities exist' has no truth-value because it has no possible-world truth-conditions, but it is nonetheless meaningful. It is meaningful in the sense that we understand to a certain extent what it means, what it is trying to say; philosophers at least have spent plenty of time discussing the existence of abstracta. However, we don't really know what the difference is between a world with abstracta and one without, Balaguer claims, so the meaning is not specific enough for the statement to have possible-world truth-conditions. There is no fact of the matter as to whether mathematical entities exist or not.

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is the only viable formulation of anti-platonism, for it's the only anti-platonist approach that explains the applicability of mathematics (*Platonism and Anti-Platonism* ch. 7).

[84] I don't see a conceptual difference between having the third truth-value be a gap, in the sense of there being no third truth-value, and having it be something like the indeterminate truth-value. The semantics would be the same in each case, the difference being merely the label.

I believe Balaguer is right that one very elegant way of explaining away the apparently unsolvable debate between the Platonist and the nominalist is to argue for the lack of truth-value of statements of the existence of mathematical entities. Balaguer's separation of possible-world truth-conditions and meaningfulness is a bit confusing, though. How can we understand enough to discuss its truth-value, but not understand enough to know what it would be like for it to be true that numbers exist? Is the approximate understanding that accounts for the meaningfulness of the statement really enough for meaningfulness, if we do not know how to differentiate worlds with numbers and worlds without numbers? What does he mean by 'differentiate'? Is it just finding a physical difference that we can empirically test for? That is, is his question metaphysical: how can there be a difference between the existence and non-existence of abstract entities? Or is it rather epistemological: how could we ever know whether abstracta exist or not? Balaguer, in correspondence over the topic, clarified this by saying that the conclusion is not epistemological, even if it takes the following epistemological point as a premise: We cannot tell the two worlds apart, and if we cannot make sense of the difference between the two, then that's reason to think that we don't have any idea what the truth-conditions of platonism are. If we don't know what the truth-conditions are, this suggests that our usage and intentions don't determine such truth-conditions, and if that's the case, the claim that numbers exist does indeed not have such truth-conditions. Now, the reason why he thinks that we cannot tell the two worlds apart is that the explanation of what it is for numbers to exist is wanting: they exist, but not in space and time, that's all we get. According to Balaguer, this does not give us a 'metaphysical picture' that makes us understand enough to tell the worlds apart.

Here are a couple of problems with this argument. First of all, if the worlds where the statement is true are indistinguishable from those where it is false, does this imply that there is no fact of the

matter, that it is metaphysically indeterminate, or rather, that there is an inconsistent fact of the matter whereby it is both true and false that numbers exists? Balaguer is not saying that there are worlds for which the truth-conditions for the statement are neither present nor not present, but that the worlds in which it is true and those in which is it false are the same. This, I think, seems to call for a dialethic conclusion.[85]

Now, let's assume that it is true that the platonist cannot give us a metaphysical picture that is satisfactory for us to imagine what it would be like for numbers to exist. Does it follow, though, that the truth-conditions of the statement aren't determined by the use and practices of the community of speakers? Why should we require that an individual speaker should grasp what is determined by the community as a whole? We have a concept of existence and that can be applied to yield true and false sentences; we also have, on the other hand, a concept of number (or any other mathematical entity) that is very well defined by mathematics. So the question that is unanswered is: what are the general truth conditions for the existence of something? There are several ways to answer that. Balaguer seems to want to latch on to the meaning of 'exist' as is used in practice. I have been defending a philosophical improvement on that concept. But either way, the fact that speakers are unaware of the truth-conditions of an edgy case in the application of a concept does not necessarily mean that the community as a whole does not determine a truth-value for the statement. Balaguer

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[85] See Azzouni and Bueno's "On What it Takes for There to Be no Fact of the Matter". They argue against Balaguer. But they assume that in order to explain satisfactorily what it is for there to be no fact of the matter, "*one has to be able to say that there is no fact of the matter without thereby conflicting with one's classical commitment to (A or ¬A), for any sentence A*". So they presume classical logic, but if we embrace a trivalent logic, we can claim this is true *(A or ¬A)*, but still that this is not equivalent to either A is true or A is false, but it means that it is true that A or it is *not true* that A (exclusion negation instead of choice negation), the latter being compatible with A being false, and with A being neither true nor false. So, I think their demands on an explanation of what it is for there to be no fact of the matter seem to preclude precisely what could be an explanation of the notion, that is, in terms of lack of truth-value.

admits that this is a possibility, but he also thinks it's possible for a whole community to use a set of terms so imprecisely that their usage actually doesn't determine truth conditions for certain sentences involving those terms. So in any given case, we must decide what's actually going on. And in the case of talk of abstract objects, Balaguer thinks that the use is too imprecise. This, he recognizes, requires argument. I propose here that the burden of proof is on Balaguer, given that if we take the concepts separately, they seem to be widely used, and we pretend to have a good understanding of mathematical entities and existence, at least insofar as it applies to plenty of uncontroversial entities. By compositionality, the question over the existence of numbers seems meaningful. It's just that given the meanings of the terms put together, it turns out that the claim that numbers exist is neither true nor false.

In any case, this talk about possible worlds prompts a further question about our own proposal. How are we to distinguish the possible worlds in which it is true that an entity, E, exists, those in which it is false, and those in which it is neither true nor false? Technically speaking the answer is not mysterious. In a many-valued logic, we will have a structure like the following.

$$[D, E, V, D, \{f_c : c \in C\}, \{f_q : q \in Q \}]$$

Where V is the set of truth-values, which in our case will include three of them (1, 0, i), D is the set of designated values, which are a subset of V. In this case, the designated value is 1. f_c is the truth function for each connective, for each c. Now, D is the domain of quantification, a non-empty set, Q is the set of quantifiers, and f_q, is a mapping of subsets of V into V. And finally, E is a subset of D, and it is the subset of existing entities of the quantificational domain. Now, in the case at hand, we have that existence itself is trivalent, so we can make E define two subsets of D, one for its positive

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extension, and the other for the indeterminate extension (*Introduction to Non-Classical Logic* 446-50).

Metaphysically speaking, the answer is provided by our theory of existence. It is neither true nor false that mathematical entities exist, and the truth-conditions for that are that numbers satisfy some but not all conditions for existence. In those worlds in which that is the case, it is neither true nor false that numbers exist. If there are any worlds in which numbers satisfy all conditions for existence, those are the worlds in which they exist. In a world in which they satisfy none of the conditions for existence, it will be false that they exist. I don't mean to dismiss Balaguer's point that the existence of numbers is difficult to get our heads around. That's indeed the case, and the reason is that it is not true that they exist, because nothing that is not space and time exists.

4.3.3. The scarcity of nonexistent entities

Another related objection has it that there is a scarcity of determinately non-existent entities, for it is false that something exists only if it is mind-dependent, non-spatiotemporal and not scientifically present. Isn't this too demanding for nonexistence? Am I excluding too little from existence? In reply to this, we must point out that even if it is true that satisfying any one of the three criteria is sufficient for precluding nonexistence, at the same time, something having indeterminate existence does not mean that it exists in anyway, for it is not true that it exists. There are three possibly outcomes of the application of 'exist' in this account: it can be true, false, or neither true nor false. Negating either of these three outcomes leaves it open as to which of the other two is the case. So, not-true that p means that p could be false, or it could be neither true nor false; not-false that p, means that it could be true or neither true nor false that p, and finally, not (neither true nor false) means that it is either true or false that p. Thus:

> i. x is mind-dependent is sufficient for the non-truth of 'x exists'.

ii. x is not spatiotemporal is sufficient for the non-truth of 'x exists'.

iii. x is not a theoretical commitment is sufficient for the non-truth of 'x exists'.

Again, if an entity satisfies any of the three criteria for existence, it won't be false that it exists, for non-existence requires that all three conditions are not fulfilled. But, I reply, it won't be true that it exists either, so we are not inflating the realm of existents.

4.3.4. Azzouni: No criteria for existence

Azzouni, in "Ontology and the Word 'Exist': Uneasy Relations", argues that there are no criteria attached to the meaning of 'exist' in any substantial sense. In order to argue for this he uses two dichotomies. One pair of notions is about the kind of connection a term may have to any criteria of application: the term can be criterion immanent or criterion transcendent. The other dichotomy is between different uses of existential expressions: they can be ontically relevant and ontically irrelevant. I will explain each of these notions first, and then I will give the argument that Azzouni presents against there being any criteria for existence. Finally, I will explain why this argument does not affect our program.

According to Azzouni, most (if not all) general terms have some criteria associated with them by speakers, which allow for their application. These words can be criterion transcendent or criterion immanent, which means the following. A word is criterion immanent, if the criteria attached to the word are such that they are analytically entailed by the term, and so, they are necessarily true of whatever falls under the concept; a word is criterion transcendent if it is just fallibly associated with

the term, in which case, it is possible that we discover that the criterion is question does not in fact reflect a property of the things in the extension of the term. As Azzouni (77) writes, "the word so used resists intuitions of analytic entailments just as other words in natural language, 'gold', 'water', etc., do."

Again, if a term is such that it does not intuitively support any substantial entailment of criteria, then it is criterion-transcendent. That is, we will observe (for this is an empirical claim about the use of certain words) that any criteria associated with it are not meaning-constituting: the term's meaning transcends any possible criteria. And thus, when there is a change in those associated stereotypes, the word is not thought to have changed meaning. Instead, our understanding of the meaning of the word will have increased and our previous uses were mistaken if they depended on that wrong criterion. So, for instance, when the atomic constitution of gold is discovered, previous uses of 'gold' that did not track the real element are considered mistaken uses, for they failed to pick out the intended referent. On the other hand, if the term is criterion-immanent, then we can draw some inferences about the nature of that kind of entity just by understanding the term, e.g. we know that a bachelor is a male. If there is a change in those entailments, there is a change in the meaning of the term. This means that previous uses were not mistaken, but they were uses resulting from a different meaning, before the word changed meaning, and thus became, really, another word. For example, if the community of speakers decides that 'bachelor' will start including unmarried women in its extension, then 'bachelor' has changed meaning and the changes apply going forward, not going back.

The distinction between ontically-relevant and ontically irrelevant uses of existential expressions is pretty intuitive: If one says 'There exist several solutions to this problem', one is not thereby

committed to the existence of a kind of entity, a solution, which exists in any real sense. One's use here is ontically irrelevant. If, by contrast, one says 'There exist at least two dogs named 'Sergeant'', then one is committed to there being two dogs at least, in an ontically-relevant sense.[86] According to Azzouni, for any existential expression, we can think of uses that are ontically relevant and others that are ontically irrelevant. This is to say, 'exist' and other existential expressions are neutral between the two uses (79-80). For an expression to be neutral between these two uses, it must be such that there are uses of statements using that expression that are ontically relevant and others that are not; and apart from this difference, the usages must seem identical in their semantic properties (same inferential role, they seem equally literal, etc.). Lastly, there can also be uses that will be neutral at to their ontic relevance; that is, sometimes, it can be unclear whether one use is ontically relevant or not until the question is raised explicitly. This relevance is determined purely in terms of the speaker's intentions: the individual speaker does (or doesn't) feel ontically committed to relevant entities.

