Existence, Actuality and Logical Pluralism

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Abstract

This work considers data about the intentional nature of human cognition, and traces their consequences for debates in the philosophy and epistemology of logic, and metaphysics. The first part of this work, comprising its first three chapters, investigates the prospect of revising logic in light of *de re* intentionality, that is, more precisely, in light of the fact that via their cognitive abilities agents can relate to objects that do not exist. We will consider two candidate systems for logical revision, expressions of two forms of logical revisionism, and eventually motivate, from anti-exceptionalist grounds, our preference for one of them. We will start in **Ch. 1** by illustrating the anti-exceptionalist methodological framework assumed in this work. Subsequently, in **Ch. 2**, we will discuss four classically valid principles inadequate to the data of *de re* intentionality, reject possible attempts, by proponents of so-called realist abstractionist theories of fiction, to deny those data, and present the system $\mathcal{P}$ of positive free logic. We will then go on, in **Ch. 3**, to illustrate the noneist programme of logical revision and a system, $\mathcal{N}^R$, implementing its principles. We will thus argue from anti-exceptionalist grounds that rational theory choice is exercised by choosing $\mathcal{N}^R$. The rest of the chapter is dedicated to defend a realist account about the ontological dependency of the non-existent on the existent. **Ch.4** and **Ch. 5** are dedicated to refute attempts, by Timothy Williamson, to reduce disagreements about non-existent

objects to cases of merely verbal disagreements. In **Ch.4**, we take issue with arguments to the extent that logical disputes about 'exists' are genuine only if the parties use it in deductively ways. In **Ch. 5** we address his scepticism towards the dispute, about merely possible objects, between actualism and possibilism, and find it unwarranted.

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Chapter 1: Methodology, *Meta*-Methodology, and Theory Choice

This work is divided into two parts. In the first part, comprising the present chapter and the subsequent two, we investigate the prospect of revising logic in light of intentionality, which is, roughly, the capacity of cognition of being directed towards an object of some kind. We take as correct the view that, through her cognitive abilities, an agent can be related in many ways to many kinds of objects. Some of which exist, some of which do not. To hold this view, however, is to contradict some principles of classical logic ($\mathcal{C}$) on its standard Quinean interpretation. This had better be revised, and replaced by a logic which delivers correct data. We will present four candidates for this task throughout the next two chapters, and make a suggestion as to which one to choose by the end of **Chapter 3**. To orient our logic choice, however, a theory of logical methodology is needed.

This is what the present chapter is about. We first present the methodological framework assumed throughout this work, which is often known as *anti-exceptionalism about logic*. We then argue that a theory of logical methodology needs to be accompanied by a *meta*-methodological account of the proper subject matter of logic, what logic is about. We then contrast two meta-methodological approaches. One takes logic as a theory of the maximally general features of reality (Williamson (2017; 2018b)), the second as a theory of correct reasoning (Priest (2014; 2016a)). We motivate our preference for the latter meta-methodology: Williamson, we argue, proposes an idiosyncratic account of logical theorising. We then conclude by distinguishing four possible attitudes towards the phenomenon of classical recapture, a system's capacity to include $\mathcal{C}$ as a proper sub-system. Our interest is in the so-called *default classicality* position, according to which $\mathcal{C}$ is in some sense correct to reason about standard cases, and so its recapture is an important result. From a similar point of view, we finally note, the process of logical revision must attribute a certain weight to the so-called *Maxim of Minimal Mutilation*: revision of a theory ought to be carried out by doing the least damage to the theory as possible. So in particular for $\mathcal{C}$.

Chapter 2: Revising Logic in Light of *De Re* Intentionality

In this chapter, our concern is threefold. First of all, we draw a distinction between two possible parsing theories which $\mathcal{C}$ has been equipped with to account for the vernacular predicate 'exists'. On one of them, 'exists' is analysed in terms of a second-order predicate (Frege (1879; 1884), Russell (1919)), denoting a property, not of individuals, but of concepts (Frege) or propositional functions (Russell). Our interest, however, is in what we call the *Quinean parsing theory* parsing theory of $\mathcal{C}$ (Quine (1948)). On this account, 'exists' is interpreted as a *blanket* property of individuals, defined in terms of $\exists$ and identity. We then single out four principles relevant for our discussion, which $\mathcal{C}$ on the Quinean parsing theory licenses as valid. Taken together, they yield the following picture: properties and relations *as such* are existence entailing, and denying the existence of an arbitrary thing results in a contradiction.

We then look closely at how of intentionality calls into question the adequacy of those principles. First of all, we distinguish between *de re* intentional contexts, where the content of an intentional state is an object, and *de dicto* intentional contexts, where it is a proposition. As it happens, we are often *de re* intentionally related to objects, such as purely fictional or mythological characters, which do not exist. The four principles of $\mathcal{C}$ on the Quinean parsing theory appear to have invalid substitution instances. We then consider possible attempts to resist this conclusion by taking into account the story provided by realist abstractionist theories of fiction (Van Inwagen (2003), Thomasson (1998; 2003)), but find their account wanting. The phenomenon of *de re* intentionality justifies the project of logical revision.

The rest of the chapter is then dedicated to illustrate the first of the two revisionary programmes we will encounter: that of free logic. Free logicians have accepted the Quinean parsing theory for 'exists', and went on to reform logic by replacing $\mathcal{C}$. Our interest in this chapter is in the so-called *positive* tradition of free logic. We will thus present a system of positive free logic ($\mathcal{P}$) which avoids the inadequacies of $\mathcal{C}$ on the Quinean parsing theory, and illustrate some implications associated with the project of revising logic in favour of $\mathcal{P}$.

Chapter 3: Noneism

This chapter is divided into two parts, just like two are the senses in which *noneism* could be interpreted. In the first part, our concern is with noneism *qua* programme of logical revision. We start by presenting the noneist approach to logical revision. Unlike the free logic tradition, which accepted the Quinean parsing theory, noneism found it faulty. In place of it, noneists have proposed an existentially neutral interpretation of quantification, and captured 'exists' by means of a monadic predicate not reducible to quantification and identity (Sylvan (1980), Priest (2008; 2016b)). We thus present a second candidate system for logical revision, $\mathcal{N}^R$, implementing such revisionary ideas. We show, in particular, that like $\mathcal{P}$, $\mathcal{N}^R$ too avoids the inadequacies incurred by $\mathcal{C}$ on the Quinean parsing theory. Our final goal in this part of the chapter is to determine which, between $\mathcal{P}$ and $\mathcal{N}^R$, delivers the best account of reasoning. We apply to this case the anti-exceptionalist account of logic choice introduced in **Chapter 1**. We thus propose the following four criteria to orient theory choice, ranked in decreasing order of importance or weight: adequacy to the data, expressive power, adherence to the Maxim of Minimal Mutilation, and conceptual simplicity. We justify this list of principles and spell out how each one will be understood. Subsequently, we will score $\mathcal{P}$ and $\mathcal{N}^R$ against each one of them. Our conclusion is that $\mathcal{N}^R$ is our best logic, the one it is more rational to choose. We thus turn to the second part of this chapter.

Here, we look at noneism from a different angle, that is, *qua* modal theory of intentionality. Our interest in this part of the chapter is in a certain philosophical issue arising in theorisation about intentionality, and that is, the ontological dependency of the non-existent on the existent. To this end, as a first task we quickly outline (what we think is the main aspect of) the account of intentionality which noneism proposes. This is based on a view which goes by the name of *anti-literalism*; the view, namely, that non-existents do not typically have *literally*, or in reality, many properties they are characterised as having. To appreciate better the position, a contrast is offered with literalist theories of intentionality. We then move on to present, and criticise, one way in which the ontological dependency of the non-existent on the existent has been understood, specifically, Crane (2016). Crane proposes an account of non-existent as dependent for almost the entirety of their properties, on the representational activities of cognitive agents. We argue, however, that a similar idea should be resisted, and move on to see how the issue of ontological dependency of the non-existent on the existent has been framed within noneism.

Here, we need to distinguish between *realist* forms of noneism, and *anti-*realist forms thereof. We will see how parties to this distinction offer different accounts for the baptism of purely fictional characters. In particular, anti-realist noneism articulates a view of purely fictional character as ontologically dependent entities, created by the activities of authors of fiction. Realist noneism, on the other hand, disputes that much. Due to its accepting talk of creation for fictional characters, anti-realist noneism might be thought of as having an initial advantage over realist noneism, grounded on its vindicating ordinary beliefs. The fact that anti-realist noneism seems to have a better claim to plausibility puts some pressure on our logic choice made in the first part of the chapter, as $\mathcal{N}^R$ is most naturally thought of as implementing realist assumptions. We will conclude the chapter, however, by showing that the initial advantage that anti-realist noneism might have been thought of as having was merely illusory. Our choice of $\mathcal{N}^R$, made in the first part of the chapter, was the right choice to make.

Chapter 4: From Collapse Theorems to Proof-Theoretic Arguments

This chapter and the next one constitute the second part of this work. In each one of them, we address the status of a logical dispute; specifically, whether or not it is merely verbal. In this chapter, we consider the status of a disagreement between a noneist and a proponent of $\mathcal{C}$ on the Quinean parsing theory; an *allist*, as we will say. Are they simply talking past each other when, say, they disagree about the validity of some of the principles governing 'exists' singled out in **Chapter 2**?

We will consider an argument by Williamson (1988) to the extent that they are likely to be, in that they are likely to mean different things by 'exists'. Their dispute would, in other words, simply turn on an equivocation and therefore be merely verbal. The argument is based on the assumption that two parties to a dispute over a logical principle for a certain logical expression are genuinely disagreeing if, and only, if they can characterise that expression up to logical equivalence in terms of some shared rules of inference (we will call this the **Genuineness Criterion**). A noneist and an allist disagree, among other things, about the validity of the so-called *Existence Principle* (EP: from Pt, infer $E!t$). And, according to Williamson, two theorists disagreeing over the validity of EP would fail to meet the standards for genuine disagreement as codified by the **Genuineness Criterion**.

We will grant Williamson that a similar criterion could be used to identify which disagreements count as real. Still, there are three reasons why Williamson's discussion does not say much about the status of a disagreement between a noneist and an allist. First, because in certain domains including non-existents, some forms of noneism will rely on systems validating EP. Secondly, because we will show that it is possible for two theorists to disagree about the validity of EP and yet satisfy the **Genuineness Criterion**. Thirdly, because, on reflection, we had better not rely on the **Genuineness Criterion** as a standard for genuine disagreement in logic, given that it fails to vindicate many disagreements it would have to do justice to.

Chapter 5: *Actual* Disputes, Logical Pluralism, and Bayesianism

In this chapter, we consider the case of a dispute in modal logic between proponents of so-called *actualism* and *possibilism*. Actualism is the thesis that necessarily, every thing that could have been actual already is; possibilism, that this is not the case. Williamson 2010; 2016b argues that this is yet another example of merely verbal dispute. In this chapter, we will give three arguments to resist Williamson's claims.

First of all, Williamson (2013c: §7.1) appealed to a translation schema by Correia (2007), to suggest that actualism and possibilism would be intertranslatable. Correia's translation has an antecedent in a translation by Forbes (1989), which it improved by resorting to infinitely many pairs of Vlach operators. However, in the constant domain S5 framework where we assume that the dispute between actualism and possibilism is conducted, this translation is shown to fail.

We then go on to consider Williamson's claim that parties to the actualism/possibilism distinction would be equivocating on the meaning of 'is actual', and test whether this claim is actually available to him. In **Chapter 4**, we argued that Williamson's **Genuineness Criterion** turns out to be problematic. We will, however, use it as a challenge for actualists and possibilists, to see whether, by his own standards, their dispute is really merely verbal: we will call this the **Uniqueness Challenge**. We then distinguish between two forms of actualism (*serious* and *frivolous*), and introduce an analogous distinction within possibilism. It turns out that serious possibilism and serious actualism can pass the **Uniqueness Challenge**.

Given this result, we are then interested in determining how likely it is to suppose that an equivocation of 'is actual' is affecting the parties to those ramifications of the debate where the **Uniqueness Challenge** cannot be met. To determine this, we will propose two simple simulations, and argue from Bayesian grounds that our confidence should be higher in the contrary thesis.

Chapter 1

Methodology, *Meta*-Methodology, and Theory Choice

1.1 Introduction

The first three chapters of this work, together, constitute its first part. The main thesis around which this part is centred is that some things, which for example can be thought of, dreamed about, imagined, or sought for, do not exist. This thesis, as is well-known, is regarded as highly unorthodox in contemporary philosophy, to the extent that many even consider it to be a contradiction in terms. For, importantly, it runs afoul of certain principles which classical logic, on its standard Quinean interpretation, does license as valid. Still, philosophical orthodoxy notwithstanding, this thesis we accept. In doing so, we are bound to say that if its truth is incompatible with classical logic, then classical logic gets things wrong. As such, it ought to be revised (in favour of a logic which gets things right). Which logic specifically, this is an issue we will discuss throughout the next two chapters. In *this* chapter, we ask: what does it mean exactly that classical logic ought to be revised? And how can we choose *rationally* between different logics? To answer similar questions, we need a theory of logical methodology. This chapter presents the methodological framework we will assume hereafter, which usually goes with the name of *anti-exceptionalism* (about logic).

Our goal in this chapter is mainly expository. In particular, we simply want to outline the assumptions which we will deploy in the course of the next two chapters. In **§1.2**, we present the principles of anti-exceptionalism about logic, introduce its mechanism of rational logic choice, and argue that this needs to be accompanied by a *meta*-methodological account about the subject matter of logic: what logic is taken to be about. In **§1.3**, we consider two meta-methodological accounts, and motivate our preference for one of them. Logic, on the account we favour, is seen as a theory of correct reasoning. In **§1.4**, we first consider the phenomenon of classical recapture: the fact that a system includes classical logic as a proper subsystem. In revising classical logic, how much importance should be attributed to this phenomenon? Here, we distinguish between four possible attitudes which non-classical logicians have expressed. One of them sees classical recapture as an important result, ensuring that classical logic can still be retained as a special case. A similar attitude, which we will find again in the next chapter, is emblematic of the so-called *default classicality* position, according to which classical logic needs to be revised, but is still (in some sense) correct to reason about standard contexts. In particular, we argue, from a similar viewpoint rational logic choice should be exercised with an eye to the so-called *Maxim of Minimal Mutilation*: revision of a theory ought to be carried out by doing the least damage to the theory as possible. Finally, in **§1.5** we will quickly sum up what has been claimed in this chapter

1.2 Anti-Exceptionalism About Logic

In recent years, the methodology of logic has attracted the attention of many commentators, sparking contributions concerning a number of questions. Is logical theorising a scientific enterprise, in the sense that it requires methods which are continuous with those of science? If so, are they more akin to those of natural sciences such as biology or physics, abstract sciences such as mathematics, or social sciences such as economics? Can logic be revised? What is the mechanism driving rational logic choice? Such questions lie at the heart of logical methodology.

An increasingly popular approach to these issues is *anti-exceptionalism about logic*[1]. On a rough characterisation of the view, anti-exceptionalism about logic holds that, with respect to the series of questions just mentioned, all those that presuppose a yes-or-no answer should be answered in the affirmative. Thus, logic is continuous with science, as is its methodology with scientific method; and logic is in principle no less subject to rational revision than scientific theories are. A further tenet shared by many (if not most) anti-exceptionalism about logic to be noted is the denial of the view that logic is *a priori* and that its truths are analytical truths[2]. These principles seem to be shared, in different degrees, by all anti-exceptionalists about logic (Hjortland (2017a, 2019), Maddy (2002), Priest (2006a, 2014, 2016a), Russell (2014, 2015),

[1]In the present context, the origin of the label 'exceptionalism' goes back to Williamson (2007: 3), who calls *philosophical exceptionalism* the view that there is such a thing as a distinctively philosophical method, discontinuous with the methods of science. His (lengthy) critique of the view can be found in a number of contributions; see (2007,2013a, 2013b, 2013c, 2016a, 2017, 2019).

[2]The idea goes back to Quine (1951), who is accordingly generally considered to have laid the foundation of anti-exceptionalism about logic. The issue is discussed at length by Read (2019). An anti-exceptionalist philosopher departing from such characterisation of anti-exceptionalism is Priest, who informs me that he *does* take the view that logical truths are analytic. The reader is however advised to consult the discussion in Priest (2016a: 359–364) for a more detailed account of why his view might be seen as at least entailing that the analyticity of logical truths is not an obvious truism.

Williamson (2013c, 2017))[3].

Importantly, as an integral part of the project, anti-exceptionalism about logic is committed to providing guidance to exercise rational theory choice in logic. From the anti-exceptionalist point of view, this is perhaps the aspect where the continuity of logic with the sciences is more visible. Scientific theories, it is often said, are chosen by means of abductive considerations (Harman (1965), Lipton (2005), Williamson (2013c: 421-429), Priest (2016a)). One sets out a number of virtues that it is desirable for theories to exhibit; such virtues constitute the criteria against which theories are assessed, and the theory that scores best against such criteria, in terms of cost-benefit, is the one our rational choice should be cast upon. Thus, roughly speaking, the underlying reasoning for selecting a scientific theory proceeds by inference to the best explanation. Theory choice in logic, anti-exceptionalists contend, should be carried out just analogously.

Priest (2016a) has shown how this process of theory choice (in logic and science in general) can be formally modelled[4]. Suppose we have set on a number of criteria $c_1, ...c_n$ for theory choice (some of them, we will encounter shortly) and want to determine which, of a group of theories $T_1, ..., T_n$, we rationally ought to choose. First, for each criterion we can define a measurement function μ_{c_i} attributing, to each theory T_i, a value in the closed interval [-10,+10]. This value represents how well T_i performs with respect to c_i; +10 being the best possible outcome. Thus, a theory T_i may for example score

[3]They are equally denied by their opponents, whom for uniformity we should call *exceptionalists* (about logic). If maintaining that logic is *a priori*, and that its truths are analytic, is sufficient to count as an exceptionalist, then forms of exceptionalism about logic have been proposed by BonJour (1997), Boghossian (2000), Wright (2004) and, historically, by Frege (1956) and Carnap (1937).

[4]See also Priest (2006a: 130-141). An application of the model has been recently proposed by Priest (2019) in the context of the debate between vacuist and non-vacuist accounts of counterfactual conditionals - see Williamson (2018a) and Berto et al. (2018) for a defence of each of the two positions respectively. The model, Priest contends, supports a choice in favour of the non-vacuist account.

very well with respect to a certain criterion (say, $\mu_{c_{n-1}}(T_i) = 9.1$) and quite poorly with respect to another (say, $\mu_{c_n}(T_i) = -3.8$). There is no need to impose that every criterion has the same importance; in fact, we might want to weight differently distinct criteria. For this reason, each criterion c_i is assigned a weight of importance $w_{c_i} \in [-10, +10]$. At this point, we can define the *rationality index* $\rho(T_i)$ of a theory as the weighted sum of its performances with respect to the various criteria considered:

$$\rho(T_i) = w_{c_1}\mu_{c_1}(T_i) + \ldots + w_{c_n}\mu_{c_n}(T_i).$$

It follows that the theory which we rationally ought to choose is the one having, amongst those considered, the highest rationality index. Now, assuming that two theorists agree on what criteria theories should be scored against, and on how much such criteria ought to be weighted, the model may deliver a straightforward indication as to what theory we ought to choose. However, it may not - even if the theorists agreed on what criteria consider and how much weight attribute to each of them. For, two theories may enjoy exactly the same rationality index. In that case, the choice of a theory is indeterminate. And although not desirable, this might not be the worst possible outcome.

For, consider the following case. Priest (2006a, 2014, 2016a) and Williamson (2007, 2013b, 2013c, 2017) have both accepted a broadly anti-exceptionalist account of logical theory choice. However, whilst the former endorses non-classical logic (his Logic of Paradox, in particular; see Priest (2006b)), the latter endorses classical logic.

This divergence is all the more striking if we observe that not only do Priest and Williamson agree that a logic needs to be chosen by abductive reasoning, they also happen to agree on what the criteria for logic choice are.

Specifically, they both hold that strength, simplicity, elegance (or absence of *ad hoc* assumptions), unifying power and adequacy to the data are criteria against which scientific theories are assessed; as such, they should drive our process of theory choice in logic too.

Here, on the one hand, is Priest (2016a: 348) - see also (2014: 217):

> The model I will propose is one that is familiar, in many ways, from the philosophy of science. It is applied whenever we have to choose rationally between competing theories. Start by noting that there are many criteria that speak in favour of a theory. The exact list is a matter for contention [...] but standard candidates include:
>
> - adequacy to the data
> - simplicity
> - consistency
> - power
> - avoidance of *ad hoc* elements

Here, on the other hand, is Williamson (2017: 14):

> [S]cientific theory choice follows a broadly abductive methodology. [...] Scientific theories are compared with respect to how well they fit the evidence, of course, but also with respect to virtues such as strength, simplicity, elegance, and unifying power. We may speak loosely of inference to the best explanation, although in the case of logical theorems we do not mean specifically causal explanation, but rather a wider process of bringing our miscellaneous information under generalizations that unify it in illuminating ways.

In sum, the fact that different logic choices are made by relying on this common methodological background may suggest that anti-exceptionalism does underdetermine the process of logical theory choice.

Hjortland (2017a) denied that things are this way. Rather, he argues, the difference between Priest and Williamson is due to an underlying disagreement as to what is the subject matter of logical theories: what logical theories are theories *of*[5]. Roughly, Williamson takes a logical theory to be primarily concerned with the discovery of which unrestricted universal generalisations hold of absolutely everything in the world (2013b, 2013c, 2017). Priest on the other hand has espoused a view of logic as being essentially a theory of validity - what follows from what (2006a, 2014). The discrepancy is further aggravated by the fact that Priest (2006a, 2014) takes logic to be an enterprise with a normative bearing on how people ought to reason in the vernacular; similar preoccupations are not essential to Williamson's enterprise. Such differences between Williamson and Priest are significant, and seem to imply that they would consequently weight the various criteria for logic choice in non-equivalent ways. For example, for a theory of valid reasoning the criterion of adequacy to the data seems to be paramount, or in any case more important than other criteria such as power. By contrast, for a theory concerned with discovering what truths hold of absolutely everything in the world, the order of importance of those two criteria would appear to be reversed. All things considered, it would be actually rather surprising if Priest and Williamson had expressed the same logic choice.

We agree with Hjortland's analysis; the difference in logical theory choice

[5]Whilst Hjortland agrees with Priest, against Williamson, that anti-exceptionalism supports non-classical logic, he nonetheless disagrees with Priest about the fact that it supports a specific non-classical logic. In fact, he urges that anti-exceptionalists about logic endorse his intra-theoretic logical pluralism; see Hjortland (2013) for a presentation of the view.

between Priest and Williamson is sufficiently explained in terms of their different assumptions about the subject matter of logical theories[6]. Rather than bringing to light a problem that anti-exceptionalism is inherently faced with, we take it that this is illustrative of two facts. First, that assumptions about the subject matter of logical theories are independent from methodological assumptions. So to speak, the former are situated one level up with respect to the latter; this level, we call *meta-methodology*[7]. This entails that a discussion over the subject matter of logical theories does not take place at the level of logical methodology, but rather at the level of logical *meta*-methodology[8]. Secondly, the rationality of a certain logic choice cannot be meaningfully assessed unless one has also clearly identified what meta-methodological assumptions underpin it. For, trying to determine what logical theory we ought to choose, independently of what we take it to be a theory of, looks like a pointless enterprise.

The methodology assumed in this work is broadly anti-exceptionalist, in the sense outlined above, particularly with respect to the anti-exceptionalist account of logical theory choice. We now turn to our *meta*-methodological assumptions, which are spelled out below.

[6]In recent private conversation, however, Priest has expressed some scepticism towards this analysis of his disagreement with Williamson, and informed me that even if they were to agree on the proper subject matter of logic, they would still disagree as to what logical laws would count as valid.

[7]In the philosophy of science, the expression 'meta-methodology' is used with a different meaning. It roughly indicates the area of study concerned both with singling out the set of values underlying a certain scientific methodology, such as objectivity and reproducibility, and with assessing whether a scientific methodology satisfies those values. For more discussion, see Fox (1996) and Andersen and Hepburn (2016).

[8]We are not aware of any author in the literature using a similar terminology to express this point; in fact we think that the distinction between methodological and meta-methodological questions in logic, in the sense just outlined, has gone somewhat unnoticed.

1.3 *Meta*-Methodology

The Priest/Williamson case shows that, in assuming the anti-exceptionalist methodology, we have at least two possible *meta*-methodological options available, each one identifying a specific subject matter for logical theories. Our main goal here is to describe the *meta*-methodology assumed throughout this work. We will ultimately side with Priest, and spell out here our reasons for this choice. As a first task, however, we need to characterise more precisely the *meta*-methodology that Priest and Williamson have espoused. This will also help us get clearer about our reasons for taking onboard Priest's *meta*-methodology.

Let us start with Williamson. Williamson's *meta*-methodology yields a conception of logic inextricably tied to the study of the maximally general features of reality. Traditionally, a similar area of investigation corresponds to metaphysics, or at least part thereof. It is thus safe to conclude that, on Williamson's conception, metaphysics makes up for the subject matter of logic. Williamson reiterated the point in a number of occasions (2013c, 2013b, 2017), but its clearest formulation is perhaps found in the following passage (our italics):

> *Classical logic is a good theory of the most abstract and general features of the real world*. It has no transcendental justification, no proof that ultimately no challenge to it makes sense. It needs no such justification. Rather, classical logic is justified like other scientific theories, by the sort of abductive comparison with its rivals [...] Classical logic is simple and elegant. It is logically stronger than most of its rivals: more informative, with more power to unify and explain general patterns. It has been tested far more intensely than any non-classical logic, and found adequate, since it has been the

> background logic of mathematics and other sciences for millennia. Attempts to show that it doesn't fit the evidence have never succeeded. It is one of our best scientific theories (Williamson (2018b: 95–96)).

The relevance of this passage for our presentation of Williamson's *meta*-methodology is obvious: classical logic, Williamson's preferred logical theory, is considered to be a metaphysical theory (of the real world). Moreover, the passage also contains an explicit formulation of the idea that, given a similar *meta*-methodological assumption, the anti-exceptionalist methodology provides support for classical logic. Articulating Williamson's reasons for thinking that the anti-exceptionalist methodology does provide support for classical logic, however, would take us too far afield[9]. Nor is it particularly important for our goals to examine these reasons, given that, as we said earlier, we disagree with his *meta*-methodological assumptions. Priest's *meta*-methodology, which we now turn to, deserves more attention.

We remarked earlier that, on Priest's conception, logic is primarily about validity (and cognate notions such as inference and argument). The subject matter corresponding to a similar account of logic, accordingly, is reasoning - *human* reasoning, to be sure. However, human reasoning is typically not carried out formally, but rather informally in the vernacular. More precisely, then, we should speak of *vernacular reasoning* to express Priest's purported subject matter of logic. In his words:

> A logic with its canonical application delivers an account of ordinary reasoning. One should note that ordinary reasoning, even in science and mathematics, is not carried out in a formal language, but in the vernacular; no doubt the vernacular augmented

[9]Most of them can be found in his (2013b, 2017), and a critical analysis in Hjortland (2017a).

> by many technical terms, but the vernacular none the less. (No one reasons *à la Principia Mathematica*) [...] In other words, a pure logic with its canonical application is a theory of the validity of ordinary arguments: what follows (deductively) from what (Priest (2014: 215–216)).

What deserves attention here is the fact that, whilst we have said that valid vernacular (ordinary) reasoning represents for Priest the subject matter of logic, in the passage above vernacular reasoning is described twice as being the *canonical application* of *a logic* (not *of logic*). On the one hand, talk of canonical application suggests that there are also non-canonical applications; on the other hand, the fact that Priest does not talk of canonical application of logic, but of *a* logic, suggests that we might have overlooked some important distinction. Priest, in other words, seems on to something which our terminology does not make immediately clear.

Indeed, there is a three way distinction which Priest (2014) asks us to consider, concerning different senses in which the word 'logic' is used. As we will see shortly, this distinction will turn out to be particularly useful, allowing us to appreciate more conspicuously the interactions between methodology and *meta*-methodology in Priest and Williamson's accounts.

First of all, when we speak of '*a* logic' instead of 'logic', we typically refer to one *logical system* amongst the plethora available - classical logic, intuitionistic logic, paraconsistent logic, quantum logic and so on. A logical system is a purely mathematical structure comprising a formal language together with an interpretation and/or a set of rules of inference. Priest (2014: 212) calls *logica docens* a similar use of the word 'logic' (*docens*, in that logical systems are typically found in logic textbooks). When we choose a *logica docens*, we do it based on two things: *methodological* considerations *and* what we take to be the canonical application of the *logica docens* in question.

A canonical application consists in what a *logica docens* is primarily *about* (its subject matter, in our old terminology); this is what Priest (2014: 220) calls *logica ens*. We need to be careful here and observe that, just as they have a canonical applications, logical systems (or *logicae docentes*) can also have non-canonical applications. Modelling electric circuits, for instance, is a non-canonical application of classical propositional logic; database management, a non-canonical application of paraconsistent logic and so on. Although these are domains logical systems can be applied to, they certainly do not represent what logical systems are mainly designed to study. In deciding the *logica ens* (viz. the canonical application) of a *logica docens* (viz. a logical system), we are making a *meta*-methodological claim.

Finally, there is *logica utens*, the way in which people actually reason. An important *caveat* concerning *logica utens*, Priest (2014: 218) notes, is that it is concerned with *prescribing* how people *ought* to reason, as opposed to merely *describing* how they *do* reason - the latter being the task of cognitive psychology. The expression '*logica utens*', in other words, pins down a normative notion.

Once we have disambiguated between these three senses of the word 'logic' we can perceive more vividly that methodology and *meta*-methodology pertain to different realms. Moreover, this threefold terminology allows us to describe more precisely the way in which methodology and *meta*-methodology interact with each other in the Priest/Williamson case.

Meta-methodologically, Williamson's intended *logica ens* is metaphysics, understood as the study of 'the most abstract and general features of the real world'. What *logica docens* is best suited for carrying out an investigation into *logica ens* so conceived? This is a question that directly interrogates the account of logical theory choice of the anti-exceptionalist methodology. The answer, for Williamson, is classical logic. *Logica utens* simply does not play a particularly significant role in this picture. Now for Priest.

Meta-methodologically, his intended *logica ens* comprises the norms of correct vernacular reasoning, which he describes as truths of the form 'that so and so follows from that such and such' (2014: 221). What *logica docens* is required here? Given the anti-exceptionalist logical theory choice, Priest contends, the answer is his Logic of Paradox. And given the nature of the *logica ens* described by Priest, it seems obvious that the correct *logica docens* will also have an impact on how people ought to reason (*logica utens*).