Azzouni's argument concludes that that there are no true criteria for existence because existence is criterion transcendent. If 'exist' is really criterion-transcendent, it cannot be discovered to have some precise set of criteria attached to it by conceptual analysis of the concept of existence. No philosophical argument is available that favors any one criterion for what exists over any other because 'exist' is criterion-transcendent.[87] The argument has as the starting point that 'exist' and

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[86] This is a similar idea than the distinction between existence-entailing and not existence-entailing predicates that we made in chapter 1. Although that distinction is semantic, and here, Azzouni is making a pragmatic point- 'exist' can be understood either way, depending on context.

[87] But, according to Azzouni, the situation is even worse for 'exist' than for other criterion-transcendent terms. Most terms, even if criterion-transcendent, have a set of properties associated with them, a stereotype that is fallibly thought to characterize the members of its extension. Furthermore, most terms belong in families of related terms whose stereotypes are interconnected and that will help us understand some more of the content of that term. But 'exist' is conceptually

other existential expressions are truly neutral between the ontically relevant uses and those that are not. This is his argument:

a. If the criteria were part of the meaning of 'exist' the word could not be used in an ontically irrelevant manner without changing its meaning.

b. When 'exist' is used in an ontically relevant way versus when it is used in an ontically irrelevant way, there is no impression that the word changes meaning.

Therefore, the criteria are not part of the meaning, 'exist' is criterion transcendent.

I take each premise in turn. The first premise claims that it would not be possible to have two uses of 'exist' (it's the same argument for other existential expressions), ontically relevant or not, if the candidate criterion were an intuitive inference from the meaning of 'exist', for in the ontically irrelevant use, we would be seen as changing the meaning of 'exist'. The idea is that if the criterion is question is truly connected to the term, then we cannot use the term in a way that does not respect that criterion. So, if existence implies spatiotemporality, then we wouldn't be able to say things like 'There's a strategy to solve this' without thereby being committed to strategies being spatiotemporal, or changing the meaning of 'exist' or 'there is', in this case.

I think Azzouni is right to point out the extreme flexibility of language, and the widespread ontically irrelevant uses of all existential expressions. It is only a matter of setting out the right kind of context; any existential expression can be made to be ontically irrelevant. But he is not going far enough in separating the two uses. I think that such striking difference in ontic commitments in the

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isolated and there are no stereotypes associated with it—we don't think someone does not know how to use the word if they say things like persons don't exist.

two uses points to more than the expressions being neutral between them. It can be argued that the two uses are actually the effect of an ambiguity in existential expressions: 'exist' and other such terms are actually ambiguous between the two. In fact, given that the notion of ambiguity allows for completely unrelated meanings to be connected to the same word, maybe it would be better to claim that 'exist' is instead polysemous, where polysemy is a type of ambiguity. The two meanings are indeed somewhat related and it is interesting that the same statement can be taken to be ontically relevant or not, depending strictly on the context and intentions of the user, but this does not mean that there aren't really two different concepts at play, that could and maybe should be separated in language, without any loss of expressivity to English (maybe just a gain in clarity).[88] The two uses are actually tracking two meanings, and even if related, there are really two concepts, 'exist' and 'exist*'.

Azzouni gives an argument as to why the two uses do not point to an ambiguity (polysemy). Let me quickly go over it, before I provide my argument that 'exist' really is polysemous. He writes (90) that speakers do not recognize the ontically irrelevant uses because they think the meaning is different, but instead they feel the need to backtrack, as in examples like these:[89]

> Mickey Mouse exists in cartoons—but he doesn't really exist.
>
> The bogyman isn't real; he only exists in your mind.

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[88] Note that everything that has been said here about existence applies to ontically relevant uses, not to those clearly not ontically committing.

[89] In a similar vein, Azzouni writes (*Deflating Existential Consequence* 73): "There are fictional mice that talk but no real ones that do. This sentence seems to show that 'there are' is not ambiguous." But, since it is explicitly stated that we are taking about fictional mice, there are fictional mice that talk is true in the ontologically committing sense, but all it commits us to is fictions, whatever their status is. Or, alternatively, the use of both 'fictional' and 'real' is a way of basically using 'there are' in both its senses in one sentence and not sound incorrect. This is supported by the fact that this sentence strikes us as false: Some mice talk but others do not.

This, however, is not conclusive. Here is how this phenomenon is explained if 'exist' is polysemous: The different meanings of 'exist' are quite close to each other, so much so that it takes some philosophical subtlety to realize there are different concepts at play, so the ordinary speaker feels the need to clarify. Even doing philosophy, and because of the ambiguity of language, we sometimes need to set up the ontically relevant context explicitly or use the expression 'really exist'. As an example of another ambiguous word that may prompt a clarification, we can certainly imagine a situation in which saying the following is warranted, maybe after a flood:

The bank is full of wet sand and gravel, I don't mean the riverbank.

As an interesting exercise, I provide here some linguistic arguments for the polysemy of 'exist'. There are several tests for ambiguity in the linguistics literature, but the most widely accepted are three: the test of contradiction, the unrelated antonyms test and the conjunction-reduction test (Zwicky & Sadock). Since polysemy is a sort of ambiguity, I proceed to see if these test give us the right result about 'exist'. The test of contradiction states that a prima facie indication of ambiguity occurs if for the same state of affairs, the same sentence can be used to express a truth and a falsity. This is not meant to be a necessary condition for ambiguity, for there will be sentences that will contain ambiguous terms but that can never be expressed to assert both a truth and a falsity, e.g. non-declarative sentences, or sentences expressing tautologies or contradictions. Nor is it giving a sufficient condition for it, for certain expressions may be unambiguous, and still affirmed and denied. Pronouns, for instance, can be understood to refer to different things in the same context, thereby

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making one understanding true and the other false, but this does not mean the pronoun is ambiguous.

Does 'exists' pass this test? Think of a statement like the following:

Solutions to this problem exist.

This statement can be taken as true, without thereby meaning that the speaker is committed to the existence of strategies; or if we think it commits us to strategies, we could take it as expressing a false claim. We can parse two readings one of which makes this sentence true and the other false, given the same state of affairs.[90]

Now, here there certainly are two uses of 'exists', or 'there is', one that is ontologically committing and one that isn't. So, I will claim, the term is indeed polysemous between existence meaning real existence, that is, attempting to describe the contents of reality in a mind-independent sense; and it just being a way of speaking about certain situations even if we do not want to add constituents of reality. The two readings constitute different concepts, even if related.

The second and third tests are less conclusive. The second test is usually called the unrelated antonyms test, and it basically says that a sign of ambiguity is to have unrelated antonyms. For instance, 'hard' is ambiguous between difficult and tough, and this is suggested by two antonyms of

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[90] We could explain away these possible readings thus: The claims are plain false, insofar as they commit us to entities that do not exist, but we understand them as true because we put them in the context that would make them so. The problem with this is that examples like (a) require too broad a context, or too vague. What would the context for (a) be? 'In the context of English conventions'?

'hard', 'easy' and 'soft', which are unrelated between themselves. These are the antonyms of 'exist', or 'existing': 'not to exist' or 'non-existing'. But even if the antonyms are the same, the antonyms themselves are ambiguous, too. So suppose I assert:

There are no solutions.

My point here is that the problem is unsolvable; I am not making a claim about what any kind of entity, as I am using the existential expression in an ontically-irrelevant way.

The third test is the conjunction-reduction test, which has it that uses of ambiguous expressions cannot be reduced or conjoined without oddity by means of pronouns if the two uses have in fact different meanings. The evidence that the ambiguous expressions cannot be conjoined is that when one tries to conjoin them the result is awkward. This sentence is an example of such strangeness: 'She went to the bank to deposit the check and then sat on one to rest'. What would it be like for 'exists' to fail the conjunction-reduction test and thus count as possibly ambiguous? Take a sentence like: 'Chairs exist and solutions do, too'. This is a strange claim, for, it may be claimed, no one wanted to say that solutions exist in the same way that chairs do. But I don't think this is as conclusive as the first test. Still, the fact that 'exists' passes the first test for ambiguity, I think, is good evidence that the two uses constitute different meanings and 'exists' is at least polysemous between them.

The preceding arguments build my case that the first premise of Azzouni's arguments is false, which claims that if the criteria were part of the meaning of 'exist' the word could not be used in an ontically irrelevant manner without changing its meaning. For if the word can be used in an ontically

irrelevant way without thereby meaning the same as the ontically relevant use, the ontically irrelevant use has no implications for the ontically relevant use. Now, the second premise of the argument makes the empirical observation that when 'exist' is used in an ontically relevant way versus when it is used in an ontically irrelevant way, there is no impression that the word changes meaning. Since Azzouni argues against the ambiguity of the two uses by providing examples that are meant to support the impression that the two uses are of the same term (that is, having one meaning), I take it that he thinks those examples provide the support for this second premise. I disagree that they are so telling. I think that ordinary people, when the say things like 'There are strategies to solve this problem', do not take themselves as saying anything at all connected to statements like 'There is a tree on my car'. If asked if they mean the same, they'll most likely reply, 'of course I don't'. But anyway, these are just guesses. My point here is that we need not think that the existential expressions are univocal in their meaning. The argument is not sound.

In any case, does Azzouni's position present a direct challenge to our view? I don't think so, for even if we accept the claim that 'exist', in its ontically relevant use, is criterion-transcendent, it is important that the three conditions for existence given here are not given as criteria- they do not follow analytically from the meaning of 'exist'. We do not claim that the theory of existence defended here follows purely from the strict meaning of 'exist'. The way in which we reach our conclusion is neither just by empirical observation of the use of existential expressions, but by providing a philosophical theory of what we ought to include in our broad theory of existence. The claim in this dissertation is that the actual meaning of 'exist' is not clear-cut (even if we focus on the ontically-relevant uses, as I have been doing) and so we wouldn't correct someone for misusing 'exist', but we are suggesting a refinement of the current use, in line with its spirit, but with some improvements.

4.3.5. Quantifier Variance?

Another kind of theory about existence that is worth mentioning, even if just to position the present suggestion with respect to it, is the notion of existence as ambiguous between several possible meanings of the quantifier. In this dissertation we have taken existence to be captured rather by a predicate, 'exist', not a quantifier. But both theories provide answers about what we should take as existing. This position is the doctrine of quantifier variance, for, the theory goes, the quantifier has more than one meaning, that's how 'exists' is ambiguous. The strongest defender of this view is Hirsch ("Quantifier Variance and Realism" and "Ontology and Alternative Languages"). He thinks that many debates in contemporary ontology are in fact merely verbal disputes, for each position in the debate is tracking one of the many possible meanings of 'exist', the disagreement boils down to a matter of linguistic choice. All we can do is look at actual use and decide which is the meaning that most speakers have in mind; he defends, therefore, a common-sense view of ontology.