With this conceptual apparatus in place, we can spell out more precisely what it means to say that we will take onboard Priest's *meta*-methodology. To say that is to say that we agree on what domain of inquiry *logica ens* singles out: the norms of correct vernacular reasoning. In the remainder of this section, we want to illustrate what we take to be a great advantage deriving from following, as far as *meta*-methodology is concerned, Priest instead of Williamson.

Let us start by describing a potential reaction which one might have against assuming Priest's *meta*-methodology. Once we have disambiguated between theories (logical or otherwise) and what they are primarily theories of (their canonical applications), it would seem natural to explain why a theory came about by appealing to an antecedent interest in its canonical application. For, what *motivates* the development of a theory, it may be said, is an antecedent interest in its canonical application. For example, consider the theory of Newtonian Dynamics and its canonical application, the dynamics of the Earth. Presumably, what motivated Newton's attempt to put together a theory of Dynamics was his previously held interest in the dynamics of the Earth. That much seems hard to deny. However, it is not at all clear that the development of *every* logical theory could be easily motivated by an antecedent interest in the norms of correct reasoning, which on the *meta*-methodological account assumed here make up for the canonical application of logical theories. For example, what seems to have crucially motivated the development of quantum logic was an antecedent interest, not much in the norms of correct reasoning, but in the phenomena studied in quantum mechanics. Had quantum mechanics never been invented, quantum logic probably may have never come about. Hence, it would seem that the reason why certain logical theories were developed has little to do with an antecedent interest in what we assumed to be their canonical application. And if so, one may doubt that Priest's *meta*-methodology singles out the real canonical application of *every* logical theory.

We make two comments on this point. First of all, it does not favour Williamson's *meta*-methodology. For, just as interest in the norms of correct reasoning does not seem to have been the key factor that led to the development of quantum logic, the same is true of metaphysics understood *à la* Williamson. Proof is that systems of quantum logic were originally couched in propositional languages, whereas Williamson's preferred systems are at (the very) least first-order[10]. It thus seems rather obvious that interest in the discovery of which universal generalisations hold of unrestrictedly everything did not act as a motivating reason for the development of quantum logic. Thus, if this point raises an issue against Priest's *meta*-methodology it also raises an issue for Williamson's. However, secondly, we think that in assuming Priest's *meta*-methodology we do not incur the problem described; we would, however, had we assumed Williamson's. So let us now elaborate on this point.

[10]Systems of first-order quantum logic are a relative novelty; see for instance Dalla Chiara, Giuntini, and Greechie (2004). It should also be added that, in *modal* metaphysics, Williamson's preferred system is actually *second-order*; specifically, second-order S5 with constant domain. See in particular Williamson (2010) and (2013c: Ch. 7).

According to some philosophers, there are different *kinds* of reasons that can explain why an agent brought about an action, and devising a theory, to be sure, is certainly a form of agency. *Motivating* reasons, namely, reasons that an agent takes to speak in favour of her acting in a certain way, certainly constitute one such kind. But another kind comprises *explanatory* reasons (Alvarez (2009, 2010), Hieronymi (2011), Darwall (2003)). Roughly, these correspond to the reasons that make an action intelligible. All these authors argue that we should not conflate these two kinds of reasons; for, as we will see, whilst every reason that *motivates* an action can always explain it, the contrary is not always true. Moreover, it seems that an action performed by an agent can be made intelligible in many ways; so, the category of explanatory reasons seems to allow for further internal ramifications. One way to make an action intelligible, for a start, is by appealing to the agent's character, as shown by this example due to Alvarez (2009: 186). Suppose every month Fred gives a lot of money to charity. A reason that *explains why* Fred does so is, say, that he is a generous man; so, here we have an explanation for an action that appeals to an agent's character. Clearly, that he is a generous man is not the reason that *motivates* Fred to give money to charity - that could be, say, that donating to charity is morally praiseworthy; and this motivating reason can be used to explain Fred's action as well. This shows that reasons of different kinds can be given to explain Fred's action; and of course, such reasons explain Fred's action in different ways. Another way in which we could make an agent's action intelligible is by appealing to her *goal*; the goal of performing an action, in other words, can be an explanatory reason for that action. And indeed, suppose that Fred's goal is to provide many disadvantaged people with a hot meal every day. That he wants to provide many disadvantaged people with a hot meal every day is a reason that explains why Fred every month donates a lot of money to charity. The moral is, motivating and explanatory reasons can both provide, in different ways, explanations as to why an action was carried out.

In fact, a context in which this is particularly clear is precisely that of accounting for why certain logical theories came about. In particular, to explain why quantum logic came about we could certainly appeal to a previously held interest in the events described by quantum mechanics. In doing so, we would be providing a *motivating* reason that led logicians to devise systems of quantum logic: the reason that spoke in favour of their developing systems of quantum logic is that they found quantum phenomena worthy of interest. This motivating reason does provide an explanation as to why quantum logic came about. But another way to explain why quantum logic came about is by appealing to the *goal* that drove such logicians, and doing so means providing an *explanatory* reason. And this goal appears to be grounded in the interest of delivering an account of valid reasoning: one, for example, in which the distributive law fails[11]. *Meta*-methodologically, valid reasoning corresponds exactly to what Priest takes a logical theory to be primarily about. Therefore, by appealing to Priest's assumed *meta*-methodology, we could provide an *explanatory* reason as to why quantum logic as a theory came about. Quantum logic came about because logicians intended to give a certain account of valid reasoning. Our contention now is twofold. First, by appealing to Priest's *meta*-methodology, one could *always* provide an explanatory reason, of the kind just illustrated, as to why *any* logical theory came about[12]. Second, by appealing to Williamson's *meta*-methodology this is not the case - we take it that the case of quantum logic makes the point sufficiently clear: the

[11]For an explanation why, see Birkhoff and Von Neumann (1936: 830-831).

[12]In fact, it seems that in some cases appeal to Priest's *meta*-methodology, in addition to providing an explanatory reason, could also provide a *motivating* reason as to why a logical theory came about. This is particularly clear in the case of Aristotle's syllogistic for example, where an antecedent interest in forms of correct reasoning is certainly what motivated Aristotle to the develop his syllogistic.

goal of quantum logicians had nothing to do with the discovery of maximally general truths about the real world.

What seems to follow at this point, on the Priestean *meta*-methodology assumed, is that the relationship between a logical theory (a *logica docens*) and its canonical application (*logica ens*) is best understood instrumentally, in terms of means to an end. For, we have argued, the goal of delivering an account of correct reasoning can always be put forward as the (explanatory) reason why a *logica docens* was developed. So whilst the discovery of what truths pertain to *logica ens* seems to be the goal of a *logica docens*, a *logica docens* appears to be the means with which this goal can be pursued.

Notice that this form of instrumentalism about the relation between *logica docens* and *logica ens* needs to be sharply distinguished from other forms of instrumentalism, such as the one proposed by Haack (1974: Ch. 2) or the one proposed by Kouri Kissel (2016). With some approximation, we could characterise Haack's instrumentalism roughly as the view that there are no objective, theory-independent facts about validity. A *logica docens merely* provides a set of principles for reasoning, which can be abandoned whenever they entail results incompatible with other theories[13]. On the other hand, Kouri Kissel's instrumentalism does not entail the absence of objective facts about validity, but maintains that these can vary depending on our purpose for utilising a *logica docens*. The kind of instrumentalism we are describing, instead, is perfectly compatible with a robustly realist stance towards the facts of validity. Consider an analogy with Newtonian Dynamics and the dynamics of the Earth. If one thinks of the former as a means to investigate the latter, one is not thereby committed to the view that Newtonian Dynamics does not describe an objective reality.

[13]In her (1978a: Ch. 12), Haack appears to have retracted at least part of her instrumentalism.

This takes us to the next question to address. Having taken onboard Priest's *meta*-methodology, we should conclude that distinct *logicae docentes* yield different accounts of valid reasoning. Moreover, having taken onboard the anti-exceptionalist methodology, we also have an account for exercising rational theory choice amongst them. Whether one thinks that logic ought to be revised pretty much depends on what *logica docens* one rationally chooses. But what does that mean exactly? The next section presents one way in which we could understand this question.

1.4 Revision, Classical Recapture and the Maxim of Minimal Mutilation

First of all, the way in which we have formulated the question seems to presuppose that there is such a thing as a *received logic* - or better, a *received logica docens*. To say that a received *logica docens* exists nowadays seems to us not very different from a truism, which therefore does not need any justification. As is well known, this *logica docens* is classical logic and is originally due to Frege (1879); in what follows, we will call it $\mathcal{C}$.

Some facts about $\mathcal{C}$ are perhaps worth rehearsing. Originally developed as a purely mathematical formalism, $\mathcal{C}$ gradually came to be perceived as a powerful tool in accounting for correct vernacular reasoning, eventually reaching here a position of near hegemony. Many consider $\mathcal{C}$ to be in fact *the* right tool guiding reasoning (for example, Quine (1970) or Rumfitt (2015)). Its theoretical virtues are lauded even by some of its detractors, who maintain that taking a departure from it is not to be done lightheartedly (Field (2008: 15)). Its proof-theory elegantly captures patterns of intuitively correct vernacular reasoning; it has a simple standard semantics and enjoys reassuring meta-theoretic properties such as completeness and compactness.

One thing should not go unnoticed, however. Dating back from 1879, our received logic is after all quite young. Just to have an idea of how young, consider that Aristotle's *Organon* was arranged in its now usual form by Andronicus of Rhodes around 40 BC, but its six books go back to about three centuries earlier.

Moreover, if $\mathcal{C}$ *came* to be our received logic, it is natural to suppose that it did so by supplanting a predecessor - a previous received *logica docens*. However, singling out what is this received *logica docens* is unfortunately not an easy task. Priest (2014: 214) summarises the issue in the following terms:

> In the mid nineteenth century, text book logic ("traditional logic") was a highly degenerate form of medieval logic: essentially, Aristotelian syllogistic with a few medieval accretions, such as "immediate inferences" like *modus ponens*.

In any case, our interest is not historical. Rather, what interests us is another consideration. If such was more or less the status of the received *logica docens* immediately preceding $\mathcal{C}$, then we have direct empirical evidence that, in logic, periods of revision of the received *logica docens* do occur sometimes. This is a data point confirming one of the principles of anti-exceptionalism.

In fact, to say that $\mathcal{C}$ merely revised the then received *logica docens* is perhaps only part of the story. Although we do not have to go into too much detail, it appears to be more appropriate to say that $\mathcal{C}$ brought about not just a period of revision, but rather a revolution[14].

Be it as it may, we now have a first rough characterisation of what, today, a revision of logic boils down to. A revision of logic today is tantamount

[14] For example, Mendelsohn (2005: 2) notes that one of the reasons why $\mathcal{C}$ was initially not well received is precisely due to the fact that, instead of building on previous work, it presented something radically new.

to taking, in some way to be explored, a departure from $\mathcal{C}$. As we will see shortly, our focus will be on one particular way in which revision of $\mathcal{C}$ can be understood. Since alternative ways are also possible, however, some preliminary general remarks will facilitate discussion.

We characterise different kinds of revision of $\mathcal{C}$ as resulting from different attitudes towards the phenomenon of *classical recapture*[15]. Speaking informally (a precise definition will be provided below) a logical system is said to recapture another one if it is possible to specify a sub-system of the former which retains exactly the valid inferences of the latter. Classical recapture is therefore a special case of recapture between two formal systems: it is the relation that a logical system bears to $\mathcal{C}$ if a sub-system of the former preserves exactly the valid inferences of $\mathcal{C}$. A system which has a subsystem equivalent to $\mathcal{C}$ is also known as *classical recapture logic*. Although, as is well-known, many systems of non-classical logic exhibit classical recapture, this has been interpreted by advocates of non-classical logics in different ways. A taxonomy of at least some the possible reactions towards classical recapture would therefore be particularly useful.

A similar taxonomy has been proposed by Aberdein (2001), who has singled out four possible stances towards classical recapture, and ordered them by analogy with a spectrum of political tendencies (the analogy, of course, is purely instrumental and not intended to suggest a correlation between logical and political views). In a decreasing order of radicalism, we encounter the radical left first (the most radical approach), followed by the centre-left, the centre-right, and eventually the reactionary right. To understand better the significance of these four stances towards classical recapture, it is appropriate to spell out some formal details of the account.

[15]The origin of the expression is due to the first edition of Priest (2006b: Ch. 16).

First of all, we can consider a logical system $\mathcal{L} = \langle For, Val \rangle$ as an ordered pair where *For* is the set of wffs of the language of $\mathcal{L}$ and *Val* is the set of valid inferences of $\mathcal{L}$ (a proper subset of the sequents defined on *For*). Given this definition, two logical systems $\mathcal{L}_1 = \langle For_1, Val_1 \rangle$ and $\mathcal{L}_2 = \langle For_2, Val_2 \rangle$ are said to be equivalent if, and only if, there exists a one-to-one correspondence between the sets For_1 and For_2 of the two systems preserving the partition of the sets of inferences into valid and invalid subsets. Two ways of contracting a system are then compared. The first captures the notion of reduct:

Definition 1.1. (Reduct, Aberdein (2001)) $\mathcal{L}_1$ is a reduct of $\mathcal{L}_2$ iff $\mathcal{L}_1$ and $\mathcal{L}_2$ are inequivalent, For_1 is defined on a proper subset of the class of constants of $\mathcal{L}_2$ and Val_1 contains precisely those elements of Val_2 which contain only elements of For_1.

A reduct, in other words, is simply the logical system resulting from restricting the class of constants of the original system. So characterised, notice that reduction is the inverse of conservative expansion[16]. The second contraction that can be defined over a system captures the notion of proper subsystem:

Definition 1.2. (Proper Subsystem, Aberdein (ibid.)) $\mathcal{L}_1$ is a proper subsystem of $\mathcal{L}_2$ iff $\mathcal{L}_1$ and $\mathcal{L}_2$ are inequivalent, For_1 is a proper subset of For_2 and Val_1 contains precisely those elements of Val_2 which contain only elements of For_1.

This last definition deserves particular attention. Intuitively, the claim that a system is a proper subsystem of another is often used to express the thought that the latter is stronger than the former. But here, we need to be

[16] A system $\mathcal{L}_1$ is a conservative expansion of a system $\mathcal{L}_2$ if, and only if, $\mathcal{L}_1$ and $\mathcal{L}_2$ are inequivalent and every valid inference of $\mathcal{L}_1$ in the language of $\mathcal{L}_2$ is already a valid inference of $\mathcal{L}_2$.

careful in pinning down exactly what is meant by 'stronger than'. For, as Humberstone (2005: 209) points out, talk of strength in logic seems to suffer from an ambiguity:

> [T]eaching experience attests to the difficulty that students have with talk of one logic's being stronger than another, invariably intended by logicians, when no further qualification is added, to mean *deductively stronger*, but often suggesting the reverse to students, the stronger logic being taken to be the one making the more stringent demands in respect of what is provable.

The idea is that there are two ways in which we can compare the strength of logical systems. One is in terms of their consequence or deducibility relation; here, strength is cashed out as deductive power. In this sense, the expression 'proper subsystem of $\mathcal{L}$' is used to define a system with a strictly weaker consequence (or deducibility) relation of $\mathcal{L}$, that is, properly included in the consequence relation of $\mathcal{L}$. But another way to understand the strength of a logical system is in terms of the distinctions it can preserve; here, strength is understood as expressive power. In this sense, the expression 'proper subsystem of $\mathcal{L}$' is used to define a system which preserves less distinctions than $\mathcal{L}$[17].

Having distinguished between strength as deductive power and strength as expressive power, it needs to be observed that an increase in one often

[17]To make precise the notion of a system's expressive power, we could follow Humberstone (2005). The idea is to understand a system's expressive power as given by the class of synonymous formulae over its consequence relation. Two formulae P and Q are synonymous over a consequence relation $\vDash$ ($P \equiv_{\vDash} Q$)) if, and only if, for every formula context $C(\cdot)$:

$$C_1(P), \ldots, C_n(P) \vDash C_{n+1}(P) \text{ just in case } C_1(Q), \ldots, C_n(Q) \vDash C_{n+1}(Q),$$

Thus, two formulae are synonymous just in case they are interchangeable without change in validity across all formula contexts. For a wide range of logics, Humberstone showed that if a consequence relation $\vDash_1$ is stronger than $\vDash_2$, then $\equiv_{\vDash_2} \subseteq \equiv_{\vDash_1}$. Thus, a logic with a bigger deductive power collapses more distinctions than one with a weaker deductive power.

means a decrease in the other, and vice versa[18]. Indeed, on Aberdein's definition, a system $\mathcal{L}_1$, with a strictly weaker consequence relation than $\mathcal{L}_2$, will not count as a proper subsystem of $\mathcal{L}_2$, but rather as a proper supersystem thereof.

For example, $\mathcal{C}$ has a consequence relation which properly includes the consequence relation of intuitionistic logic. In terms of deductive power, then, $\mathcal{C}$ is stronger than intuitionistic logic. However, on **Definition 1.2**, $\mathcal{C}$ is a proper subsystem of intuitionistic logic. For, only some formulae of intuitionistic logic are decidable, that is, those for which the Law of Excluded Middle is valid (or equivalently, the rule of Double Negation is admissible). Restricting intuitionistic logic to precisely those formulae yields $\mathcal{C}$ as a subsystem.

Thus, we can see that **Definition 1.2** expresses a more general form of contraction than **Definition 1.1**. For, whilst a reduct can only be obtained by reducing the set of constants on which the class of wffs of a logical system is defined, a subsystem can also be generated by specifying some other constraint (such as the constraint of decidability in the case of intuitionistic logic).

At this point, we can define classical recapture as follows:

Definition 1.3 (Classical Recapture, Aberdein (2001)) $\mathcal{L}_1$ recaptures $\mathcal{L}_2$ if, and only if, there is a proper subsystem of $\mathcal{L}_1$, $\mathcal{L}_1^\star$, which is defined in terms of a constraint on For_1 finitely expressible in $\mathcal{L}_1$, and which is equivalent to $\mathcal{L}_2$. If $\mathcal{L}_2$ is $\mathcal{C}$, then $\mathcal{L}_1$ is a classical recapture logic.

In other words, a system is a classical recapture if, by specifying a finite constraint on it, one can obtain a subsystem which is equivalent to $\mathcal{C}$. Thus,

[18] See footnote 16 in this chapter.

for example, intuitionistic logic is a classical recapture logic, given the above decidability constraint.

However, we said earlier that the significance of classical recapture is somewhat contentious[19]. On the most radical of attitude towards classical recapture, which Aberdein (2001) describes as typical of the radical left, classical recapture is simply denied: no suitable constraint is deemed available to recapture $\mathcal{C}$ - Aberdein and Read (2011: 676) attribute a similar position to proponents of the so-called *Scottish Plan* in relevant logic, such as Read (1988). The opposite end of the spectrum, the reactionary right, corresponds to the position according to which a system exhibiting classical recapture is considered as an extension of $\mathcal{C}$ - a similar attitude, Aberdein argues, is particularly clear in modal logic, which is typically understood as extending $\mathcal{C}$. On a more moderate left-wing position (corresponding to the centre-left), classical recapture is formally acknowledged but almost as a mere curiosity; it is denied of any significance, in that $\mathcal{C}$ is deemed unintelligible. This attitude, it is suggested, was roughly expressed by Dummett (1974) - see however Dummett (1975) for a more conciliatory approach.

The position which we will be focusing on in the rest of the section is the centre-right one. Here, the phenomenon of classical recapture is interpreted in the following terms. $\mathcal{C}$ is understood as a special case of the classical recapture logic or, conversely, the classical recapture logic is understood as generalising $\mathcal{C}$. The underlying thought to the centre-right attitude is that whilst $\mathcal{C}$ is perfectly fine for reasoning in standard scenarios, in general it is not - this approach is described by Beall (2011) as *default classicality*. The form of revisionism guiding the default classicality (or centre-right) position is certainly more moderate than the two left-wing positions in Aberdein's scale. For, $\mathcal{C}$

[19]The four positions in Aberdein's scale, each one corresponding to a certain attitude towards classical recapture, are discussed extensively by Aberdein and Read (2011).

is somehow regarded as being the *right* logic for reasoning in standard cases, but it ought to be revised due to the presence of contexts where it does lead us astray. A similar attitude towards $\mathcal{C}$ is for example quite clearly present in Priest (1989, 2006b) - the contexts where $\mathcal{C}$ is inadequate, according to Priest, being the inconsistent ones.

However, a tension needs to be highlighted here. On the one hand, $\mathcal{C}$ is seen as the correct logic to reason in standard contexts. This means that in these contexts the axioms and/or rules of inference of $\mathcal{C}$ do work as a guide for correct deductive reasoning. As such, in these contexts, they are to be accepted. On the other hand, to say that a non-classical system recapturing $\mathcal{C}$ is better fit (than $\mathcal{C}$) to handle non-standard contexts implies abandoning some axioms and/or rules of inference of $\mathcal{C}$. Intuitionism, for example, does not accept Double Negation when reasoning in infinite domains. But if the principles of $\mathcal{C}$ are correct to reason in standard contexts, abandoning them is a casualty[20]; retaining them, accordingly, a virtue.

This suggests that, from the point of view of default classicality, the extent to which classically valid principles can be retained works in effect as a criterion guiding rational theory choice amongst non-classical logics. That is to say, in dealing with non-standard contexts, a logical system that can retain more classically valid principles than another one will do, all things being equal, a better job. Revision of a theory, in a slogan, ought to be as conservative as possible.

We can see this appeal to conservatism as an instance of what Quine (1970: 100) called the *Maxim of Minimal Mutilation*: revision of a theory must be carried out piecemeal, doing the least damage to the theory as possible. In our case, then, the Maxim has it that when revising $\mathcal{C}$, one ought to take

[20]This is exactly how Priest (2006b: 221) describes the failure of Disjunctive Syllogism in systems of paraconsistent logic.

care mutilating it as little as possible - a mutilation occurring every time a principle of $\mathcal{C}$ is abandoned[21].

Of course, in exercising logical theory choice amongst non-classical logics, how much weight should be attributed to the Maxim of Minimal Mutilation is contentious. For example, suppose a system of non-classical logic scores better than another one in terms of the Maxim of Minimal Mutilation, only thanks to a number of *ad hoc* assumptions made precisely to retain classically valid principles. Avoidance of *ad hoc* assumptions, we have seen, is another criterion for logical theory choice. So should we choose a system that is, so to speak, less elegantly close to $\mathcal{C}$, or one that is more elegantly distant from it? And again, suppose two systems of non-classical logic abandon the same number of classically valid principles, but different ones. How do we apply the Maxim of Minimal Mutilation in a similar case? There are perhaps no once-and-for-all answers to these questions; a certain level of arbitrariness may therefore always be required. Still, it seems that we can at least settle on this partially satisfactory solution: in case of a tie, scoring better in terms of the Maxim of Minimal Mutilation could decide the course of our logical theory choice in favour of a certain logical system.

Having provided at least one way in which the Maxim of Minimal Mutilation could contribute to the process of logical theory choice, we can set other concerns aside. Our foregoing discussion of the phenomenon of classical recapture has highlighted the many ways in which revisionism of $\mathcal{C}$ can be undertaken. We favour a centre-right (or default classicality) approach. In doing so, we consider the possibility for a system to exhibit classical recapture as an important fact, and consequently attribute some weight to the

[21] An interesting discussion of how systems of non-classical logic score in terms of the Maxim of Minimal Mutilation when handling aletheic paradoxes can be found in Hjortland (2017b). Notice, however, that the Maxim of Minimal Mutilation could work as well as a criterion *not* to revise $\mathcal{C}$. For example, the Maxim of Minimal Mutilation plays a role in Quine's (1970: 86) rejection of quantum logic.

Maxim of Minimal Mutilation. Both of these will constitute important assumptions for our arguments in the next chapter.

Our discussion of classical recapture also completes this first chapter. Here, we have illustrated where we stand with regard to certain issues in the philosophy of logic, which we deem important for our investigation. We have throughout committed ourselves to a number of assumptions. Thus, before turning to other matters, it is important to quickly sum them up.

1.5 Taking Stock

We started by presenting the main tenets of anti-exceptionalism about logic, our preferred methodology, and contrasted them with those of the rival exceptionalist methodology. Logic is a posteriori and continuous with science; as such, it is revisable just like scientific theories are. Logical theory choice goes hand in hand with theory choice in science. A choice of logic is to be carried out abductively, by comparing how different logics score against certain criteria expressing virtues that are desirable for theories to exhibit, such as fit with the data, simplicity, elegance and so on.

Interestingly, however, two advocates of the anti-exceptionalist methodology such as Priest and Williamson ended up expressing different opinions as to what logic we should accept. This disagreement, we have pointed out, reflects a difference concerning what logic is taken to be about: roughly, correct vernacular reasoning for Priest and the general features of the world for Williamson. Since both moves are compatible with the anti-exceptionalist methodology (and presumably any other one) they pertain to a more general realm which we have called *meta*-methodology.

We then have spelled out Priest and Williamson's *meta*-methodologies in more detail and sided with Priest. In particular, one merit of the Priestean *meta*-methodology is that it allows us to distinguish between different senses in which the word 'logic' is used (*logica docens*, *logica utens*, *logica ens*). When anti-exceptionalists hold that logic is revisable, they primarily mean 'logic' in the sense of the received *logica docens*.

Following Aberdein (2001), we then went on to describe different ways in which revision of classical logic can be understood. These vary according to the radicalism with which they interpret the phenomenon of classical recapture. Our interest is in the so-called *default classicality* position, according to which classical logic is in some sense correct to reason in standard contexts, but it leads us astray in non-standard ones. But if the principles of classical logic are correct in standard contexts, abandoning them must be seen as a cost. Accordingly, we argued that the Maxim of Minimal Mutilation is a helpful criterion guiding logical theory choice amongst non-classical logics: all things being equal, a logical system that retains more classically valid principles than another one is to be preferred.

In the next two chapters, we will address a case study to which we could apply the assumptions we have made in this first chapter.

Chapter 2

Revising Logic in Light of *De Re* Intentionality

2.1 Introduction

Sherlock Holmes does not exist, although he was thought about by Conan Doyle. And neither does Zeus, despite the fact that he was worshipped by Homer. Nor, finally, does the Fountain of Youth, despite having been so ardently sought for by Ponce de Leon. All this appears obvious to our eyes; and, we submit, to the eyes of most non-philosophically trained people as well.

One feature that these three examples share is that they all involve a relation between two objects. Moreover, the relations involved in these examples have in turn something in common: they are all *intentional* relations. Intentionality is widely considered to be a fundamental aspect of cognition, corresponding to its being directed towards an object of some kind. As we will see more precisely, the object in question may be a thing or a proposition. It is therefore appropriate to distinguish between acts of cognition directed towards things (*de re* intentionality) and propositions (*de dicto* intentionality). The form of intentionality which the previous three examples share is of the first kind, *de re*. This is the one which we will be essentially concerned with in this chapter. The examples considered above are just three of the countless data points showing that we can be *de re* intentionally related to objects which, be they purely fictional such as Holmes or mythological such as Zeus or the Fountain of Youth, do *not* exist. Fictional and mythological characters are ubiquitous in every day talk. The phenomenon of *de re* intentionality shows that relations do not in general entail the existence of their *relata*.

However, as previously noted in **§1.1**, to say that much runs afoul of our received *logica docens*, that is, classical logic ($\mathcal{C}$) on its (now standard) Quinean parsing theory, as we will call it in the next subsection. What characterises the Quinean parsing theory of $\mathcal{C}$ is a certain conception of existence, according to which this is taken to be a first-order property of every thing. Obviously then, if one takes seriously the data which the phenomenon of *de re* intentionality presents us with, the need for logical revision becomes quite pressing.

By the end of the next chapter, we will have presented two programmes of logical revision, and will be able to evaluate from anti-exceptionalist grounds their merit in addressing the inadequacies of $\mathcal{C}$ (on its Quinean parsing theory). *This* chapter is structured as follows.

We will start by presenting the Quinean parsing theory of $\mathcal{C}$, and focus our attention specifically on four of its principles (**§2.2.1**). Then, we move on to say a little bit about the distinction between *de re* and *de dicto* intentionality, and motivate our interest in the former by showing that it makes those four principles particularly problematic (**§2.2.2**). In **§2.2.3**, we will corroborate our arguments by presenting some evidence from linguistics showing that support for the main thesis they entail is available. In **§2.2.4**, we will present possible lines of response which proponents of $\mathcal{C}$ on its Quinean parsing theory might resort to, but find these accounts wanting.

The first programme of logical revision we will consider is that of the free logic tradition; specifically, its *positive* ramification. This will occupy us throughout all of **§2.3**. The free logic tradition in general has urged that logic ought to be revised by giving up on $\mathcal{C}$, rather than its Quinean parsing theory (which it accepted). However, although an endorsement of the Quinean parsing theory is a common feature of the free logic programme, free logicians have differed over what *logica docens*, to use a terminology we are now familiar with, ought to replace $\mathcal{C}$. We will thus present a system of positive free logic, $\mathcal{P}$, and bring to light its differences from systems of so-called *negative* and *neutral* free logic. In particular, in $\mathcal{P}$ all the principles discussed in **§2.2.2** turn out to be invalid. This automatically makes $\mathcal{P}$ a potentially good candidate for exercising logical revision. Along the way, we will also see that $\mathcal{P}$ is a classical recapture logic, and that many advocates of positive free logic (though not all of them) have expressed an attitude towards this result which seems typical of a centre-right position in Aberdein's scale.

We will then conclude, in **§2.4**, by quickly taking stock of what we will have seen in this chapter.

2.2 *De Re* Intentionality and Logical Revisionism

2.2.1 Quinean Parsing Theory

In **§1.1.3** we have seen that a *logica docens* with its canonical application aims to deliver an account of correct vernacular reasoning. What we have not noted there, is that in order to accomplish this goal a *logica docens* must also be equipped with what Aberdein and Read (2011: 615) call a *parsing theory*: a way in which it can represent vernacular argumentation (see also Resnik (1985, 1996)). This, in particular, requires a translation manual assigning vernacular utterances to formal propositions. Sure enough, the parsing of vernacular arguments will not be entirely transparent, inevitably involving certain distortions and idealisations, which the *logica docens* will have to be ready to account for[1].

In the case of $\mathcal{C}$, we submit, the idealised character of the parsing theory emerges somewhat clearly when we consider the role it assigns to $\exists$, what is commonly referred to as the *existential quantifier*[2]. It is precisely on the role of $\exists$ which we want to focus in this sub-section.