Ted Sider, in "Ontological Realism", writes:

> Clearly there are multiple (inferentially and materially adequate) interpretations of quantiers. As I see it, the real issue is whether any of these interpretations is metaphysically distinguished, whether any of them uniquely matches the structure of the world, whether any carves nature at the joints better than the others. (...) The core of quantifier variantism, in my view, is the rejection of the existence of such a metaphysically distinguished candidate meaning. (394)

This is the sticking point about this doctrine: quantifier variantists deny that there is more to the choice of quantifiers than whatever the community decides. And this core is how this view can be contrasted to the one defended here, even if we are dealing with a predicate and Hirsch thinks about existence as a quantifier. I think the main point of Hirsch's view is, as Sider points out, that Hirsch does not think that the choice between different understandings of existence needs be anything else other than a linguistic choice- what should we want to mean by 'there is'? Hirsch's reply is: whatever the community of speakers happens to mean. To put it in another way, for Hirsch, many ontological disputes turn out to be verbal disputes without much real ontological weight. The only way to pick out the right meaning for 'exists' is to look at use, according to Hirsch. In contrast with this, I have spent a long time arguing for the theory of existence that I think would best serve our aim of describing how things are and respecting certain philosophical and scientific insights. We bring in these considerations and the resulting meaning of choice may well be different from how most speakers use it, but, if the philosophical arguments hold, the novel suggestion is an improvement on the common-sense meaning.

A further contrast is that Hirsch's view of existence is not such that it can be indeterminate as to whether something exists or not. He thinks that once the language that is being spoken is fixed, disambiguated, then for each entity, it will either be true or false (and not both) that it exists. Hirsch's discussion occurs at the meta-level. He is questioning whether it makes sense at all to have ontological disputes and the way he solves that problem is by claiming that 'exist', which he identifies with the quantifier, can have different meanings. The present proposal is not a view about existence being open to interpretation, but it is proposing, instead, a new account of the one meaning of existence, one new interpretation, at the same level as the other possible meanings of 'exist'. And it is a fact of the matter, or so I argue, that this understanding of existence is better at

tracking reality than other possible ones. Even if I am claiming that the joints of nature, to put it in Sider's terms (more on Sider later), can bend three ways, that is, that something can fall right in between either side of one joint, I am defending this view because it is a better theory of what exists than other candidates, for the reasons I have given in the previous chapters.

4.3.6. Sider Against Vague Existence

Let's continue by considering Ted Sider's arguments against vague existence ("Against Vague Existence" and "Against Vague and Unnatural Existence: Reply to Liebesman and Eklund"). There are two arguments, the indeterminacy argument and the naturalness argument. These are arguments against vague existence, where vagueness is understood as the phenomenon that gives rise to a Sorites sequence. Existence as understood in this dissertation is not vague in this sense, but the criticisms that Sider puts forward apply to indeterminate existence, too. Sider presupposes that the way to analyze vague existence is by means of the supervaluationist resource of precisifications. Finally, he assumes that existence is expressed by an unrestricted quantifier. We have been separating the orthodox quantifier from existential commitment. In fact, existence is best understood as expressed by a predicate, not a quantifier. But all these views have something in common: they are all tackling whatever existence is. And so, an argument against vague existence is interesting as an objection to our view, at least until we know for sure it does not affect our position. I argue here that the argument can be run also against the view that existence is a vague predicate, and in doing so we bring out the assumptions that Sider is making. We can then consider whether these assumptions are fair to the defender of vague existence.

This is the argument ("Against Vague and Unnatural Existence" 557):

1. Assume that '∃' has two precisifications, ∃₁ and ∃₂, in virtue of which '∃xϕ' is neither true nor false: '∃xϕ' comes out true when '∃' means ∃₁, and it comes out false when '∃' means '∃₂'.

2. The natural way to think about how ∃₁ and ∃₂ generate these truth-values is this: ∃₁ and ∃₂ are associated with different domains, some object in the domain of one satisfies ϕ, whereas no object in the domain of the other satisfies ϕ.

3. But 2 entails that some object satisfies ϕ (If "some object in the domain of one satisfies ϕ" is true, then some object satisfies ϕ).

4. So '∃xϕ' is true, not neither true nor false.

Therefore, by reductio ad absurdum, '∃' cannot have more than one precisification.

Sider's aim is to conclude that vague quantifiers would be very different than what we understand as quantifiers, and, since we are taking existence to be a predicate, this argument is not directly a problem for our view. Suppose, though, that we do not take existence to be a quantifier but a predicate, 'E'. Suppose, instead, that we take this argument and turn it into an argument against our view. What I am suggesting is that the point he is making would apply even if we talked about different possible extensions of the predicate of existence, instead of domains of quantification of the so-called existential quantifier. Sider wants to conclude from the claim that something is in the domain of one of the precisifications of '∃', that they exist, *simpliciter*. This would be the analogous version of Sider's argument, in terms of extensions of the predicate of existence, 'E' and a particular quantifier with no existential import:

1. Assume that the predicate 'E' has two possible precisifications, E_1 and E_2, in virtue of which '$\exists$x(Ex & ϕx)' is neither true nor false: "$\exists$x(Ex & ϕx)' comes out true when 'E' means E_1, and it comes out false when 'E' means 'E_2'.

2. The natural way to think about how E_1 and E_2 generate these truth-values is this: E_1 and E_2 are associated with different extensions, some object in the extension of one satisfies ϕ, whereas no object in the extension of the other satisfies ϕ.

3. But 2 entails that some object satisfies ϕ (If "some object in the extension of one satisfies ϕ" is true, then some object satisfies ϕ).

4. So '$\exists$x(Ex & ϕx)' is true, not neither true nor false.

Therefore, by reductio ad absurdum, 'E' cannot have more than one precisification.

Sider's argument is saying: if something is in the extension of the predicate of existence, it exists. But the whole point of separating existence from the particular quantifier is to be able to talk about things without thereby being committed to their existence. And so, even though we quantify over the members of the extensions of the different possible extensions of '$\exists$', we are not committed to their existence. I think, in conclusion, that Sider's argument boils down to the traditional complaint against nonexistents. It's the problem of non-being: We cannot say that for some entity, it does satisfy ϕ, but it does not exist. But that's not true: all we need to do is realize that the particular quantifier need not have existential import. Now, if we go back to the argument as Sider gives it, he is assuming that the particular quantifier is existential and unrestricted. I think this is the problem with his argument- by assuming this, he precludes talk of alternative precisifications of existence. But he is also assuming that the supervaluationist is the right way to think about vagueness, so he makes contradictory assumptions.

The second argument he gives is the naturalness argument. It is aimed at the doctrine of quantifier variance as supported by Hirsch, the argument was already hinted at in the previous section, but here it is again. One way in which to give a theory of indeterminate existence is to say that for all the possible meanings of 'exists' (again, Sider equates this to the quantifier, but it need not be thus), there is no substantial way to determine which is most correct, the discussion is merely verbal: what should we take this word to mean? So, Hirsch continues, we may as well just look at how people actually use the word and take that as existence. All the possible candidate meanings, must be similar in some respect, aim at capturing the same concept. But there is a further assumption that Sider thinks must be made by the quantifier variantist and which constitutes the core his criticism of this position: for the different meanings of 'exists' to be equivalent, none of them must be more natural, carve nature at its joints better, otherwise, the dispute is not merely verbal. And here are Sider's reason for believing in one distinguished meaning of 'exists': We generally attribute distinguished meanings (meanings that carve nature at its joints) to the primitive expressions of our most successful theories, and, he goes on, the quantifiers (or 'exists', I say) occur in every successful theory about the world (560). So it is the quantifier that is used in our most successful theories about the world that should be taken as the distinguished meaning, which is, in a nutshell, Quine's proposal, of course. There is a distinguished meaning, Sider claims, because we take it to be distinguished when doing science.

The problem is that Sider is assuming the nature's joints are bivalent and that there is a single bivalent joint-carving concept associated with the quantifier. He is ruling out that the world could be indeterminate, so he is ruling out by his assumptions that there could indeed be no distinguished meaning of 'existence'. Initially it seems that he is trying to argue against the view that existence

could be vague, but when the arguments are spelled out, it appears that we assumes that existence is not vague… so it is unsurprising that the under those assumptions, vague existence appears contradictory. In this dissertation I propose that it would be better to realize that existence need not be bivalent, accepting the joins are more elusive than we thought them to be.

The theory of existence that I defend is an attempt to unify our use of existential expressions with other philosophical and scientific insights, so it can be understood as a complex, tripartite distinguished concept of existence. But, it is interesting to point out that it can also be seen as modeled on the supervaluationist's understanding of vagueness, even if in this case, the indeterminacy does not give rise to a Sorites. We are claiming that it is true that something exists if each of the conditions is satisfied; it is false that something exists if none are, and it is neither true nor false otherwise. If we take each condition to be a sharpening, then it is true (supervaluationists would say 'super-true') that something exists, if it is true under all sharpenings. It is false that something exists, if it is false under all sharpenings. It lacks truth-value otherwise.

4.3.7. Fictional Entities

To conclude this review of objections and clarifications, it is necessary to approach briefly our position on fictional entities. I take fictional entities to be those characters that are part of fiction, artistic or mythological, the product of our imagination, in the strict sense, not including other kinds of discourses that may have a fictionalist interpretation. As has become clear in the process of developing the arguments in the previous chapters, we have been taking fictional entities to fail to satisfy each of the three conditions. I have asserted that fictional entities are not in the quantificational domain of a true and complete description of the world, for even if we include psychology and even literature in that description, all that is needed by those disciplines is that we

have thoughts about these entities, not that these entities exist- they are not part of the commitments of any scientific account of reality. The account of reality would only include talk of fictional entities when describing human creations, beliefs and hallucinations. Fictional entities are also not spatiotemporal, in the sense that they are not in space and time. And finally, I have been assuming that they are mind-dependent, that they are the product of our imagination and that their properties depend in a very strong sense on what we believe them to be. This, according to our theory of existence, implies that it is false that fictional entities exist. In this section I will consider some alternative views and the consequences that would follow from them in terms of the existence of fictional entities.

Are there fictional entities? And if so, what are they like? Everyone agrees that Santa Claus doesn't exist as a bearded big man living in the North Pole. But even still there is room for disagreement: we can separate a realist position from an anti-realist one. The anti-realist has it that there are no fictional entities, existent or nonexistent, nothing is a fictional entity. Fictional realists, on the other hand, think fictional entities are nonexistent entities. Given that we are quantifying over them and separating their status from those entities for which it is neither true nor false that they exist, here the view defended is a realist view in this sense. I have argued that it is false that these entities exist, but that we can say true things about them, other than predicating existence or any existence-entailing properties of them. I claim that it is true in the actual world that Indiana Jones is a fictional character, but it is only true in the story that he has a cool hat. Now, I have followed Priest (see chapter 1) in analyzing this as it being true in some possible world that Indiana Jones has a cool hat. This means that even if Indiana Jones is not spatiotemporal because he is not in space and time in the actual world. Indi could be spatiotemporal- for that it what it means for there to be a possible

world in which he wears a cool hat.[91] This also makes Indiana Jones be a kind of possible entity. So, this view is a kind of possibilism, that is, fictional entities are possible entities.