As is known, the reason why $\exists$ is typically called the 'existential quantifier' is due to the fact that it is taken to capture vernacular expressions such as 'exists', 'there exists' and, assuming no difference in meaning, also 'there is/are'[3]. Thus, in using $\exists$ in this way, which we may well call *existentially loaded*, one is thereby taking $\exists$ to be the formal device representing the property of existence. However, the idea that the property of existence is represented by $\exists$ can be understood in two different ways. Since these deliver different parsing theories for $\mathcal{C}$, the distinction is important for our goals.

On one account, put forward by Frege (1884, 1979) and Russell (1919), existence is seen not as a first-order property (viz. a property of individuals) but, rather, as a second-order one[4] - specifically, a property of concepts (Frege), and of propositional functions (Russell). These are abstract objects denoted by predicates such as '... is a wolf', '... is a unicorn' and so on. Often, similar general kind terms do occur in general existential statements, such as 'there exist wolves' or 'there are unicorns'. Then, to say that there are/there

[1]There is an interesting issue to be pursued here as to what degree of transparency it is reasonable to demand from a parsing theory. For, whilst an overly opaque parsing theory would mean the adoption of a system with a certain level of adhocness, a perfectly transparent parsing theory seems somewhat utopian (natural language seems inherently more expressive than any formal language). See Aberdein and Read (2011: §1.1) for discussion.

[2]For a historical perspective on the issue, see Priest (2008).

[3]Interesting grammatical subtleties emerge at this point, but for simplicity we can set them aside. See Priest (2015).

[4]As is known, the origin of this idea can be at least traced back to Kant's rejection of the ontological argument for the existence of God (A592/B620-A602/B630 - Kant (1998: 563–569)). For discussion see my (Forthcoming).

exist wolves reduces to the claim that the concept (propositional function) of being a wolf is instantiated. To formalise this claim, we can help ourselves to $\exists$ and offer $\exists x(\text{Wolf } x)$. And to say that there are/there exist no unicorns reduces to the claim that the concept (propositional function) of being a unicorn is not instantiated: $\neg\exists x(\text{Unicorn } x)$. Thus, existence on this view is equivalent to the property of being instantiated, and that is a property of concepts or propositional functions, not of individuals.

However, in addition to general existential statements such as 'there are wolves', in the vernacular we also proffer singular existential statements (for instance, 'Mount Everest exists'). The view that existence is not a property of individuals, then, has inevitably a certain impact on the parsing of similar statements. For, be they in negative ('Sherlock Holmes does not exist') or positive ('Mount Everest exists') form, the parsing of these statements cannot have the subject-predicate structure that they actually seem to have. The question, then, is how the parsing of such statements can be carried out.

An influential proposal is Russell's (1905) theory of descriptions. Very briefly, on this view subject terms such as 'Sherlock Holmes', 'Mount Everest', and so on are seen as disguised definite descriptions: sentences of the form '*the* **F**', for **F** a certain condition. Definite descriptions, on Russell's conception, have a general quantificational form which does not involve subject terms. Thus for example, assuming that 'Mount Everest' is analysed as the definite description 'the 8,848 m tall mountain', the sentence 'Mount Everest exists' has a logical form that can be more accurately expressed as 'There exists a unique 8,848 m tall mountain'. This sentence is only true of Mount Everest, but the subject term 'Mount Everest' does not figure in it; indeed, its formalisation according to Russell is $\exists x(Mx \& Tx \& \forall y(My \& Ty \rightarrow y = x))$ - for M and T the properties of being a mountain and being 8,848 m tall respectively. Thus, here we have one way in which singular existential statements can be parsed so as not to exhibit a subject-predicate form[5].

Whatever the merits of the view, we are interested in another account, according to which existence is, despite being captured by $\exists$, a first-order property (or a property of individuals) - Quine (1948), Van Inwagen (1977, 1983, 1998, 2003, 2008, 2009), Thomasson (1998, 2003, 2017). The parsing of singular existential statements is precisely one aspect which distinguishes this view from the Fregean-Russellian one. For, singular existential statements, on this new account, can be parsed so as to exhibit a subject-predicate form.

To see how this is possible we need to notice that in $\mathcal{C}$, $\exists$ is interpreted over a (non-empty) domain, populated by a class of individuals which exhaust the domain of discourse: no individuals are left outside such a domain. Of course, its extension may vary across models, up to including, according to some, absolutely everything without any restriction whatsoever[6]. But if $\exists$ is to express existence, then it is not possible for any individual in the domain of $\exists$ to lack it - would $\exists$ still capture existence otherwise? Equivalently, every member of the domain of $\exists$ must be an existent. However, every member of the domain of $\exists$ must also be identical to at least one thing, that is, itself. But if existence and self-identity characterise every member of the domain of $\exists$ (and thus, every thing *qua* thing), then we can define existence as the (first-order) property of being identical with something in the domain of $\exists$. In other words, by letting the predicate $E!^C$ express existence so conceived, we can stipulate that $E!^C x =_{Def} \exists y(y = x)$. We should notice that the *definiens* here is an open formula, but we can form a corresponding predicate, denoting the property of existence, by binding the free variable x with a λ-operator, yielding the predicate $\lambda x \exists y(y = x)$ - reading: being an x, such

[5]The view has incurred several criticisms, however. See, in particular Lectures 1 and 2 of Kripke (1980) and Ludlow (2018: §5) for a more general overview.

[6]See Williamson (2003) and Rayo and Uzquiano (2006) for presentations of the view.

that x is identical with something. And this predicate expresses a property of individuals.

Of course, it does not express a first-order property in the sense in which perhaps most properties do, such as, say, the property of being a wolf: for, the latter is not enjoyed by any thing *qua* thing. To mark the distinction, then, we can borrow from Berto (2015: 242) the expressions *blanket* and *non-blanket* properties. The label *blanket property* is attributed to every property enjoyed by any thing *qua* thing. Existence, according to the account just presented, is a blanket property; as further examples of blanket properties, we could offer identity, being either a wolf or not a wolf, being a wolf if everything is, and so on. By contrast, non-blanket properties do *not* characterise any thing *qua* thing. In doing so, they are enjoyed by some things and lacked by others; the property of being a wolf is just a case in point, since it is indeed enjoyed by certain things and lacked by others[7].

However, although a blanket property, existence is here seen as a first-order property none the less. Consequently, the view can now offer a parsing of singular existential statements capable of retaining their apparent subject-predicate structure. For example, if e stands for 'Mount Everest', 'Mount Everest exists' can be formalised as $E!^{\mathsf{C}}e$ - provided this formula is equivalent to $\exists x(x = e)$. Van Inwagen (2003: 143) attributes the origin of this view on existence to Quine's (1948) influential essay *On What there Is*, particularly with reference to his famous *motto* 'to be is, purely and simply, to be the value of a quantified variable' (1948: 32). Accordingly, we will call *Quinean* the parsing theory that this view generates.

Since we will often refer to them later on, it is convenient to first present very quickly the language and semantics of $\mathcal{C}$ on its Quinean parsing theory.

[7]Another way to express the distinction is by appealing to Kant's distinction between determining and non-determining properties (A 598/B 626 - Kant (1998: 566–567)) - the latter roughly corresponding to blanket properties and the former to non-blanket ones.

Here and throughout, we will use bold capital letters $\mathbf{A}, \mathbf{B}, \mathbf{C}$... as metavariables for formulae; bold lower case letters $\mathbf{a}, \mathbf{b}, \mathbf{c}$...$\mathbf{x}, \mathbf{y}, \mathbf{z}$ as metavariables for terms, where $\mathbf{a}, \mathbf{b}, \mathbf{c}$ are used for individual constants, $\mathbf{x}, \mathbf{y}, \mathbf{z}$ for variables and $\mathbf{t}$ for a generic term (either a constant or a variable); lower case greek letters α, β, γ... as metavariables for predicates, followed where needed by a superscript indicating the arity of a predicate.

The signature of $\mathcal{C}$ includes:

- The five sentential operators $\neg, \&, \vee, \rightarrow, \leftrightarrow$;
- Infinitely many individual variables x, y, z...;
- Infinitely many individual constants a, b, c...;
- Infinitely many n-place predicates P, Q, R..., for $n \geq 0$;
- The identity symbol $=$;
- The two quantifiers $\forall, \exists$;
- The 'exists' predicate $E!^C$.

(For simplicity, we have omitted a stock of infinitely many n-place function symbols f, h, g...; this entails no loss of generality).

The set $For_{\mathcal{C}}$ of wffs of $\mathcal{C}$ is recursively defined as follows, subject to the usual constraints about variable binding, ruling out vacuous and repeated quantification:

$$\mathbf{A} ::= |\xi^n(\mathbf{t}_1, \ldots, \mathbf{t}_n)|\neg\mathbf{A}|\mathbf{A}\&\mathbf{B}|\mathbf{A} \vee \mathbf{B}|\mathbf{A} \rightarrow \mathbf{B}|\mathbf{A} \leftrightarrow \mathbf{B}|\mathbf{t}_i = \mathbf{t}_j|\forall\mathbf{x}\mathbf{A}|\exists\mathbf{x}\mathbf{A}|E!^C t$$

Call a structure $\mathcal{M}^{\mathcal{C}} = \langle D, \nu \rangle$ a model for $\mathcal{C}$, where: D is a non-empty set (the domain of quantification), and ν is function such that $\nu(\mathbf{a}) \in D$, for each individual constant $\mathbf{a}$ and $\nu(\xi^n,) \subseteq D^n$, for each n-place predicate ξ. Given a variable assignment g based on $\mathcal{M}^{\mathcal{C}}$, the valuation function ν is extended to a function ν^g whose domain is the union of the set of variables and the set of constants of $For_{\mathcal{C}}$, being defined as follows: for any term **t**, $\nu^g(\mathbf{t}) = \nu(\mathbf{t})$ if **t** is an individual constant, and $\nu^g(\mathbf{t}) = g(\mathbf{t})$ if **t** is a variable.

Satisfaction relative to a model $\mathcal{M}^{\mathcal{C}}$ and a variable-assignment g based on that model is defined as follows.

C1 $\mathcal{M}^{\mathcal{C}}, g \vDash_{\mathcal{C}} \xi^n(\mathbf{t}_1, \ldots \mathbf{t}_n)$ iff $\langle \nu^g(\mathbf{t}_1), \ldots, \nu^g(\mathbf{t}_n) \rangle \in \nu(\xi)$.

C2 $\mathcal{M}^{\mathcal{C}}, g \vDash_{\mathcal{C}} \neg\mathbf{A}$ iff $\mathcal{M}^{\mathcal{C}}, g \nvDash_{\mathcal{C}} \mathbf{A}$.

C3 $\mathcal{M}^{\mathcal{C}}, g \vDash_{\mathcal{C}} \mathbf{A}\&\mathbf{B}$ iff $\mathcal{M}^{\mathcal{C}}, g \vDash_{\mathcal{C}} \mathbf{A}$ and $\mathcal{M}^{\mathcal{C}}, g \vDash_{\mathcal{C}} \mathbf{B}$.

C4 $\mathcal{M}^{\mathcal{C}}, g \vDash_{\mathcal{C}} \mathbf{A} \vee \mathbf{B}$ iff $\mathcal{M}^{\mathcal{C}}, g \vDash_{\mathcal{C}} \mathbf{A}$ or $\mathcal{M}^{\mathcal{C}}, g \vDash_{\mathcal{C}} \mathbf{B}$.

C5 $\mathcal{M}^{\mathcal{C}}, g \vDash_{\mathcal{C}} \mathbf{A} \rightarrow \mathbf{B}$ iff $\mathcal{M}^{\mathcal{C}}, g \nvDash_{\mathcal{C}} \mathbf{A}$ or $\mathcal{M}^{\mathcal{C}}, g \vDash_{\mathcal{C}} \mathbf{B}$.

C6 $\mathcal{M}^{\mathcal{C}}, g \vDash_{\mathcal{C}} \mathbf{A} \leftrightarrow \mathbf{B}$ iff $\mathcal{M}^{\mathcal{C}}, g \vDash_{\mathcal{C}} \mathbf{A}$ and $\mathcal{M}^{\mathcal{C}}, g \vDash_{\mathcal{C}} \mathbf{B}$, or $\mathcal{M}^{\mathcal{C}}, g \nvDash_{\mathcal{C}} \mathbf{A}$ and $\mathcal{M}^{\mathcal{C}}, g \nvDash_{\mathcal{C}} \mathbf{B}$.

C7 $\mathcal{M}^{\mathcal{C}}, g \vDash_{\mathcal{C}} \mathbf{t}_1 = \mathbf{t}_2$ iff $\nu^g(\mathbf{t}_1) = \nu^g(\mathbf{t}_2)$.

C8 $\mathcal{M}^{\mathcal{C}}, g \vDash_{\mathcal{C}} \forall\mathbf{x}\,\mathbf{A}$ iff $\mathcal{M}^{\mathcal{C}}, g[o/\mathbf{x}] \vDash_{\mathcal{C}} \mathbf{A}$ for each $o \in D$.

C9 $\mathcal{M}^{\mathcal{C}}, g \vDash_{\mathcal{C}} \exists\mathbf{x}\,\mathbf{A}$ iff $\mathcal{M}^{\mathcal{C}}, g[o/\mathbf{x}] \vDash_{\mathcal{C}} \mathbf{A}$ for some $o \in D$.

Moreover, since we have introduced an 'exists' predicate for $\mathcal{C}$, we add to C1-C9 the following clause:

C10 $\mathcal{M}^{\mathcal{C}}, g \vDash_{\mathcal{C}} E!^{\mathrm{C}}\mathbf{t}$ iff $\nu^g(\mathbf{t}) \in D$,

which simply says, in accordance with the Quinean parsing theory, that to exist is equivalent to belonging to D, the domain of $\exists$.

We can take $\mathcal{C}$ to also be equipped with the usual natural deduction rules of inference for the five connectives and the quantifiers. Admissible rules of inference for $E!^{C}$ can be read off intuitively from the semantics.

Throughout this chapter, particular attention will be given to the following valid schemata of inferences of $\mathcal{C}$ on its Quinean parsing theory:

EP: $\xi\mathbf{t} \vDash_{\mathcal{C}} E!^{C}\mathbf{t}$.

GEP: $\rho(\mathbf{t}_1, \ldots, \mathbf{t}_n) \vDash_{\mathcal{C}} E!^{C}\mathbf{t}_i$, for $\mathbf{t}_i \in \{\mathbf{t}_1, \ldots, \mathbf{t}_n\}$.

NGEP: $\neg\rho(\mathbf{t}_1, \ldots, \mathbf{t}_n) \vDash_{\mathcal{C}} E!^{C}\mathbf{t}_i$, for $\mathbf{t}_i \in \{\mathbf{t}_1, \ldots, \mathbf{t}_n\}$.

LNE: $\vDash_{\mathcal{C}} E!^{C}\mathbf{t}$.

Before turning to other matters, a quick guide to the labels just used is in order. Following Williamson (1988), 'EP' stands for *Existence Principle*: it says that having a property expressed by a monadic predicate entails existence. GEP is the generalisation of EP to *n*-place predicates, the *Generalised Existence Principle*; it says that being related entails existence. NGEP is GEP in its negative form, the *Negative Generalised Existence Principle*; it says that *not* being related entails existence. 'LNE' stands for *Logical Necessity of Existence*, the principle according to which the existence of any thing is a logical truth.