Possibilist views of fictional entities are faced with a problem that I want to address here, the so-called indeterminacy problem. I take up Kripke's version of it here ("Vacuous Names and Fictional Entities").[92] The argument is this: suppose that fictional entities are those possible entities that satisfy all the predicates attributed to them in the story. But even if we take a highly developed character, like, say Tolstoy's Anna Karenina, the characterization is not rigid, that is, it is not directly picking out an object, a person in this case, but it picks out whoever fulfills the description in the book. This could be fulfilled in more than one way: the book leaves out plenty of details about Anna Karenina, e.g. how many hairs did she have on her head, exactly at what age did she take her first steps, what she was thinking when she woke up the morning before the story begins, etc. So, there are infinitely many possible entities that could be Anna Karenina. In Kripke's words, about Sherlock Holmes:

> Under what circumstances, to mention the case that I noted before, would Sherlock Holmes have existed, given that the name in fact has no referent? Well, not simply if someone or other would have done these things in the story, because the name 'Sherlock Holmes' is supposed to refer to a particular person rigidly. One cannot say, 'Well, it does not designate a real person, but just a (merely) possible person', whether one likes such an ontology or not, because many possible people might have done the things in the story. (…) [O]ne cannot say which person would have been designated.

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[91] Note that talk of possible worlds need not be existence entailing so I am not hereby committing myself to the existence of possible worlds.

[92] See also Kripke's *Naming and Necessity*,156–8. Another important paper making a similar point is Anthony Everett "Against Fictional Realism", which argues that the indeterminacy problem affects realist positions in general.

> There is no criterion to pick out one as opposed to another; one should say that this name does no designate. (59)

In reply to this challenge I think that we must agree that there is no way of choosing which one of the possible entities is the fictional entity intended, but instead, we can challenge the assumption that the name is to refer rigidly, or even pick out a unique entity at a given time. Here is the proposal: a story picks out infinitely many possible entities that satisfy the description. The more the story develops, the set of possible entities that could be the fictional entity changes, it excludes more possibilities, even if it always remains infinite in cardinality. Whatever the fictional entity is, it remains mind-dependent, because it is the author or community that decides the characteristic of the fictional character. But, as Kripke points out, no description can ever be complete enough to refer rigidly, so, I say, they do not refer rigidly. Since we don't care about the characteristics of fictional characters that are not specified in their descriptions, it doesn't make a difference to us which one of those possible entities Anna Karenina really is- she is any one of them. We don't care about the number of hairs on her head, so we can think about all those possible entities that have a normal amount of hairs on their head (for she wasn't bald).

One of Kripke's points is that if we found someone in real life that fitted perfectly the full description of a fictional character, we wouldn't think of them as that character, for that character was thought out as a fiction, which includes their not existing. Kripke's point is that the story was not about anybody real, so we cannot think of anybody real as the referent of a fictional name or as being picked out by a description intended for no one in the actual world. This case is motivated by the thought that names in fiction are supposed to refer rigidly, so it is not, as it stands, an argument for the rigidity. Nonetheless it is important that we explain this kind of case from within our theory.

I think that, first of all, the thought experiment is a bit unfair, because the chances of actually finding someone who satisfies all of the predicates of a full description of a fictional character are very, very low. To make things more unlikely, Kripke, for instance, talks about a situation in which we find that someone actual, like Charles Darwin, instantiates all the properties attributed to Sherlock Holmes, but we are easily confused by that example; if we are asked to think of Charles Darwin, of course we conclude he is not Sherlock Holmes! But let's try to be charitable and think of a case in which it truly turns out to be the case that we find someone satisfying all of the attributes of a fictional character. Suppose that we come across a real-life Anna Karenina, that is, a woman that goes by that name and is exactly how Tolstoy describes her, satisfying all and each of the descriptions in the four hundred pages of the book. Would it be so crazy to think of her as the Anna Karenina of the book? Of course, assuming that Tolstoy was making his story up, the coincidence would be nigh on impossible, but if it did happen, why not say that in fact there is an Anna Karenina in real life? Notice that I am not saying that that would be the only Anna Karenina, for I am embracing the indeterminacy in fiction, which means that we still have all the other merely possible Anna Kareninas that would also be picked out by the book-length description. But that's alright, because all of these fictional entities are exactly how Tolstoy wanted, so they are Anna Karenina for all intends and purposes, according to this possibilist view.[93]

I conclude with this a review of some of the most salient objections to the theory. It is not meant to be an exhaustive list, and many other objections have been dealt with along the way. I go on to look carefully at the application of this theory of existence to the case of mathematical entities.

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[93] Others have argued that there is indeterminacy in fiction. See Parsons' *Indeterminate Identity*. Thomasson also defends the indeterminate identity of fictional entities in "Fictional Entities".

Chapter 5: Mathematics

Physical objects in this generous sense constitute a fairly lavish universe, but more is wanted-

notably numbers. Measurement is useful in cookery and commerce, and in the fullness of time it

rises to a nobler purpose: the formulation of quantitative laws. These are the mainstay of scientific

theory …

Quine "Things and Their Place in Theories", 13-4

It is neither true nor false that numbers, sets and other mathematical entities exist. This chapter provides a sketch of a philosophy of mathematics such that the existence of mathematical entities is indeterminate. Any philosophy of mathematics must provide answers to several questions. The ontological question, we have already answered, and it is the starting point of this account. But we must also deal with the epistemological issues: Do we have real knowledge of mathematics? If so, how do we achieve this knowledge? If not, what are mathematicians doing when they do math? And

last but not least we must explain the applicability of mathematics, how does math play the role it plays in science and every-day life?

5.1. The truth-value of mathematical statements

In order to answer the epistemological questions about mathematics, we must first determine what follows from the indeterminate existence of mathematical entities with regards to the truth-value of mathematical statements. For that, I will give a sketch of a semantic interpretation for mathematical statements. One crucial element of these statements is the particular quantifier (a.k.a. existential quantifier). Does the particular quantifier have existential import or not? In general, in order to be able to speak about nonexistent entities and indeterminately existing entities, regardless of mathematics, I think that separating existence from the quantifier is very useful. That is, we shall take the quantifier to indicate that for some, what is said is the case (instead of 'There is something for which what is said is the case'). But the domain of quantification includes entities that may or may not exist. Existence, therefore, will be considered a predicate, E, that must be explicitly predicated for a statement to have direct existential content.

But, following Priest (*Towards Non-Being*), some predicates are existence-entailing, that is, even if a statement has only a particular quantifier without it explicitly predicating existence of anything, it may imply that some thing exists: If it is true of x that Fx, and F is an existence-entailing predicate, that implies that x exists (in the actual world). Whether the predicate is existence-entailing depends on the particular characteristics of each predicate and each application of it, as was discussed in chapter 2. This view therefore allows for truthful talk about nonexistent entities, without thereby allowing nonexistent entities to have properties that only existent objects can reasonably have. So, we can truthfully say that Sherlock Holmes is a fictional character, without it implying that it exists:

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nonexistent entities have some properties in the actual world without thereby existing. He is a detective only in the story. But if it were true, say, that the Tooth Fairy left some money under your pillow last night, then that would be existence-entailing: for that to be true, said fairy must exist in the actual world.

Many think that the particular quantifier has existential import (hence the loaded name 'existential quantifier'), so they take statements like 'There are infinitely many natural numbers' as implying the existence of numbers. Now, even if we separate existence from the particular quantifier, most are convinced that particular statements in mathematics have the implicit assumption of existence, that is to say, that mathematical predicates, like 'being a prime number' or 'being continuous' are existence-entailing predicates in the sense just spelled out. In either case, the orthodox position is that mathematical statements carry the assumption of existence, be it via the quantifier or via existence-entailing predicates. So, I take this assumption on board here and show how the indeterminate existence of mathematical entities affects the status of math: I start by assuming that mathematical predicates are existence-entailing. After that, I go ahead and also consider the alternative, that these predicates are not existence-entailing after all, for that is also a position open to us here and worth pointing out. The consequences of this view for the truth-value of mathematical statements are spelled out.

A semantic interpretation of mathematics can be done along the same lines as a semantic interpretation of natural language. The only special characteristic of mathematical statements is that they involve specifically mathematical predicates and constants, and if anything, they are simpler than natural language, for there is no tense, everything is in the present indicative. Again, the quantifier is a particular quantifier with no existential import. The domain contains mathematical

entities, but this does not imply that they exist, just that they are the subject matter of mathematics, whether they exist or not is determined by the extension of the existence predicate, E. I consider both alternatives. First, I take mathematical predicates like 'is a set', 'is a function', 'is a real number', etc. to be existence-entailing, that is, they only truly apply to things that are also members of the extension of E. Given this, if some predicate like 'is a number' is applied to an entity such that it is not true that it exists, then the claim that such an entity is a number cannot be true. The truth-value of the statement will depend on whether it is false or neither true nor false that the entity exists, and whether the entity is number or something else. The kind of thing that could be a number will be such as to satisfy the other predicates that are predicated of numbers, organized and collected in the axioms of the different number theories. So, for this reason, 'I am a number' is false: I do not satisfy the other predicates attributed to numbers. But for something to be truly said to be a number, it must also exist.[94]

As for the constants, say, the numerals in number theory, they will pick out the entities that we normally take them to pick out, but the assumption that they exist is unwarranted, since the entities are members of the domain, and the domain includes entities for which it is true that they exist, those for which it is false also those that have indeterminate existence. So, if mathematical predicates are not existence entailing, 2+2=4 is not true in the actual world, since its truth implies the existence of 2 and 4.

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[94] This is in line with the thought that mathematical entities necessarily exist. On the other hand, however, if the truth of mathematics does not depend on the existence of mathematical entities, then the existence of numbers can be taken to be not necessary. Suppose that one thinks that numbers don't exist but they are not impossible, like many nominalists think. We can put this in terms of possible worlds: numbers don't exist in this world, but they do exist in some possible world this means that it is possible that they exist. In particular, if numbers are taken to be nonexistent and nonexistent entities are taken to be just like fictional entities, inhabiting a merely possible world instead of the actual world, it follows that a fictionalist of the sort that has been sketched here is committed to denying the necessity of the existential status of numbers.

If mathematical predicates are not existence entailing, things are much simpler, for math can be taken to be true, regardless of the existence of numbers. In what follows I choose one of the logics for the connectives and show what follows from that. Attempting a semantic interpretation for pure mathematics, we can constrain the domain to mathematical entities; otherwise we can have a broader domain, containing any kind of thing. The following is a specification of an interpretation of a language that contains mathematics and other kinds of discourse, for I want it to extend to applied mathematics, too. I do not pretend to give an exhaustive interpretation of mathematics in what follows, but just a very small example of how it could work.

5.1.1. A Semantic Interpretation

The domain includes examples of existing entities, nonexistent entities, and some for which it is neither true nor false that they exist. As representatives of mathematical objects, I will take 3 sets; 3 human beings will be examples of existing entities, and as nonexistent entities I will talk about 3 fictional entities. The first part of what follows is common to both possible semantics for math: whether mathematical predicates are existence entailing or not. Then, I specify the differences.

D: $\{\emptyset, \{\emptyset\}, \{\{\emptyset\}\},$ Human 1, Human 2, Human 3, Fictional Entity 1, Fictional Entity 2, Fictional Entity 3$\}$

Logical connectives and quantifiers:

Strong Kleene logic is a simple example of a three-valued logic, that is, one where the truth-values are three instead of the classical two, as expressed below by the set V. The designated truth-value (that is, the value that is preserved in valid inferences) is still just 1, as in classical logic. We define

the interpretation of the logical connectives by providing truth tables, which represent the truth

functions for each of those connectives (119-122):

V={1, i, 0}

f¬	
1	0
i	i
0	1

f&	**1**	**i**	**0**
1	1	i	0
i	i	i	0
0	0	0	0

f∨	**1**	**i**	**0**
1	1	1	1
i	1	i	i
0	1	i	0

f⊃	**1**	**i**	**0**
1	1	i	0
i	1	i	i
0	1	1	1

This interpretation is a nonclassical interpretation of the usual connectives, and it has a consequence

that some classical principles do not hold. So, for instance, the Law of Excluded Middle does not

hold, for it is explicitly stated that there can be a third value, a middle value. The Law of

NonContradition, the principle that it is not true that p and not-p at the same time, is however a tautology in this logic, whatever value p takes, it will not be true that p or not-p (it will either be false or neither true nor false).[95] A usual objection to this kind of logic is that Kleene's truth tables commit us to accepting some less-than-ideal truth-values for certain statements. One of them is A⊃A, the Law of Identity, for it is not a tautology. E.g. 'If n is a number, then n is a number' is not true. For those n for which 'n is a number' is indeterminate, the conditional takes the value i, according to the truth tables above. This could be solved by adopting another very similar interpretation, Ł3 or Łukasiewicz three-valued logic. In Ł3, the middle value for the conditional changes:

f⊃	1	i	0
1	1	i	0
i	1	1	i
0	1	1	1

On this interpretation, A⊃A is a tautology.

Now, the choice between K3 and Ł3 is about trade-offs. So, it is advantage of Ł3 that A⊃A is always true, prima facie. But on the flip side of this issue, in Ł3 statements of the form A⊃ ¬A are also going to be true if A has the truth-value i. So, for instance, 'If n is a number, then n is not a

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[95] So it is not a logical truth, but explosion is valid under this logic.

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number' comes out as true also. These are the kind of particular trade-offs of each of these logics, and there are plenty more examples of this sort.

I am for now leaving it open as to whether mathematical statements are existence-entailing or not, but it may be thought that it is important that our choice of logic allows us to express the claim that mathematical statements are existence-entailing, when it comes to it, and so that the choice of logic should take that into consideration. However, it is important to notice that we do not have to express the existence-entailing quality of mathematical statements as a conditional. Neither K3 nor Ł3 satisfies the Deduction Theorem, which has it that there is a connection between the inference relation and the conditional such that:

$$\vdash A \supset B \text{ if and only if } A \vdash B$$

It is easy to check the truth table above to realize that in K3,

$$A \vdash A$$

but it is not the case that

$$\vdash A \supset A$$

And in the case of Ł3, even though

$$A \& (A \supset B) \vdash B$$

It is not the case that:

$$\vdash (A\&(A\supset B)) \supset B$$

What this means is that the existence-entailing of mathematical predicates is a statement of deducibility, but not a conditional. Take this simple example:

'2+2=4' implies that 2 and 4 exist.

We have spent over two hundred pages arguing for the indeterminate truth-value of existential claims about abstract entities like numbers, so let's assume that part. Thus, assume '2 and 4 exist' is neither true nor false. Now, suppose we wanted to express the thought that mathematical statements are existence-entailing, all that means is that if '2+2=4' is true, then the conclusion has to be true, for both these logics only have 1 as the designated value. But given that the conclusion as we have it is neither true nor false, all that tells us is that '2+2=4' cannot be true. It may be false or it may be neither true nor false, and still mathematical statements would be existence-entailing. And this is the case in both K3 and Ł3, so this consideration is not going to help us decide which logic to adopt.

Given the choice, and regardless of some of the counterintuitive consequences, I will go ahead and adopt K3 in what follows, and I will take it that mathematical statements that are accepted by mathematicians are neither true nor false. We can reserve the truth-value false for those statements that are not accepted by mathematicians as part of any theory. I choose K3 because if we assume

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that atomic mathematical statements are neither true nor false, then in K3 all complex statements will come out also as neither true nor false. So in the case where we take mathematical predicates to be existence entailing, we will get mathematics being uniformly neither true nor false. For those predicates that behave classically, the truth tables above will be the same, but only the classical values will be relevant. Some predicates will never have an indeterminate application, but some are indeed trivalent, for instance 'existence' is gappy.

There are two quantifiers, the universal and the particular quantifiers, neither of which have existential import. A valuation of a quantifier will depend on the domain of quantification, so if, for instance, when we claim 'everything is F', what that means depends on what we take 'everything' to mean, and most interpretations do not actually mean absolutely everything. In non-free logics, the domain of quantification is the domain D of the logic, for everything in the domain is presupposed as existing. However, in a free logic like the one being described here, being a member of the domain D is no guarantee of existence. If we want the quantifiers to have the same meaning, and thus have also existential import in a free logic, we have the option of restricting the quantifiers so that they range over the extension of the existence predicate, the set ∃, also called the inner domain. Call the quantifiers restricted to ∃ the inner quantifiers, and call the quantifiers ranging over the greater set, D, the outer quantifiers (457). Here, I will define the quantifiers as outer quantifiers: the quantifiers have no existential import, since I want to be able to make true quantifier statements about all things in D, e.g.: for some x, x is a number, and x's existence is indeterminate. It is very easy to define the inner quantifiers in terms of the outer ones, by adding the constraint that the entities be also members of ∃.

There is valuation, a function v, that assigns values to each of the pieces of the language. So, v

assigns a constant for each element of the domain. For each $d \in D$, k_d is a constant for d, that is, a

name for d. So, for each $d \in D$:

$$v[\,k_d\,] = d.$$

And for each predicate, v(P) will assign truth-values (0, i, or 1) to members of D. Let P be any n-

place predicate:

$$v(Pa_1 \ldots a_n) = v(P)(v(a_1), \ldots, v(a_n))$$

The same thing for each proposition connective, where f_c is the function defining each connective

(we have defined it via the truth-tables above):

$$v(c(A_1, \ldots, A_n)) = f_c(v(A_1), \ldots, vA_n))$$

D is not the domain of existing things; it is broader than that. The extension of E is what defines

what exists. So we have two sorts of quantifiers, the inner and the outer ones. The only difference is

that the inner quantifiers will have $\exists$ instead of D in the following interpretations. But here are the

semantics of the outer quantifiers:

This is the ordering for the truth-values of Ł3: $0 < i < 1$.

$$v(\forall xA) = Min(\{Ax(k_d): d \in D\})$$

$$v(\exists xA) = \text{Max}(\{Ax(k_d): d \in D\}).$$

What this means is that a statement with the universal quantifier, $\forall xA$, will have the same truth-value as the minimum shared value of all the x in D. Just as if the universal quantifier is interpreted as a conjunction, we take the value of the claim 'All x are A' to be as true as the minimum degree to which all the x are actually A, and that is the minimum truth value of the bunch. In the case of the particular quantifier, the analogy is with a disjunction, so the quantified claim will be as true as the most true case in the sample, that is, it will take the maximum value of those As in D (547). The reasoning is analogous for the inner quantifiers, but the domain is $\exists$.

Non-logical symbols:

In this language there are at least the following predicates and relations: 'exists', 'is a human', 'is a fictional entity', 'is a set', 'is a member of'. Out of all of these, some are gappy and others behave classically.

Predicates that behave bivalently:

$V(Hx) = 1$ IFF x is human, that is, x= Human 1, or x= Human 2, or x= Human 3

$V(Hx) = 0$ otherwise.

$V(Fx) = 1$ IFF x is a fictional entity, that is, x= Fictional Entity 1, or x= Fictional Entity 2, or x= Fictional Entity 3.

$V(Fx) = 0$ otherwise.

Existence:

V(Ex)= 1 IFF x exists (x is spatiotemporal, theoretically present and mind-independent). That is x=

Human 1, or x= Human 2, or x= Human 3.

V(Ex)= 0 IFF x determinately does not exist (x is not spatiotemporal, not theoretically present, and

not mind-independent). That is, x= Fictional Entity 1, or x= Fictional Entity 3.

V(Ex)= i IFF it is neither true nor false that x exists (x is at least one but not all of the following:

mind-independent, theoretically present, spatiotemporal). That is, x= $\varnothing$, or x={$\varnothing$}, or x={{$\varnothing$}}.

If mathematical predicates are existence-entailing:

Being a set:

v[Sx]= 1 IFF x is a set and x exists.

{x: Sx}= $\varnothing$

v[Sx]= 0 IFF x determinately does not exist or x is not a set.

{x: ¬Sx}={Fictional Entity n, Human Being n}

v[Sx]= i IFF x is a set and x indeterminately exists, that is, x= $\varnothing$, or x= {$\varnothing$}, or x={{$\varnothing$}} or x=

{{$\varnothing$}, {{$\varnothing$}}}

Being a member of:

v[x ∈ y]= 1 IFF x is a member of y and x exists and y exists.[96]

v[x ∈ y]= 0 IFF x and y determinately do not exist or x is not a member of y.

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[96] I am claiming here that the symbol '' is the mathematical symbol for the English 'is a member of', I am assuming here that we understand English, so I am not providing an explicit definition of what the relation of membership is, but I also assume that it is provided by the axioms of ZF set theory.

v[x ∈ y]= i IFF it is neither true nor false that x or y exist and x is a member of y.

Under this interpretation, in order for something to be a mathematical entity or have a mathematical property, it must exist first. This is the orthodox view about math, one that even many people who think that mathematical entities do not exist, agree to: If mathematical entities existed, then mathematical statements would be true, they claim, but they don't exist, and that is why math must be other than true. This is the fictionalist line. The platonist, too, believes this: math is indeed true and mathematical entities exist. According to this interpretation, if it is neither true nor false that mathematical entities exist then that mathematical statements are neither true nor false. I proceed to consider what things would be like if mathematical predicates were not existence-entailing.

If mathematical predicates are not existence-entailing:

Being a set:

v[Sx]= 1 IFF x is a set, that is x= $\varnothing$, or x= {$\varnothing$}, or x={{$\varnothing$}}.

{x:Sx}= {$\varnothing$, {$\varnothing$}, {{$\varnothing$}}}

v[Sx]= 0 otherwise.

Being a member of:

v[x ∈ y]= 1 IFF x is a member of y. That is, x= $\varnothing$ and y= {$\varnothing$}, or x= {$\varnothing$} and y={{$\varnothing$}}.

{x, y: x ∈ y}= {($\varnothing$,{$\varnothing$}), ({$\varnothing$},{{$\varnothing$}}) }.

v[x ∈ y]= 0 otherwise.

In this case, the existence of mathematical entities is not a requirement for mathematical statements to come out true. We can truly say things like $\{\varnothing\}$ is a set with $\varnothing$ as a member, even if sets don't really exist, just as we can say that Pegasus is a mythological animal without thereby being committed to the existence of Pegasus as a horse in this world. I think this option is overall tidier than the other, since it allows us to maintain that math is true, and I see no reason why mathematical predicates should be existence entailing. In fact, the queerness of their existence, or rather, the arguments provided here for their indeterminate existence could be taken as a reason against the predicates being existence-entailing. However, I do not need to commit one way or the other, and since the orthodox view is that they are existence entailing, I rehearse both possibilities in what follows. In fact, the case for the indeterminate existence of mathematical entities is made stronger if I can indeed provide an explanation of the nature of mathematics, whatever the nature of mathematical predicates is taken to be. Thus, this chapter will leave the choice to the reader.