We can conceptually divide these schemata of inference into two groups. The first group comprises EP, GEP and NGEP. We can interpret these schemata as telling us, jointly taken, that all properties and relations are existence-entailing, pure and simple[8]. In particular, not only do they entail the existence of those things which enjoy them, they also entail the existence of those things which do not (witness NGEP).

[8] EP is in fact a special case of GEP, which could be understood as saying that one-place relations are existence entailing. As we will see, having isolated the special case where GEP is EP will be particularly important for our discussion in **Chapter 4**.

On the other hand, from the last group, comprising only LNE, we get that the existence of a thing is a truth which holds as a matter of logical necessity. Denying it is equivalent to affirming a contradiction. LNE, accordingly, entails all the other three inference schemata.

The adequacy of each of those four principles can be doubted on several grounds. The next sub-section shows that the phenomenon of intentionality can offer a unifying reason supporting those doubts.

2.2.2 Intentionality: *De Re* and *De Dicto*

Before we bring intentionality into the picture, we want to present a different line of argument that can be pressed against one of the four principles just mentioned, that is, LNE. According to this principle, the existence of any thing denoted by a term is a logical truth. Equivalently, denying the existence of any such thing results in a contradiction.

Consider the formula $E!^{C}x$; by LNE, this is a logical truth which, we have seen, is by definition equivalent to $\exists y(y = x)$. So $\exists y(y = x)$ is in turn a logical truth, asserting the existence of at least one thing. Then, it seems that $\mathcal{C}$ on its Quinean parsing theory commits us to the view that there has to be at least one thing! Put otherwise, a scenario where nothing exists is a contradiction in terms. This claim may give one pause. That some things exist, rather than nothing at all, many philosophers took as a striking fact requiring some form of explanation[9]. A sceptic might surely reply that the kind of explanation those philosophers were seeking is ultimately unavailable (Nozick (1981: 115), Hempel (2001: 341)). Perhaps, but that reply seems to miss what is at stake here. For, regardless of whether it is possible to explain why there

[9]Leibniz, for example, is amongst those philosophers; see for instance §7 of his *Principles of Nature and Grace, Based on Reason* - Leibniz (1989: 638-639). Hume is another example; see Part IX of his *Dialogues Concerning Natural Religion* - Hume (2007: 64).

is something rather than nothing, the point is that those philosophers clearly regarded the possibility of there being nothing at all as being perfectly consistent[10]. And, although we do not want to rule it out, the contrary claim (that it is impossible for there to be nothing at all) appears to require a substantial amount of justification[11]. Thus, unless one wants to take onboard such an explanatory burden, one had better reject the view that there has to be, as a matter of logical necessity, at least one thing. And this, in turn, amounts to rejecting LNE.

Quine (1954) even considered this possibility, but ruled it out by means of an inference to the best explanation. First, to allow for the possibility that nothing exists is equivalent, given the Quinean parsing theory, to allow for models with an empty domain of quantification. However, Quine argues, in such models every universally quantified formula should be evaluated as true and every existentially quantified one as false[12]. Hence, some formulae which are valid if we restrict ourselves to models with a nonempty domain of quantification, with the inclusion of models with an empty domain of quantification would become invalid. Since this would result in a big loss of (deductive) power, we should refrain from including models with an empty domain of quantification[13].

[10]See in any case Brenner (2020) for arguments in favour of the view that the question *why there is something rather than nothing?* is in principle answerable. Incidentally, he too takes there being nothing at all as a possible scenario.

[11]For a *probabilistic* argument that there being nothing at all is a highly improbable scenario, see Van Inwagen (1996), who nonetheless contends that '[there is] no known argument that can plausibly be said to show that it is impossible for there to be nothing' (1996: 99).

[12]However, as Williamson (1999) has shown, it is not immediate how to find a compositional adjustment to the standard Tarskian definition of truth in a model under an assignment delivering Quine's ruling that all universal and existential formulae should respectively be evaluated as true and false in models with an empty domain.

[13]Others, such as Leblanc and Meyer (1969) or Bencivenga and Indrzejczak (2014), did not see any decisive reason for excluding models with an empty domain of quantification and went on to develop systems of so-called *inclusive* logic - inclusive, that is, of models with an empty domain of quantification. For the origin of inclusive logics see Bencivenga (2002: 152-155). The issue is also taken up by Oliver and Smiley (2013: 182-188).

However, this argument hardly gives any reason for thinking that a scenario where nothing exists is a contradiction in terms. In fact, it seems to us that the argument may equally work as a *reductio* of Quine's assumption that $\exists$ needs to be interpreted as existentially loaded. For, if models with an empty domain of quantification are to be excluded, that could be a reason precisely *not* to take the domain of $\exists$ as only including existents. Perhaps there is not much more to be added to the issue, save for the fact that the burden of proof here is on the proponent of $\mathcal{C}$ on the Quinean parsing theory to convince us that the principle stands (LNE, that is). Until then, rationality seems to require to at least remain sceptic about the validity of LNE - by the end of this subsection, in any case, we will present another reason against the validity of LNE.

Let us now turn to the other group of inferences (EP, GEP, NGEP). We said earlier that, jointly taken, they tell us that properties and relations *as such* are existence entailing. In many circumstances, this accords with our intuitions. Here are some substitution instances of the principles:

- John is a footballer. *Therefore*, John exists. (EP)
- Gavin married Stacey. *Therefore*, Stacey exists. (GEP)
- Mary did not get to the airport on time. *Therefore*, the airport exists. (NGEP)

The reason why these arguments look fine is quite clear. The properties of being a footballer, being married to Gavin and not being reached *on time* by Mary, all presuppose a spatiotemporal collocation. And things which are spatiotemporally collocated do undoubtedly exist. Thus, any individual who is a footballer, or is married to Gavin, or is not reached *on time* by Mary, must exist. How could it be otherwise?

The problem is to what extent the principle that properties and relations are existence entailing can be held in general. Notice that we are not asking whether some isolated substitution instances of EP, GEP or NGEP succeed in delivering counterexamples to these putative schemata of inference. For, as Priest (2016a: 355) notes, logical data are soft. That is to say, even if a substitution instance of a schema of inference licensed by a logic does strike us as incorrect, theoretical considerations can always overturn our intuitions. To this, we also add that, from an anti-exceptionalist point of view, it may not be a good idea to abandon a logic which is not entirely adequate to the data, if it scores very high with respect to the other criteria selected for theory choice (see **§1.1**).

What we are asking is whether we can single out a class of cases which, in virtue of some shared feature, *systematically* disturb the adequacy of the schemata of inference at hand. As anticipated, and as many have pointed out, one such class is the one of *intentional* contexts (Zalta (1983, 1988), Crane (2016), Priest (2016b), Berto (2011, 2012a), Berto and Priest (2014)).

Intentionality is the mark of those mental states (such as thinking, believing, fearing, worshipping, imagining, seeking) which are necessarily *directed towards* something[14]. Let us call verbs such as thinking, fearing, and so on, *intentional verbs*. Then, an intentional context is a sentence or an argument in which one or more intentional verbs occur.

Intentional states can be of at least two kinds, depending on the complement of intentional verbs. Thus, we can fear *that global warming could create big damage to the environment*, or imagine *that tomorrow the sun will shine*, or believe *that an economic recession will soon hit the European Economic Area*. In each of these cases, the complement of the intentional verb is a sentence (the

[14]For an introduction, see Pierre (2019).

one in italics); the content of the intentional states here is therefore a proposition. Berto (2012a: 56) calls *de dicto* such intentional states, namely those that have a proposition as their content.

Now, *de dicto* intentional states should be contrasted with *de re* intentional states. The content of the latter, as the name suggests, is an object. For example, consider 'the Romans worshipped *Mars*', 'John fears *the person living next door*', or 'Jim thinks of *Anne* every day'. In these cases, we can see that the complements of the intentional verbs are noun phrases (those in italics), and noun phrases denote objects. Let us call *intentional* those objects denoted by a noun phrase occurring as a complement of an intentional verb (thus, introducing a *de re* intentional state).

Notice, finally, that certain intentional verbs can occur both in *de dicto* and *de re* intentional contexts. So for example, one can think *that the Edinburgh Castle is well worth a visit* (*de dicto*), but one can also think of *a 1$ bill* (*de re*).

De dicto intentional states are more difficult to model than *de re* intentional states. An adequate treatment of *de dicto* intentional states, as Priest (2016b: Ch. 1) has shown, requires expanding the above signature for $\mathcal{C}$ with a new type of logical items, namely intentional operators. And once intentional operators are added, the language seems to require a world-based semantics - we will encounter again *de dicto* intentionality later in **§3.3**. By contrast, modelling *de re* intentional states requires no expansion whatsoever; intentional verbs introducing *de re* intentional states can be treated just like ordinary relations, for after all this is just what they seem to be.

As we said at the beginning of this chapter, our focus hereafter will be on *de re*, rather than *de dicto*, intentional states. The reason is that, for one thing, *de re* intentional states very often present counterexamples to GEP and NGEP. And the reason why they do, as we will see shortly, also explains why EP and

LNE fail as well[15]. The phenomenon of *de re* intentionality has therefore a big unifying power to explain the faults of $\mathcal{C}$ on its Quinean parsing theory.

Some plausibly invalid substitution instances of GEP and NGEP, involving *de re* intentional states, are in order:

- Ponce De Leon sought for the Fountain of Youth. *Therefore*, the Fountain of Youth exists. (GEP)
- Le Verrier postulated Vulcan. *Therefore*, Vulcan exists. (GEP)
- Homer worshipped Zeus. *Therefore*, Zeus exists. (GEP)
- J.K. Rowling was asleep yesterday night, and was not thinking of Harry Potter. *Therefore*, Harry Potter exists. (NGEP)
- Anna does not fear the Easter Bunny. *Therefore*, the Easter Bunny exists. (NGEP)
- George does not prefer Gandalf to Frodo. *Therefore*, Gandalf exists. (NGEP).

Whilst the premises of all these examples describe real or likely scenarios, the conclusions do all strike us as incorrect. This may be because the noun phrases in the conclusions refer to purely fictional characters (Harry Potter, the Easter Bunny, Gandalf) or objects common sense or scientific progress has eventually dispensed with, that is, mythological objects such as Vulcan,

[15]To this, we also add that the formulation of EP, GEP, NGEP and LNE does not include any occurrence of intentional operators. Hence, there do not seem to be substitution instances of those principles involving *de dicto* intentional contexts.

the Fountain of Youth and Zeus[16]. Be that as it may, these intentional objects, towards which cognitive activity is directed, simply appear to be non-existent[17]. Obviously, our cognitive activity is not exclusively directed towards non-existents: we clearly also think of (desire, fear...) things which are very much existent. What the previous examples show, however, is that this is in general not the case. Accordingly, it seems *false* that relations as such are existence entailing: *de re* intentional relations such as those listed above certainly do not seem to be.

Moreover, our cognitive activity may also be directed towards other kinds of objects that could be taken to be non-existents, such as numbers or other sorts of *abstracta*. The reason why we have not considered examples involving those objects has simply to do with the fact that it is not uncontentious to take them as non-existents. There is not a similar problem with purely fictional and mythological objects: these are clear examples of non-existents, if anything is. This is why, in this and the next chapter we will restrict our attention only to those two kinds of non-existents. And in any case, restricting our attention to them is sufficient to make the point we are trying to make.

Indeed, acknowledging that we can be *de re* intentionally related to non-existents such as purely fictional and mythological characters seems to have, *ipso facto*, an immediate (negative) impact on the validity of LNE and EP.

Consider LNE first. If any of the previous substitution instances of GEP and NGE fails, that is in part because the intentional object referred to in the

[16]We have called objects such as Holmes and Zeus *purely fictional*, in order to distinguish them from the existent objects which sometimes feature in fictional stories. For example, in one of the Holmes stories, Holmes has tea with British Prime minister William Gladstone, who really existed. This makes Gladstone a fictional character of the Holmes stories, but Gladstone is certainly not a purely fictional character like Holmes, who never existed.

[17]One could observe that mythological entities are a category of non-existents distinct from purely fictional characters on the grounds that, for example, whilst hardly anyone has ever seriously believed that Harry Potter existed, Homer worshipped Zeus precisely because he believed that Zeus did exist.

conclusion does not exist. Let t stand for any such object; if it is the case that t does not exist, then *pace* LNE, it is false that, for arbitrary **t**, **t** exists.

Moreover, once we have accepted that some intentional objects do not exist, it is not difficult to find troublesome substitution instances for EP either. Here are two:

- Holmes is a purely fictional character. *Therefore*, Holmes exists.
- Zeus is a mythological creature. *Therefore*, Zeus exists.

In both cases the inference seems to fail almost by definition. Once we accept that Holmes is a purely fictional character, we should not conclude that he exists - quite the contrary, we should conclude that he does not, given that part of being a purely fictional character is not to exist. Similarly for Zeus and other mythological creatures.

Now, we have so far focussed our attention on a number of valid inference schemata of $\mathcal{C}$ on the Quinean parsing theory (LNE, EP, GEP and NGEP) not all substitution instances of which strike us as valid. Such substitution instances, in particular, all share a conclusion of the same form: '**t** exists' - for **t** a noun phrase. Therefore, in deeming such substitution instances invalid, we are thereby committed to the view that sentences of the form '**t** exists' may be false; or, equivalently, sentences of the form '**t** does not exist' may be true. We already saw that a similar view is incompatible with $\mathcal{C}$ on the Quinean parsing theory, and for this reason accused it of incurring problems of adequacy to the data. By 'data', as we explained in the previous chapter, we mean the data from natural language, concerning what arguments and utterances are deemed correct in the vernacular. We, however, have so far almost took for granted that vernacular argumentation allows sentences of the form '**t** does not exist' to be true. Thus, in the next sub-section, we want to get clearer on the extent to which, if at all, linguistic data from natural language can corroborate this claim[18]. Subsequently, in **§2.2.4**, we will discuss, and criticise, some ways in which proponents of $\mathcal{C}$ on the Quinean parsing theory may respond to the claims we have made in this sub-section.

2.2.3 Linguistic Data

The thesis entailed by the claims we defended in the previous sub-section, as just said, is that sentences of the form '**t** does not exist' may be true. Cases in which '**t** does not exist' strikes us as true, we maintained, are for example those in which a noun phrase (a singular name or a description) standing for an intentional object is substituted in for **t**. Something remarkably close to this view was proposed by linguist and philosopher Friedrieke Moltmann (2013) as a *defining criterion* for an existence predicate in natural language. It is now worth going into some details of her account, which will serve as evidence that our views are continuous with the work of linguists in the field of natural language semantics. Of course, this evidence is limited, and nothing in principle prevents that future developments in linguistics may even overturn it. In that case, our arguments would inevitably require to be corroborated with new data. But because our primary goal here is outlining a programme of logical revision, we will take the evidence presented as at least sufficient to ground the legitimacy of our enterprise.

Moltmann (2013: §2.3) starts by considering a three-way distinction for predicates in natural language, between ordinary predicates, existence predicates, and predicates which do not fall under either of the previous two categories - more on why we have spoken of 'existence predicates' in the plural shortly. What distinguishes ordinary from existence predicates, according to

[18] We are particularly grateful to Catarina Dutilh Novaes for pressing us on this issue.