5.2. Knowledge of mathematics?

Once we have determined the truth-value of mathematics, the next pressing question is about the status of mathematical knowledge. In other words, what does the pure mathematician do? Is she gathering truths and thus gaining knowledge? Given that we have two alternatives open to us with regards to the truth-value of math, I must consider each option in turn. I will start with the easier case, that where mathematical statements are not existence-entailing.

5.2.1. Math is true

If mathematical predicates are not existence-entailing, then mathematical statements can be taken to be true without thereby being committed to the existence of numbers. So, we can maintain that even if the existence of mathematical entities is indeterminate, mathematicians are proving truths about numbers, sets and geometrical figures. Since these truths do not require that these entities really exist, whenever a particular quantifier is used in a mathematical statement within a theory, it is not to be read as an existential claim, but just a description of what is true for some of these entities, for which it is neither true nor false that they exist. Take, for instance,

(p) There are infinitely many prime numbers.

This statement is true. The quantifier 'There are' is a particular quantifier that carries no existential commitment. The fact that we say 'There are' instead of 'For some' must not be taken as a sign of existential import. Language is very malleable, and speakers take lots of liberties with words. One says 'There are many ways of solving this', without thereby meaning to be saying that ways actually exist in any robust manner, for example. Natural language clearly uses a free logic and the existential import of a statement is gathered by the content of the statement, the context of utterance and other assumptions to be made about the speaker's intentions and beliefs[97], and sometimes, we must resort to philosophical considerations to decide whether a statement can have existential import or not. In any case, the point is that the use of 'there are' is no sure sign of existential import. In the case of mathematics, we are considering what it would be like if its predicates were not existence entailing.

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[97] A nominalist can say that there is a possible world where she can fly, and not be committed to possible worlds. Now, someone like Lewis could assert the same about the nominalist who could fly and mean it in an ontologically substantial way. So whether the use is existence entailing or not depends on the intentions of the speaker to a certain extent.

In such interpretation, (p) is true as a description of these entities, prime numbers. Just as it is true that Indiana Jones is a fictional character can be read as true without thereby implying the existence of anything.

Mathematicians are describing a world, a structure, of indeterminately existing entities. The way they go about it can be understood as a two-stage process. The way they come up with theories is more creative than anything (axioms or, for non-axiomatized theories, the starting stages of their development). Some theories are thought out in order for them to apply to the world, like basic arithmetic or geometry, and so, in those original stages, mathematicians can be thought of as getting their inspiration from their basic beliefs about the actual world and what would help them describe it. Other theories come out of pure curiosity for the possibility of a theory with some assumption that was never considered before. So, the beginnings for those more speculative theories are also creative, more freely so. But once the demarcation has happened, so to speak, the field of play is chosen and then the mathematician can be seen as discovering the consequences of such premises.

It is just like the fiction writer who has written the first book of a trilogy and in writing the second volume must be faithful to the characters that he developed previously. And it is this desire for faithfulness to the characters that gives the writer the sense of what she can or cannot do. In analogous manner, the logically imposed constraint of the premises and the chosen logic limits the creativity of the mathematician. This gives the appearance of pure discovery in mathematics. The only reason why the writer does not have such a strong sense of discovery is because the laws of what can or cannot be done to a character are much more vague and easy to bend than the laws of a deductive theory. (This is not to say that there are no other differences between math and fiction, for math is applicable to the world and fiction isn't. More on this difference later.)

5.2.2. Math is neither true nor false

If mathematical statements are neither true nor false, then mathematicians can have no knowledge of mathematics, for knowledge, whatever it is, it is factive, that is, it requires the truth of what is known. Again, we are working with K3, and atomic mathematical statements are either neither true nor false, or they are false. The statements are false if they are not part of an acceptable theory (e.g. 2+4 =2), and they are neither true nor false if they are part of some theory but still, since it is not true that numbers exist, they cannot be true. Compound statements composed of neither true nor false mathematical statements will either be neither true nor false.

Now, what is the mathematician doing in such a scenario? Can we think of her as knowing? Maybe what she knows is something like this. Take s to be an atomic statement of mathematics, and T the theory that describes the subject matter of s. Then this is a step closer:

(p*) If mathematical entities exist as T describes them to be, then s.

This being a conditional in K3, it is nether true nor false. So this cannot be the way to represent this. I claim that most of what the mathematician engages in is the study of what would follow from the existence of numbers, even if sometimes, the hypothetical aspect of their knowledge is ignored and even forgotten. This thought, therefore, would best be understood counterfactually, or better still, as presenting a hypothesis. The mathematician is going to assume that numbers exist, and see what would follow if that were the case. So it is not a plain conditional to be analyzed according to the truth table. It would be better posed like this:

(p*') Under the hypothesis that mathematical entities exist as T describes them to be, it would follow that s.

It is helpful here also to separate two stages of mathematical development, in a way very closely related to that explained in the previous subsection. The hypothetical nature of mathematical knowledge applies once the domain has been demarcated. The reasons for choosing to think about such and such numbers instead of others, or this kind of sets instead of others will vary for each case. Sometimes, one chooses whatever mathematical entities will work for the application sought, other times, it will be pure intellectual curiosity about the feasibility of such kind of entities that will be the motivation. So, the two ways of understanding pure mathematics are pretty similar: the only difference is that in the first, given that mathematical predicates are not existence-entailing, we need not think of mathematical knowledge as depending on the existence of mathematical entities.

5.3. The application of mathematics

Once again, we must separate the two possible outcomes for the truth-value of mathematics of the indeterminate existence of mathematical entities: math can be taken to be neither true nor false, or true.

5.3.1. Applying a neither true nor false discourse

Can we say that statements involving mathematical entities are neither true nor false and still explain the fruitful application of math? What options are there for giving an account of the applicability of mathematics if the existence of mathematical entities is indeterminate? In order to answer this

question, I am going to look into two fictionalist positions in the philosophy of mathematics. Fictionalists agree that mathematics, were it to be true, would imply the existence of mathematical entities. But the fictionalists also believe that math is not true, but false, so they are not committed to the existence of mathematical entities after all. Each fictionalist story proceeds by giving an explanation of the role of math and particularly of the success of its application in science, since that becomes the most pressing problem: how math remains so useful given that it is false. In this section, I will modify the fictionalist's explanation of how we can still have a satisfactory account of math, even if it is false, into an account of math, where math is instead not true and not false either. Both fictionalist theories to follow, Hartry Field's and Stephen Yablo's philosophies of mathematics, I think, are interesting, even if ultimately Field's leaves some questions unanswered, and thus Yablo's, even if also a rough draft, seems more appealing as a potential explanation of the application of math.

5.3.2.a. Field's Fictionalism

The first position to consider is an incomplete development of a good idea: Hartry Field's fictionalism in *Science Without Numbers*. First of all, as a fictionalist, Field accepts that assuming the axioms of, say, Peano arithmetic, are true, then there are infinitely many natural numbers. That is, there is no way around the ontological commitments of mathematics.[98] E.g. if it is true that there is a prime greater than 3, then that implies that there exists a number, just as if it is true that there is a bus coming at 3pm, that implies that there exists a bus. Now, even though math is strictly speaking false, the addition of math to a purely empirical scientific theory is a conservative extension of such science. So math is a conservative extension of nominalistic science and for that reason, it is a useful

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[98] Many take this to be an advantage of fictionalism: it supposes a uniform semantics for math and the rest of the language. But I think that depends on whether it is true that natural language has such simple semantics.

fiction that we are allowed to use without thereby being committed to the existence of numbers. Nominalistic science is science that is not committed to abstract entities: it is science that has no terms for mathematical entities, and it is done only with quantification over space-time points and regions, all of which are spatiotemporal. That math is a conservative extension of nominalistic science means that applying math to a nominalistic version of science will not allow us to conclude any nominalistic results that would not be derivable within nominalistic science alone. If some nominalistic result is derivable from nominalistic science plus math, it is derivable from nominalistic science alone.

Math is just a fiction, a useful fiction, with which we come up to help us deal with the physical world. There are certain structural similarities between space-time and the real numbers that allow us to use representation theorems to go from numbers talk to space-time talk. Representation theorems give us the way in which to go from nominalistic to platonistic science, back and forth, as required. For instance, Field's toy example is Newtonian gravitational theory, and in order to argue for the conservativeness of mathematics as an extension of gravitational theory he gives representation theorems to ascend into abstracta and then descend back to nominalistic science. One set of such laws goes from points in spacetime (concrete) and their relational properties to their abstract counterparts, which are numbers and distances. As an example, take the property 'x is a point on the line segment whose end points are y and z', or 'x Bet yz' for short. This property is a relational property between space-time points, all of which is nominalistic and requires no abstract entities, according to Field. This, however, can be shown to be isomorphic to a non-nominalistic counterpart in terms of distances, d, thus:

For any points x, y, and z, x Bet yz IFF $d(y, x) + d(x, z) = d(y, z)$

A distance function is a number-valued function that gives us platonist, absolute measurements of distances, d. So, the representation theorem gives us a way of translating the nominalistic, relational property of in-betweeness into a platonistic version that ranges over distances, which require numbers.[99] Thus, we can go from comparative claims about segments, to abstract claims about distances. The completed project, according to Field, would show that strictly speaking, math is not required to arrive at the nominalistic results that we use it for. We could in principle get to those same results without talk of numbers, but it makes things much easier and faster if we can use math.

If this is the case, then we also have a philosophy of mathematics that explains how we come to think about mathematical entities and are able to apply math: we use math as a useful representation of what is after all just good old spatiotemporal entities, space-time regions. In order for us to know about those, no special epistemology is required, and so we can maintain a naturalistic and unified view of knowledge.[100] Furthermore, the conservativeness of mathematics is basically a claim of non-indispensability, which is to say that Field's theory, if successful, constitutes a reply to Quine and Putnam's argument that numbers exist because they are indispensable to science and we must take

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[99] As a potential problem for the combination of our view with Field's strategy, it is worth noting that this biconditional would turn out to be neither true nor false in our understanding of mathematics, for the left-hand side is true (about physical entities) and the right-hand side has the truth-value i (for it is about distances, which are numerical). Now, the clue here is that math is supposedly conservative; in which case, we are allowing ourselves to use math as if it was true. Otherwise, this would be a problem for Field, too, who thinks that math is false- the representation theorem strictly speaking is false in his (strict) view.

[100] Thus, Field can be seen as answering Benacerraf's dilemma: semantic and epistemological requirements are both met. But see MacBride, 439: "By contrast to physical objects and events, space-time points are not posited to explain occurrences. Like mathematical entities, points are posited to 'structure and organise' occurrences. Resnik also claims that whilst the attribution of causal powers to the space-time regions occupied by fields makes our epistemic access to regions unproblematic it does not follow that our access to the points that compose those regions is also unproblematic."

as existing anything that science commits us to. Field denies the first of these claims, the indispensability claim.[101]

Field's project has faced many objections. Before this is considered a fully developed position, Field must show how all of science can actually be rid of reference to abstracta and give us the bridge laws for any theory, not just Newtonian gravitational theory.[102] This, in fact, is at the basis of one of the objections that has been put forward against him, since he provided the nominalized version of only (a big part of) Newtonian physics, and nothing more. What's more, he must successfully argue that no result got to by the use of math is underivable without math given the bridge laws described, a step that has also been criticized by some. The complaint is that in arguing for this, Field makes use of mathematical notions, in particular the notion of model, which is an abstract entity; and this, he is not entitled to use unless he can give a nominalistic understanding of it. Field attempts such a tour-de-force by giving a notion of model in terms of possibility: if there is a model for A, then possibly A; if there is no model for A, then not-possibly A. 'Possibly' is taken to be a primitive notion. This has been considered insufficient: making the notion at stake be primitive seems just like a way of avoiding the question rather than answering it.[103]

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[101] But see Colyvan, *The Indispensability of Mathematics*, 177: It is questionable whether the nominalistic theory can really be said to be equally satisfactory as a theory, even if the nominalistic results are the same. Empirical accuracy is not the only criteria to choose one theory over another, we must also look at simplicity/parsimony, unificatory/explanatory power, boldness/fruitfulness, and formal elegance. It is arguable that the nominalistic science is not preferable to the mathematically loaded version of science, and thus that numbers are not really dispensable after all.

[102] See also Malament, 523-534. There he makes the case that Field's strategy does not extrapolate to all scientific theories, and that Field is committed to making mathematically committing claims in the supposedly nominalistic sections of science.

[103] For Field's reply to this accusation see Field's "Metalogic and Modality". Since my general point does not depend on the success of this criticism, I do not pursue this line of discussion further and move on with the main line of argument.

I will not attempt here a defense of Field's program, I think there are some issues with it, but some valuable insights; if math is in principle conservative, then we should not care that we need it in practice to get to results, for its conservativeness implies that it can be just a tool and not a truthful description of a kind of entity. Now, if we take math to be neither true nor false, instead of false, can we still take a Fieldean approach to the usefulness of math? It seems, firstly, that there is no barrier to asserting that math is a useful fiction and that it is neither true nor false. It is a useful tool, one that allows us to streamline and tidy up scientific discourse.

Here is a second reason why a Fieldean position is possible while maintaining math is neither true nor false. In order for Field's position to circumvent Quine's indispensability argument, he must defend that nominalistic science, science without numbers, is at least as appealing as the platonistic version of science: Quine's suggestion is to look at the ontological commitments of our best theory, not just any theory, but one that is better than any others available. Field's numberless science has to be argued to be such theory. This has been taken to be a big objection to Field's theory, for nominalistic science is definitely longer and uglier than science with numbers. Field himself admits that practically speaking, we may require math because nominalistic science may be impossible for us to deal with.

Now, this last objection provides for an interesting comparison between Field's nominalism and the position defended in this dissertation that it is neither true nor false that mathematical entities exist. Assume that it is the case that in terms of the theoretical attractiveness of the two theories, a mathematized science is much more elegant and useful than a nominalistic version of it. Field has to then agree that maybe his argument is not truly a reply to platonism within the framework of Quine's indispensability argument, for the notion that Field uses of indispensability is different than

Quine would have had it. But suppose also that Field is right and math is a conservative extension of science, then the suggestion here is that maybe he would be in a better place if he concluded, along the lines proposed in this thesis, that it is not true, but it is not false either that mathematical entities exist. The new version of the position would combine both insights: It is the admission that math really makes for a more elegant theory, or even that practically speaking is not indispensable, that supports the claim that math is not false, but it is not true either, because it is conservative. He wouldn't need to defend his program against the attractiveness objection, since he would agree that math is part of our best theory, which is a step in our argument that it is neither true nor false that mathematical entities exist. But taking a purely Fieldean approach about conservativeness, he can explain the applicability of math along Field's lines. So, taking this point also as applicable to our position here, if math is indeed conservative, we can adopt Field's explanation of the applicability of math and answer some of the objections by maintaining that math is neither true nor false, instead of false.

The assumption of conservativeness is a hard one to prove and it remains an open question today whether math is conservative or not, for previous attempts to fully prove it have failed.[104] So, it is at best unknown, and at worst false, that math is conservative. But what if math is not conservative and so it is indeed indispensable (logically as well as practically) for science? This is where the second sort of fictionalism is relevant. The overarching argument, therefore, is that here we don't need to position ourselves, for we have several positions open to us. If math does turn out to be conservative, we can adopt Field's line of thought about the applicability of mathematics and, by claiming (given our reasons) that it is neither true nor false that numbers exist, we are actually in a better position than him to answer some of the objections that he faces, as explained in the previous

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[104] For a development of this argument see Stewart Shapiro, "Conservativeness and Incompleteness".

paragraph. Now, if, as it is very likely, math is not in fact conservative, I suggest that we can adopt a line similar to that of Yablo to explain the applicability of mathematics, and circumvent Quine's challenge. Here's a sketch to the figuralist position.

5.3.2.b. Yablo's Figuralism

Yablo's figuralism ("Myth of the Seven") is an important position that must be taken seriously. In contrast with Field, Yablo asks: "If deductive usefulness is a reason to use math without commitment to its truth, why shouldn't representational usefulness be also such a reason?" He takes the view that mathematics is just a representational tool to express some things that we would not be able to express otherwise. Just like, say, we use metaphors to talk about the ineffable, we use math to talk about science when it requires dealing with actual infinities. Even if mathematics is a useful representational tool, one derives the same expressive benefit from thinking about numbers as existing or not. So, we need not infer that they exist just because we need to use them in science, against the Quinean dictum. Yablo separates real from literal content, where real or conventional content is what the sentence is 'generally understood to say'. The literal content is the meaning that the expression has if taken strictly, non-metaphorically. If we take the literal content, then, science and math do commit us to numbers. But we need not do so.

Functioning as a representational aid is not "a privilege reserved to existing things". Even though we require numbers in order to say everything we want to say about the physical world, this does not imply the existence of numbers. All that we require is that the non-numerical content is true. That is the part that is literally true and the rest is only metaphorically true, but not literally so. Pure math, therefore, is false, and science that uses math is true only with respect to the physical world. In the

same way, if I say I have butterflies in my stomach, it is true only with respect to the metaphorical meaning, not literally true.

We use math just like we use metaphors. In the case of math it is a necessary use: we must use math given our finitude, and consequent inability to deal without talk of sets and numbers, but this does not give it any special ontological status. For instance, suppose that some physicist is studying gravitational fields and the speed that a projectile must travel at to escape a given field. Suppose she has lots of particular examples of this schema:

> (A) A projectile fired at so many meters per second from the surface of a planetary sphere so many kilograms in mass and so many meters in diameter will (will not) escape its gravitational field. (15)

Now, given enough of these we may have the ability to generalize, but if we cannot make use of real numbers, and generalizations over them, we cannot do so, unless we have the ability to produce uncountably many different names for each weight and velocity of all the possible cases. But we cannot do so in English. So we resort to math, and then we can write:

> (B) For all positive real numbers M and R, the escape velocity from a sphere of mass M and diameter 2R is the square root of 2GM/R, where G is the gravitational constant.

All of this, however, does not imply the existence of numbers. All that we require for B to be interesting is that we understand the non-numerical content as true. That is the part that is true and

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the rest is only metaphorically true, but not literally so. Pure math is false, and science that uses math is true with respect to the physical world.[105]

Yablo presents several reasons in support of his view, but a central one is the following. He thinks that we can make use of numbers as deductive tools without thereby being ontologically committed to them, even if they are indispensable, because whether numbers exist or not makes no difference to the advantages. This bases his rejection of the indispensability argument. Yablo illustrates the indifference to the existence or nonexistence of numbers by means of a little story, out of Burgess & Rosen's *A Subject with No Object*:

> Finally, after years of waiting, it is your turn to put a question to the Oracle of Philosophy...you humbly approach and ask the question that has been consuming you for as long as you can remember: 'Tell me, O Oracle, what there is. What sorts of things exist?' To this the Oracle responds: 'What? You want the whole list?. . . I will tell you this: everything there is is concrete; nothing there is is abstract. . . .' (*A Subject with no Object* 3 qtd. in "Myth of the Seven" 88)

And then he goes on, rather dramatically:

> Trembling at the implications, you return to civilization to spread the concrete gospel. Your first stop is [your university here], where researchers are confidently

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[105] See the following papers for a development of the objection that mathematicians do not take themselves to be dealing with metaphors, representational aids or anything like that: Burgess' "Mathematics and Bleak House" and Burgess and Rosen's "Nominalism Reconsidered".

judging validity in terms of models and insisting on 1-1 functions as a condition of equinumerosity. Flipping over some worktables to get their attention, you demand that these practices be stopped at once. The entities do not exist, hence all theoretical reliance on them should ease.

They, of course, tell you to bug off and am-scray. (Which, come to think of it, is exactly what you yourself would do, if the situation were reversed.) (89)

The point here is that we use math not because we think numbers exist, but for some other reason, and for some other means: they are very helpful to express things about the physical world.

This argument is dangerous, though: if the conclusion follows from the premises, then what is stopping us from applying this kind of reasoning to other fields? For instance, even if the Oracle told us that macrophysical objects do not really exist, we would most likely still make use of the concepts, because of the advantages of simplicity and speed of expression that they suppose. Does this constitute a good reason to dismiss the existence of macrophysical objects? Not unless we have other reasons. The same goes for microphysical objects. In the case of microphysical entities, we do not actually see them with the naked eye, but we have good reasons to conclude that we see their effects through specialized instruments. In Yablo's case, there is a presumption that abstracta are suspicious and had better be done without. So the argument is rather: we should not accept abstracta unless we absolutely have to, and the fact that we need to use them as representational aids is not a sufficient reason.

I want to add one last thought about this argument, an appeal to a contrast that may help somewhat clarify Yablo's point. Suppose that the Oracle told us that the external world didn't really exist. I pick

the external world as an example of something that most of us firmly believe does really exist. Does the counterfactual still hold? Were the Oracle to tell us that we are misguided about the existence of external reality, would we proceed in just the same way? I think not quite in the same way: we would have to proceed in a similar way because we have to behave and live regardless: it appears as if it does exist, regardless of our beliefs. But one would most likely feel the attachments to the world in a very different way and if one is consistent with that, it may be that we would behave differently: who cares if someone becomes upset at us if they don't exist? Who cares if we destroy the environment? I believe our behavior is somewhat a consequence of our belief in the existence of an external reality, certainly with regards to our morally motivated actions. So, the point is, going back to numbers: if the Oracle's news would not change our application of mathematics at all, then that is a sign, at least, that the existence of numbers is not something that we hold in so much regard as we do the existence of external reality.

Another aspect of Yablo's view that is appealing is that most people who use math do not take themselves as thereby being committed to the existence of a third realm of mind-independent mathematical entities. Thus, the figuralist position I think reflects a common sense attitude towards math, even if, clearly, the layman would not put it in so many words. Furthermore, and to add a final observation in support of Yablo's position, even if the semantics become more complicated in his theory, for sometimes the meaning of an expression is to be taken literally and some other times it is to be taken figuratively, it is fair to say that natural language is also like that. We constantly use metaphors; we intend the non-literal meaning of expressions all the time. If we were to take only the literal meanings of what we say, most statements we make would be false. There are lots of examples of this: butterflies in one's stomach, somebody being full of it, a broken heart, fishing for an answer, feeling blue… Now, one difference between other kinds of figurative speech and mathematics is

that we need mathematics in order to express these contents at all; we are unable to express the same content non-figuratively. I venture that the reason for this is related to our limitations as knowers, to our finitude. Analogously, some people lack expressive means to come up with ways of saying what they want to say without metaphors. The only difference is that all humans have the same limitations that make us prone to use math.