Moltmann, is their behaviour under negation. More specifically, Moltmann (2013: 35) argues, '[s]entences with ordinary predicates in the present tense [...] intuitively lack a truth value if the subject is an empty term or does not stand for an actual, presently existing object'. 'Subject' is here to be understood in a technical sense, that is, roughly, as the doer of an action; to be contrasted with a direct object, or the *receiver* of an action. Consider for instance the pair of sentences O1-O2 and O3-O4 below:

O1 Napoleon is right-handed;

O2 Napoleon is not right-handed.

O3 The king of France is bold.

O4 The king of France is not bold.

Each one of O1-O4 is formulated in the present tense, and contains an occurrence of either the intransitive predicate: '... is right-handed' (O1-O2), or '... is bold' (O3-O4) - where an intransitive predicate is one which takes a subject but not a direct object. Those two predicates count for Moltmann as ordinary, and each of O1-O4 as plausibly neither true nor false. The reason is, Moltmann (2013: 35) argues, that 'ordinary predicates in the present tense in general presuppose that the subject stands for an actual presently existing object' - which Napoleon or the king of France are not. If this is correct, then the following defining criterion for ordinary predicates in natural language is an immediate consequence:

O A (intransitive) predicate ξ is an ordinary predicate iff for any world w and time t, for any singular term **t**, if **t** does not stand for an actual entity in w, then neither $[\mathbf{t} \text{ not } \xi]^{w,t} = \text{true}$ nor $[\mathbf{t} \text{ not } \xi]^{w,t} = \text{false}$.

In other words, ξ is an ordinary predicate just in case in any context in which **t** does not stand for an actual individual, and ξ is an intransitive predicate, the present tense sentence '**t** is not ξ' is neither true nor false.

Examples of predicates which, given **O**, fails to qualify as ordinary predicates and, as we will see, as existence predicates as well, are for instance *is important* or *is influential* or *is a philosopher*. Indeed, consider N1 below:

N1 Plato is not influential.

Competent speakers would certainly consider N1 as *false* even though Plato is not currently existing. For one thing, this classifies *is influential* as being not an ordinary predicate; shortly, we will see why it classifies *is influential* as being not an existence predicate either.

Existence predicates in natural language behave differently than ordinary predicates. Suppose again that the subject does not stand for an actual object at the present time. Moltmann identifies the specificity of negated sentences in the present tense containing an existence predicate and a subject of that sort with their being true. In other words, Moltmann (2013: 36) is proposing the following defining criterion for an existence predicate in natural language:

E A (intransitive) predicate ξ is an existence predicate iff for any world w and time t, for any singular term **t**, if **t** does not stand for an actual entity in w, then $[\mathbf{t} \text{ not } \xi]^{w,t} = \text{true}$.

That is to say, ξ is an existence predicate just in case in any context in which **t** does not stand for an actual individual, and ξ is an intransitive predicate, the present tense sentence '**t** is not ξ' is true - and its negation, accordingly, false.

Whilst the criterion **E** for existence predicates, we can now see more clearly, classifies *is influential* as being not an existence predicate, Moltmann (2013:

36) argues that it 'obviously classifies *exists* [...] as an existence predicate'. Consequently, just as for example E1 below is to be counted as expressing a truth:

E1 The king of France does not exist,

So should E2:

E2 Pegasus does not exist.

If this confirms our view that sentences of the form '**t** does not exist' may sometimes be true, Moltmann's account extends far beyond that point[19]. Indeed, so far in this work we have tacitly restricted our discussion to sentences of natural language containing terms standing for objects. However, we might want to extend our discussion so as to include more complex types of entities as well, such as events or, as Moltmann (2020: 318) calls them, 'condition-like entities' such as states, situations, conditions, rules and laws. In doing so, by relying on Moltmann's account, we could also acknowledge the presence of further existence predicates in natural language, such as: *hold*, *occur*, *obtain*, *take place*, *happen*, which do not apply to objects, but rather events; or *hold*, which again does not apply to objects but rather to condition-like entities[20]. Thus, for instance, E3 below is undoubtedly true, if 'the demonstration' fails to denote an actual event:

E3 The demonstration does not take place.

[19]One could perhaps maintain, along the lines of Salmon (1987, 1998), that in negative existentials featuring definite descriptions of seemingly non-actual objects, such as E1, the description in fact lacks denotation altogether and negation is understood as external negation. In this way, one does not need to posit, as we have argued, a non-existent object. See however Moltmann (2015: 162-165) for a robust critique of the view.

[20]Moltmann (2015: 149) observes that *exists* could not take subjects standing for events but may take subjects standing for condition-like entities. Thus, for instance, 'the demonstration exists/does not exist' appears to be infelicitous, whereas 'the law described by John does not exist' does not.

Likewise, E4 expresses a truth if 'the law described by John' does not express an actual law

E4 The law described by John does not hold.

It turns out, therefore, that not only there is linguistic evidence for the view, applied to objects, we articulated in the previous section. There are also correlates of this view when the domain of entities taken into consideration is so enlarged as to include entities of more complex types, such as the ones just illustrated in the previous paragraph - for a full account of which see Moltmann (2020).

We believe that our discussion in the last two sub-sections makes at least for a *prima facie* case to answer for proponents of $\mathcal{C}$ on the Quinean parsing theory. Thus, a discussion of their attempts to answer the points we raised, as we had anticipated at the end of **§2.2.2**, will occupy us throughout the next sub-section, to which we now turn.

2.2.4 Quinean Rebuttals

In **§2.2.2**, we had proposed that we take certain substitution instances of LNE, EP, GEP and NGEP as invalid, when they concern certain intentional objects such as fictional or mythological characters. This, as we said, committed us to the view that sentences of the form '**t** does not exist' may express truths - that is, at least, when **t** is used for an object belonging to either of those two categories. The last sub-section showed that this view has found a home in linguistic theorising about the semantics of natural language. So at this point, we want to discuss how proponents of $\mathcal{C}$ on the Quinean parsing theory might respond to the charges we pressed against their preferred theory.

To begin with, here is for instance Van Inwagen (2003: 145) (our italics):

> It seems [...] that much of what we say in fictional discourse is true and that the truths of fictional discourse carry ontological commitment to fictional characters. That is to say, *it seems that fictional characters exist*. And, since the names that occur in works of fiction, names like 'Mr Pickwick' and 'Tom Sawyer' (when they occur not in works of fiction, but in discourse about works of fiction, in what I am calling fictional discourse), denote fictional characters if fictional characters are there to be denoted, *Mr Pickwick and Tom Sawyer are among the things that are* – an assertion that we anti-Meinongians regard as equivalent to the assertion that *Mr Pickwick and Tom Sawyer are among the things that exist*.

And here is Thomasson (2003: 222) (again, our italics):

> So what sense can we make of those who would accept the existence of [...] works of literature, but deny the existence of fictional characters? Perhaps they have an artificially inflated idea of what would be required for there to be a fictional character (e.g. that that there be some nonexistent person) – if so, it is they who are taking fictional discourse and its commitments too seriously. In any case, those who accept the existence of the relevant sorts of literary work, but deny that of fictional characters, only distort the ordinary rules for using the term "fictional character" without yielding a genuinely more parsimonious ontology; if we accept such works of literature, *we need not fear that it would be profligate to accept that there are fictional characters in the only sense that most people ever expected there to be*.

In different ways, the two passages deliver the same message. What throughout the previous two sub-section struck as an uncontentious data point, namely that purely fictional characters are non-existents, would be in point of fact false: purely fictional characters do exist! And this claim, if correct, would immediately undermine our previous reasoning in **§2.2.2**. For then, the supposed examples of invalid substitution instances of valid inference schemata of $\mathcal{C}$ on the Quinean parsing theory would in fact be no problematic at all for its proponents.

A response to this view might start by considering that it seems at least correct to say that *most people* would find it quite puzzling that, for example, 'Sherlock Holmes exists' expresses a true proposition. Thus, it seems to us, friends of the view that purely fictional characters exist need to explain two things. First, what they mean exactly when they say that fictional characters exist; second, how can their view account, if at all, for the pre-theoretic intuition, shared by most people, that they do not.

First of all, it is customary to call the position that purely fictional characters exist *fictional realism* (see Everett (2005) for a thorough critical discussion of the view). Of course, fictional realism does not entail that characters such as Sherlock Holmes are to be found anywhere in the world. Indeed, Van Inwagen and Thomasson take great pains to argue that purely fictional characters are *abstract* in nature, even though they slightly differ over the connotations that their abstract status is supposed to involve[21]. Accordingly, we can call *fictional abstractionism* their proposed form of fictional realism. So let us suppose we grant fictional abstractionism at least some *prima facie* plausibility.

At least intuitively, fictional abstractionism seems incompatible with the

[21] For instance, Thomasson (1998) takes purely fictional characters to be the product of the artistic activity of their authors. As such, they are created entities, differing from statues and other concrete artefacts only in that the latter are, indeed, concrete. A similar view is put forward by Braun (2005), whereas see Wolterstorff (1980) for an account of purely fictional characters as non-created entities. Van Inwagen, on the other hand, took a noncommittal stance on this issue.

widely held pre-theoretic belief that purely fictional characters do not exist. That this belief is widely shared should not be in dispute. Think of another example, Santa Claus: is it not true that, at some point in life, many children had to come to terms with the painful truth expressed by those four words, 'Santa does not exist'?

However, both Van Inwagen (2003: 146-147) and Thomasson (1998: 111; 2003: 217-218) maintain that fictional abstractionism can still vindicate truths of this sort. If this were the case, this would make the view incredibly attractive. For, the view would manage to save, in addition to the four principles discussed in the previous sub-section, also what appear to be well established intuitions. In the works referred to a few lines above, Van Inwagen and Thomasson have indicated a number of strategies through which they could achieve this result. We will now look at the one elaborated by Thomasson (1998: 111) which, unlike the others, crucially relies on the abstract nature of purely fictional characters.

Briefly, the idea is that when one says 'Sherlock Holmes/Santa does not exist' one is not thereby making an assertion to the extent that Sherlock Holmes (Santa) is identical with nothing (something of the form $\neg\exists x(x = s)$ or $\neg E!^{C}s$). For that, in $\mathcal{C}$ at least, is a contradiction. Rather, what 'Sherlock Holmes/Santa does not exist' ought to be taken to mean is that Sherlock Holmes (Santa) is not to be found in the realm of concrete objects (something of the form $\neg Cs$). And a claim of this form is perfectly coherent.

However, Berto (2012a: 95-96) has shown why a similar strategy looks implausible - another critique of fictional abstractionism roughly along the same lines can be found in Sainsbury (2009: Ch. 5). Unlike negative existentials expressed by means of 'there is/are' ('there are no tigers'), negative existentials expressed by means of 'exists' ('tigers do not exist') do not carry contextual restrictions to any domain. Consider the following example.

When one utters (say, in a zoo) 'there are no tigers', one is thereby saying that no tiger is to be found *in the zoo*. But if one uttered 'tigers do not exist', in a zoo or otherwise, it seems that one is making the stronger, and false, claim that tigers are *nowhere* to be found - perhaps meaning that tigers are extinct, or something along those lines. To say that tigers do not exist in the zoo but exist in the Savannah seems somewhat bizarre; or in any case this is not how competent speakers normally communicate. And when we take into account negative singular existentials, things look even more awkward. As Berto (2012a: 96) observes, 'we cannot sensibly say things like *Obama does not exist in Texas* (save perhaps as an emblematic way of saying that Texas is very much pro Republicans...); or *A man existed at the door this morning, looking for you*'.

Applied to the cases of Sherlock Holmes and Santa, the point just highlighted seems to confirm what we already knew ahead of theoretical inquiry. When people utter 'Sherlock Holmes/Santa does not exist' they do it with the intention to express that Holmes (Santa) does not exist *full stop*, not that he does not exist in the realm of concrete things. No tacit contextual restriction whatsoever seems to be in place in similar assertions. Thus, if 'Sherlock Holmes/Santa does not exist' expresses a truth, as most people would certainly say, it expresses a truth fictional abstractionism could hardly account for. And if so, taking purely fictional characters as (existing) *abstracta* does not look like a particularly promising way to go. Hence, we conclude, we had better withdraw the initial plausibility we had granted to the view.

However, it does not follow *yet* that our previous appeal to non-existent intentional objects to explain why EP, GEP, NGEP and LNE have invalid substitution instances is legitimate. For, what motivated our view was simply the fact that sometimes, we seem to have *de re* intentional states directed towards such objects. Granted, we have seen that the fictional abstractionist attempt to consider these objects as *abstracta* is not particularly promising. Perhaps though, there are other possibilities available to defend those principles.

According to Priest (2016b: xix–xxxi), one would have three further strategies at disposal. Each one of them attempts to replace the non-existent objects seemingly involved in *de re* intentional contexts with some other kind of item: a proposition (via a definite description), a monadic predicate and a mental representation.

As Priest has shown (2016b: xix–xxxi; 58-59), each strategy is problematic in its own way. However, the most promising of them is by far the latter, or so it seems to us anyway; it is therefore worth to quickly look at it. The argument here goes as follows: when one thinks (desires/imagines...) something, that something is in fact a mental representation. And, the argument concludes, mental representations exist. Thus if, for example, Jim is thinking of Anne, the view entails tat Jim is not intentionally related to Anne herself, but rather to a surrogate object corresponding to the mental representation of Anne.

But then, consider 'Jim is thinking of Anne, who is 7 foot tall'. If the sentence is true, it follows that there is someone Jim is thinking of and that someone is 7 foot tall. Even granted that that someone Jim is thinking of is a mental representation, it seems highly implausible (in fact, false) that *the mental representation* Jim is thinking of be 7 foot tall! To be sure, it would all be equally implausible if Anne in the example had been any other height. The point is, rather, that height is not a feature that can be meaningfully characterise a mental representation.

In general, the problem with the mental representation strategy can be described in the following terms. When we are (*de re*) intentionally related to something via some act of cognition (thinking/desiring/imagining...) the *relatum* which is thought of/desired/imagined often has properties which seem impossible for mental representations to have (such as being 7 foot tall). Notice, moreover, that the thesis that some intentional objects do not exist plays no role in the failure of the mental representation strategy. Jim and Anne, for all we know, may very well be existing things.

Just like fictional abstractionism, the view that intentional objects would in fact be surrogate objects corresponding to mental representations does not seem particularly convincing. The conclusion we draw is that we are better off taking some intentional objects, such as purely fictional and mythological characters, for what they intuitively look like: things which do not exist.

In taking this view, we commit ourselves to the thesis that $\mathcal{C}$, on the Quinean parsing theory, considers as valid inference schemata with invalid substitution instances: EP, GEP, NGEP, LNE. And as we have seen, the phenomenon of *de re* intentionality can provide an explanation for the failure of each of those inference schemata.

At this point, given the evident problems of adequacy to the data incurred by $\mathcal{C}$ on the Quinean parsing theory, one may think that a logical revision is needed. So, in the next section, we will look at one way in which a similar revisionary work could be carried out.

2.3 Positive Free Logic

We start by highlighting some considerations which follow from our previous discussion. First of all, a logical system incurs problems of adequacy to the data when its principles do not match what is acknowledged as correct vernacular reasoning. This, as far as we can see, may either happen because a system licenses as valid inferences which are intuitively invalid, or else because it *fails* to license as valid inferences which are intuitively so. And $\mathcal{C}$, we have argued, incurs problems of adequacy to the data in the former sense: for example, by licensing as logically valid any sentence of the form '**t** exists'. In particular, our discussion in **§2.2.3** has provided evidence that our claim, that *exists* does not exhibit a similar behaviour, can effectively be grounded on the work of linguists, who have acknowledged the presence in natural language of *several* existence predicates precisely manifesting the behaviour we have attributed to *exists*.