Now, the point here is that we can defend a similar kind of explanation of the applicability of mathematics and claim that math is neither true nor false instead of false. Even though our reasons for the indeterminacy of mathematics are somewhat independent of Quine's indispensability argument, we agree that indispensability is necessary but not sufficient for existence. But I claim that the reason why math is applicable is that it is a representational aid that we make use of to describe the world, a tool that is neither true nor false. For after all, why should we need a tool to be true or false? All we need of it is that it works. And this tool, by the way, satisfies our first condition for existence, but since that condition is not sufficient for existence, it does not follow, against Quine, that mathematical entities exist.

Some theories have directly been thought out in order to apply to the world. Other theories, however, are exercises in imagination and abstraction; their concepts refined just following the intuitions and desires of pure mathematicians. But even still some have been found to apply, unexpectedly. What about those theories? Can they still be taken to be representational aids, and thus explain their potential applicability? I think so. The origins of mathematical practice are clearly examples of useful fictions, but once we have, for instance, natural numbers, nothing is stopping us from thinking about them as something to describe and analyze. In order to describe these entities, we come up with further entities, and so on and so forth, we can proceed with more and more

abstraction until we forget where it started. Mathematicians end up developing theories without having any interest in their application and they are just exercises in mathematical and logical ingenuity, but we should not be surprised that some of them in fact apply to the world. Even if the aim is not its application, math is a tool to describe the world, so, by coming up with mathematical theories, we are bound to find some that actually apply. And all along, there is nothing problematic with it being neither true nor false that those entities exist.

It's worth noting that the truth of scientific statements or every day examples of applied mathematics is not affected by this position. This position does not commit us to a general instrumentalism, which would be a high price to pay. Even if mathematics is neither true nor false, the ideal would be to separate that content from the content relevant to the described reality, so that the true part of it can still be held as such, without the disastrous literal reading of the metaphorical content. Mathematics is neither true nor false, when taken literally, but as a representational aid, it can be used to say many true things. I do not claim to have a systematic way of doing this, nor can one find a complete development of it in Yablo's work, but the idea is analogous to the way in which it is true a person we know well is blue, without thereby meaning that the person is a member of the Blue Man Group. There is no doubt that we separate literal from non-literal content all the time, so I will just say that, most likely, whatever we do all the time with natural language, can be also done with scientific language, if we take mathematics to be the metaphorical tool.[106]

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[106] See Balaguer's "A Fictionalist Account of the Indispensable Application of Mathematics". Also, Chapter 1 above.

5.3.2. Applying a true discourse

Suppose now that math is true, even if it is neither true nor false that mathematical entities exist. How does the application of such a discourse happen? In one respect, it is easier to explain, just like the platonist will claim: it is true, so how is it a problem that it is applicable to the actual world? But it is not so clear that the explanation is this simple. The platonist himself has more work to do than just claiming her discourse is true: it is true, but it is about numbers, which, even if they truly exist, are abstract and hence not spatiotemporal; so how is it that talk of these such entities is at all helpful in describing the physical world? In the same manner, the indeterminist (one who defends that it is neither true nor false that numbers exist) will have to explain why, even if we accept that math is true, a true discourse about a bunch of entities for which it is neither true nor false that they exist is so fruitful.

The problem of the applicability of mathematics can be compounded further. It is not just that we can use math to describe the world, but that mathematical ideas seem to be helpful in order to discover things about the world. For instance, there is the classic story of how Maxwell discovered electromagnetic radiation. He realized that the accepted laws of electromagnetism, as they were thought to be previous to his discovery, went against the conservation of electric charge. He added an extra factor to Ampere's Law so as to make the set of Laws conservative, that was the radiation produced. This was concluded purely because of a mathematical analogy.[107] Scientists assume that reality will behave mathematically and apply mathematical ideas to it, not just to tidy up data, but in order to frame theories and focus empirical research. How is it that the world fits mathematics so? This is the so-called Wigner's Puzzle: one must explain why math is so helpful in the discovery

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[107] See Colyvan, "The Miracle of Applied Mathematics", 267-8, for a detailed explanation of this discovery.

process of science, not just the mechanics of the application of math. A usual example of one such discovery is Maxwell's discovery of electromagnetism: Maxwell thought that the accepted laws for electromagnetic phenomena accepted at the time jointly contravened the conservation of electric charge, which was a presupposition that he made as an analogy to the Newtonian law of conservation of mass. He modified the laws aiming at symmetry in conservation principles. The laws were later confirmed to work out better than their predecessors. As Weinberg writes:

> It is very strange that mathematicians are led by their sense of mathematical beauty to develop formal structures that physicists only later find useful, even where the mathematician had no such goal in mind. [...] Physicists generally find the ability of mathematicians to anticipate the mathematics needed in the theories of physics quite uncanny. It is as if Neil Armstrong in 1969 when he first set foot on the surface of the moon had found in the lunar dust the footsteps of Jules Verne. (Weinberg 125 qtd. in "The Miracle of Applied Mathematics")

Now, this puzzle is a general problem for any philosophy of mathematics. But it is an interesting feature of this account here that the explanation of the applicability of mathematics also suggests a response to Wigner's puzzle also. The one way, I think, that this set of challenges can be answered is realizing that the origin of mathematical entities is in the application of mathematics itself. Mathematical entities are tools that we think about for better organizing and describing the physical world. The idea is very much along the lines of the suggestion in the previous section, the only difference being whether or not talk of mathematical entities requires their existence or not. Running the risk of sounding outdated, let me put it in terms of abstraction: mathematical entities are

abstractions, our thinking about concreta is simplified and made more elegant by talking about such entities, instead of only physical entities. They are tools to talk about infinities and to abstract from the particulars of each situation and only focus on certain aspects in a very specific way: the mass, speed, force, etc. The fact that their origin is in existent entities makes them somewhat connected to the actual world in a way that purely fictional entities are not. Hence, we claim they are indeterminately existing, not purely nonexistent. The discourse is true, for we describe these entities without requiring their existence, and the way in which they are applicable is they are entities originated in order to help us explain the world, by organizing it, structuring it and allowing focus on determinate aspects of it.

In conclusion, I think this section shows that both alternative views about the truth-value of mathematics present viable philosophies of mathematics. In fact, even if the truth-value of mathematics is different in each option, when push comes to shove, their solutions to the questions are very similar: the way each view answers the questions over the application of mathematics and the relevance of mathematics to the world is the same. Given that, in any case, both solutions seem workable, I need not choose here which is most desirable, and the reader can pick the one closer to their heart. Mathematical entities have thereby been shown to have indeterminate existence. This constitutes one of the most interesting results of our theory of existence as a tripartite concept. This chapter is an attempt to show how this implication of the theory of existence is acceptable and even appealing.

There is one independent observation that supports the appeal of the indeterminate existence of mathematical entities, which I think it is interesting to bring up. In studying the history of the philosophy of mathematics one can get frustrated at the impression that certain moves in the

discussion are repeated again and again and are not resolved by the opponent's reply. The dialectics appears stuck. One way of escaping the cycle of inconclusive exchanges is to step out of it by claiming that it is neither true nor false that numbers exist. Both the platonist and the nominalist make good points and neither one is completely right. The platonist is right that it is not true that numbers do not exist. The nominalist is right that it is not true that numbers do exist. That is, one can draw an inference to the best explanation of the state of the ontological debate in the philosophy of mathematics, and conclude that it is neither true nor false that numbers exist. It is the indeterminacy of the answer that explains the ongoing debate.

Concluding thoughts

How can we do better? We can get a useful start by getting the simple things right. Much even of analytic philosophy

moves too fast in its haste to reach the sexy bits.

T. Williamson, "Must Do Better" 288

The theory of existence provided here is a synthesis of the most appealing insights about existence to date and I think that for that reason it is interesting and valuable. This dissertation has developed a theory of existence such that it is neither true nor false that some entities exist, which turns out to solve some of the most recalcitrant arguments in ontology by providing a third option between nominalism and platonism. The case for this theory has been completed to the extent that we have provided reasons for each of the conditions for existence and the application of the tripartite concept of existence has been tested against plenty of examples. Given the nature of the topic, a wide variety of issues have been broached. But in order to attain our objective of completing the overview of the theory of existence, there are points at which the arguments could be developed

further and in more detail. I want to conclude by reviewing a couple of important ways in which to extend the research that this dissertation sets up.

There is a contrast between the first condition for existence, that of being a theoretical commitment of a true and complete theory of reality, and the other two, which require that existing entities are spatiotemporal and mind-independent. The way in which the first condition is a necessary condition for existence is only insofar as we focus on entities that are within our conceptual grasp, whereas the other two conditions have no such restriction. This is because we have maintained a realist position of reality by which it is the way it is, independently of what we know or can know about it. A further project that must be pursued regarding this condition is to provide an account of the kind of description of the world that is relevant for the condition. What is it about the scientific method and rational justification of beliefs that will provide a thorough catalog of existing entities? Can there be more than one true and complete description of the world? And if so, which is the relationship between the different descriptions? It seems that it is possible fully to describe phenomena at different levels- it is not the same to give a molecular account, a macro-physical account, or even a subatomic account. The condition remains necessary for existence even if there are several of these descriptions, for the condition does not specify that the entity must be part of the existential commitments of the one and unique description. But even still, this opens up many questions about the nature of the relation of the possible descriptions, which should not remain unanswered.

Another interesting issue that has been a recurring theme throughout this dissertation is the idea that talk of some entities may be necessary, that is, indispensable in order to explain certain phenomenon, but that this, nonetheless, does not mean that we must commit ourselves to the existence of such entities. This was necessary for us to argue that the Quinean criterion for existence is not sufficient;

it was also part of the account that we defended in the application of Ockham's Razor; and we revert to such a thought again when we think of mathematical predicates as not being existence-entailing. The way in which language does or does not commit us to ontological and metaphysical positions is, I think, a very interesting question that has great implications for metaphysical enquiry and methodology, and that should be the focus of some separate research in order to strengthen the value of the present theory of existence. The linguistic turn in ontology can be understood as the adoption of the methodological principle that we must look at language in order to decide what we take as existing, instead of relying on mysterious intuitions and other less than scientific sources of justification. But even those most radical proponents of this view saw that there were some exceptions. I think it is of the utmost importance to realize this; we must adopt a more honest view of the role of language in ontology and admit that we have some preconceived ideas as to which parts of language we are to take seriously and which should be taken as *façons de parler.* The project that complements the main argument of this dissertation is to provide a systematic account of this separation and to be explicit about the ways in which we discriminate between reliable linguistic evidence and unreliable uses. What kind of content do we take seriously and why? And what other sources of our trust or mistrust in linguistic evidence are there? Here I have been providing philosophical and common-sense arguments to counterbalance the strength of the linguistic arguments, but a review of the different methods available should be produced.

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