However, it is important to remark that it is not a logical system *per se* to incur problems of adequacy to the data. For, as we noted in **§2.1.1**, a logical system (a *logica docens*) is merely a mathematical structure, with no immediate connection to any data whatsoever. Rather, the connection between a logical system and the data it aims to account for is crucially mediated by its parsing theory. Issues of adequacy to the data only emerge at this point, that is, when a system is equipped with a parsing theory. In our case, then, it is not much $\mathcal{C}$ to be inadequate, but rather, as we always took care to clarify, $\mathcal{C}$ on what we have called its Quinean parsing theory. And the Quinean parsing theory of $\mathcal{C}$, to repeat, is the thesis that existence is a first-order property defined in terms of the quantifier $\exists$ and identity.

It follows that if $\mathcal{C}$, on the Quinean parsing theory, ought to be revised, the revision can be carried out in at least two different ways. The first option is to target the Quinean parsing theory and leave the semantics and/or proof-theory of $\mathcal{C}$ intact. In this case, the main task of the revisionary work will consist in providing an alternative parsing theory capable of solving the problems of adequacy to the data that $\mathcal{C}$ did incur on its old parsing theory. The second option is to preserve the Quinean parsing theory and revise the semantics and/or proof-theory of $\mathcal{C}$. Needless to say, the main task of a revision in this sense will be to show that the problems incurred by $\mathcal{C}$ on the Quinean parsing theory disappear once an alternative semantics and/or proof theory is/are in place.

Free logics can be seen as an example of revisionary approach in the latter sense, targeting the semantics and proof theory of $\mathcal{C}$, rather than its Quinean parsing theory. As Bencivenga (2002: 148) for example notes (our italics):

> [Free logicians] wanted to reform classical logic, and substitute for it a better instrument, *they thought that both the usual formal systems and the usual formal semantics were faulty in important ways*, and it is only fair to define free logics so as to make sense of the precise task that they set for themselves.

And although we can distinguish between at least three main strands within the free logic project (more on this shortly), an endorsement of the Quinean parsing theory seems to be a common trait to each of them. Here is again Bencivenga (2002: 148–149), this time proposing a definition of free logic (our italics):

> I propose the following definition. A free logic is a formal system of quantification theory, with or without identity, which allows for some singular terms in some circumstances to be thought of as denoting no existing object, *and in which quantifiers are invariably thought of as having existential import*.

Of course, if the quantifiers are 'invariably thought of as having existential import', this is because they ($\exists$, specifically) represent the device through which existence can be expressed. And this claim seems to very much correspond to the gist of the Quinean parsing theory illustrated previously.

The novelty brought about by free logic is represented by the clause that some singular terms are allowed to denote no existing object. On the semantics of $\mathcal{C}$ (on the Quinean parsing theory), a similar condition was ruled out by the stipulations that (1) the valuation function was defined as total (viz. assigning a referent to each term) and (2) such referent was to be found in the domain of ∃. Hence, in $\mathcal{C}$, on the Quinean parsing theory, every term denotes an existent.

Some systems of free logics have rejected the totality of the valuation function, whereas others have retained it but rejected that a term's referent had to be found in the domain of ∃. In each case, it is clear that the revisionary work of free logic focussed on the semantics (and, consequently, the proof-theory) of $\mathcal{C}$, not its Quinean parsing theory.

Allowing terms to denote no existing object means one of two things: either that some terms are assigned a referent and this is a non-existent, or that some terms simply lack reference altogether. It is customary to call a term that either refers to a non-existent or does not refer at all an *empty* term, and *empty-termed* a formula where an empty term occurs.

A conception of empty terms as lacking reference altogether was developed by so-called *negative* and *neutral* free logic. Thus, systems of negative and neutral free logic typically resort to a partial (as opposed to total) valuation function, but differ in their treatment of empty-termed atomic formulae. On the negative account (Burge (1974), Gratzl (2010)), any such atomic formula is automatically evaluated as false. On the neutral account (Lehman (1994, 2001, 2002) empty-termed atomic formulae are automatically evaluated as truth-valueless[22].

Distinctive of the so-called *positive* approach to free logic is the conception of empty terms as having referents, albeit corresponding to non-existent objects: the valuation function, on the positive account, is therefore typically

[22]With one exception. If $E!$ is the existence predicate of neutral free logic and t is an empty term, then $E!t$ is evaluated as false. Other systems of neutral free logic, however, can restore truth-values for empty-termed atomic formulae through the mechanism of supervaluations. See on this Van Fraassen (1966) and Bencivenga (1986, 2002: §10).

total[23]. Moreover, empty-termed atomic formulae, on this account, are allowed to be true (Cocchiarella (1966), Leblanc and Thomason (1968), Bacon (2013)).

One consequence of positive free logic is that if empty terms denote nonexistents, and at the same time $\exists$ is interpreted as existentially loaded, then empty terms must refer outside the domain of $\exists$. A simple semantics for positive free logic (often known as *dual domain*) is thus in order - call $\mathcal{P}$ the system it generates.

Let the language of $\mathcal{P}$ be just like that of $\mathcal{C}$, except that its existence predicate is now $E!^{\mathcal{P}}$, and a model $\mathcal{M}^{\mathcal{P}} = \langle D_O, D, v \rangle$ a structure where: D_O, the so-called outer domain, is a nonempty set; D, the inner domain (of $\exists$), is a possibly empty set such that $D \subseteq D_O$; v is a total function such that $v(\mathbf{t}) \in D_O$ for each term $\mathbf{t}$ (individual constant or variable) and $v(\xi^n) \subseteq D_O^n$ for each n-place predicate ξ. A variable assignment is a function whose domain is the set of variables. Satisfaction relative to a model $\mathcal{M}^{\mathcal{P}}$ and a variable-assignment g based on that model is defined exactly as per $\mathcal{C}$, for the five connectives and identity. The clauses for the quantifiers and the existence predicate are given below:

P8 $\mathcal{M}^{\mathcal{P}}, g \vDash_{\mathcal{P}} \forall \mathbf{x}\, \mathbf{A}$ iff $\mathcal{M}^{\mathcal{P}}, g[o/\mathbf{x}] \vDash_{\mathcal{P}} \mathbf{A}$ for each $o \in D$.

P9 $\mathcal{M}^{\mathcal{P}}, g \vDash_{\mathcal{P}} \exists \mathbf{x}\, \mathbf{A}$ iff $\mathcal{M}^{\mathcal{P}}, g[o/\mathbf{x}] \vDash_{\mathcal{P}} \mathbf{A}$ for some $o \in D$.

P10 $\mathcal{M}^{\mathcal{P}}, g \vDash_{\mathcal{P}} E!^{\mathcal{P}}\mathbf{t}$ iff $v^g(\mathbf{t}) \in D$.

The key idea is that, on the one hand, $\exists$ is interpreted as existentially loaded, which means in particular that, for arbitrary $\mathbf{t}$, $E!^{\mathcal{P}}\mathbf{t} =_{Def} \exists x(x = \mathbf{t})$.

[23] An exception is Antonelli's (2000) proto-semantics. Whilst allowing some empty-termed atomic formulae to be evaluated as true, systems of positive free logic on Antonelli's proto-semantics do not allow empty terms to refer. However, Antonelli (2007) later criticised the account as artificial.

But the range of $\exists$ is restricted to a subset of the outer domain, and the latter may thus include non-existent objects.

It is now an easy exercise to formally show that EP, GEP, NGEP and LNE are all invalid in $\mathcal{P}$. More precisely, by uniformly substituting $E!^P$ for $E!^C$ in the formulation of EP, GEP, NGEP and LNE, the results are four invalid inference schemata.

Thus, having a property expressed by a monadic predicate is no longer taken to be a sufficient condition to exist, and this invalidates EP. Similarly for being related or failing to be related, whence the failure of GEP and NGEP. In sum, properties and relation are no longer taken as existence-entailing. Moreover, the domain of $\exists$ is possibly empty, and this fact has two nice consequences. First, that the possibility of there being nothing at all is now allowed. Secondly, and accordingly, that LNE fails as well: denying the existence of a thing referred to by a term is no longer taken as self-contradictory. Notice, however, that there is also another reason why LNE fails in $\mathcal{P}$. That is, suppose that h stands for Sherlock Holmes and d for Conan Doyle. Then, presumably, although $v(h) \in D_O$ and $v(d) \in D_O$, $v(h) \notin D$ and $v(d) \in D$ and so $\mathcal{M}^{\mathcal{P}} \models_{\mathcal{P}} \neg E!^P h$ but $\mathcal{M}^{\mathcal{P}} \models_{\mathcal{P}} E!^P d$; that is, Holmes does not exist but Doyle does. Thus, although in this case there exists something, it is still not the case that, for arbitrary **t**, **t** exists.

This means that the previous problems of adequacy to the data incurred by $\mathcal{C}$, on the Quinean parsing theory, are now avoided. In $\mathcal{P}$, for example, 'Ponce De Leon sought for the Fountain of Youth' can be formalised as Spf, and it is not difficult to find a model for this formula which is also a model of $\neg E!^P f$.

All this is certainly a step in the right direction. However, on closer inspection, it seems that $\mathcal{P}$ still raises important concerns about adequacy to the data. If, say, the Fountain of Youth does not exist, then the natural consequence would seem to be that *some* things do not exist. However, a moment's reflection reveals that this claim, in $\mathcal{P}$, expresses a necessary falsehood. Indeed, 'some things do not exist' is here appropriately expressed by the formula $\exists x(\neg E!^P x)$ which, given the existentially loaded interpretation of $\exists$, is a contradiction. And this upshot, once $\mathcal{P}$ is provided with the resources to acknowledge as true sentences such as 'The Fountain of Youth does not exist', appears to be entirely unmotivated. We will resume this issue again in the next chapter; in the remainder of this section, we want to survey a few more facts about $\mathcal{P}$.

First, given the failure of EP, GEP, NGEP and LNE, the consequence relation of $\mathcal{P}$ is properly included in that of $\mathcal{C}$. Thus, if deductive power were the criterion with which to assess whether a system counts as a subsystem of another, then $\mathcal{P}$ would have to count as a subsystem of $\mathcal{C}$.

However, things look differently if we look at the relation between $\mathcal{P}$ and $\mathcal{C}$ in terms of *expressive power*. For, there are distinctions, which $\mathcal{P}$ can retain, that $\mathcal{C}$ does collapse; so, $\mathcal{P}$ is more expressive than $\mathcal{C}$. For instance, the formulae $E!^C t$ and $t = t$ are interchangeable in $\mathcal{C}$ in all formula contexts without change of validity, something which does not happen in $\mathcal{P}$ between $E!^P t$ and $t = t$ - whilst $\vDash_{\mathcal{C}} t = t$ iff $\vDash_{\mathcal{C}} E!^C t$, it is not the case that $\vDash_{\mathcal{P}} t = t$ iff $\vDash_{\mathcal{P}} E!^P t$. In fact, it is possible to specify a finite constraint on $\mathcal{P}$, which yields $\mathcal{C}$ as a subsystem. For, only some formulae of $\mathcal{P}$ contain terms which all denote members of D. If we restrict $\mathcal{P}$ precisely to those formulae, then we obtain a subsystem of $\mathcal{P}$ which is equivalent to $\mathcal{C}$[24]. Hence, given Aberdein's definition from **§1.4**, $\mathcal{P}$ is a classical recapture logic.

A question that arises at this point is what to make of this classical recapture result. Here, free logicians have expressed positions corresponding

[24]For a syntactic argument along the same lines, see Meyer and Lambert (1968).

to different attitudes in Aberdein's scale. On the right-wing front we can find Van Fraassen (1969), Lambert (2002) and Bacon (2013), who all see positive free logic as a generalisation of classical logic (on the Quinean parsing theory). Insofar as the quantifiers and non-empty-termed formulae are concerned, these authors do agree that classical logic is correct; the defects of classical logic are only due to not admitting empty terms. Classical recapture is therefore an important result, confirming that positive free logic can retain classical logic as a special case. A similar point of view, ascribable to a centre-right position in Aberdein's scale, is however rejected by Bencivenga (2002: 187), who maintains that this form of logical conservatism does not do justice to either free or classical logicians. For, proponents of classical logic on the Quinean parsing theory have *their* views about empty terms (viz. there being none of them). And such views, Bencivenga argues, free logicians did very little to preserve. Positive free logic is thereby an *alternative*, rather than a generalisation, of classical logic; and this arguably puts Bencivenga on the left-wing camp.

In any case, in **§1.4** we noted that for proponents of non-classical logics who took a centre-right position towards classical recapture classical logic is in some sense correct to reason about standard cases. From this point of view, it is therefore not just important to revise $\mathcal{C}$ in favour of a logic recapturing it; it is also important that the recapturing logic dispenses, in light with the Maxim of Minimal Mutilation, with as few principles of $\mathcal{C}$ as possible. If the principles of $\mathcal{C}$ are correct for reasoning about standard cases, not being able to retaining them is a cost.

So what principles of $\mathcal{C}$ should one abandon if one were to revise it in favour of $\mathcal{P}$? The first casualties are all the natural deduction introduction and elimination rules governing the quantifiers in $\mathcal{C}$, being all unsound with respect to the semantics of $\mathcal{P}$. This should not be surprising: if semantically the range of the quantifiers in $\mathcal{P}$ is restricted to a subset of the outer domain, this restriction requires a syntactic counterpart, in absence of which the proof theory of $\mathcal{P}$ would be unsound. The required restriction is carried out by means of the predicate $E!^P$, ensuring that, when a quantified formula is introduced or eliminated, the inference is drawn from assumptions referring to the underlying inner domain. Specifically, ∃I and ∃E now look as follows:

$$\frac{\mathbf{A} \qquad E!^P\mathbf{t}}{\exists \mathbf{x}\mathbf{A}[\mathbf{x}/\mathbf{t}]}\ \exists\text{I}$$

$$\frac{\exists \mathbf{x}\mathbf{A} \qquad \begin{matrix}[\mathbf{A}[\mathbf{t}/\mathbf{x}]\&E!^P\mathbf{t}] \\ \vdots \\ \mathbf{B}\end{matrix}}{\mathbf{B}}\ \exists\text{E}$$

where **t** is new and does not occur in **A** or **B**.

Likewise, here are ∀I and ∀E:

$$\frac{\begin{matrix}[E!^P\mathbf{t}] \\ \vdots \\ \mathbf{A}[\mathbf{t}/\mathbf{x}]\end{matrix}}{\forall \mathbf{x}\mathbf{A}}\ \forall\text{I}$$

where **t** is new and does not occur in **A**.

$$\frac{\forall \mathbf{x}\mathbf{A} \qquad E!^P\mathbf{t}}{\mathbf{A}[\mathbf{t}/\mathbf{x}]}\ \forall\text{E}$$

Notice in particular the multiple roles that $E!^P$ plays in this group of rules. For example, in ∃I and ∃E its presence guarantees that we do not draw an existential conclusion from a claim involving a non-existent object - one cannot conclude that there exist winged horses from ‘Pegasus is a winged horse’. In

∀E, the presence of $E!^{P}$ serves two purposes. On the one hand, it blocks inferences from universal claims about all existents to a particular claim about a non-existent - one cannot conclude that Pegasus is spatiotemporally located from 'every (existing) thing is spatiotemporally located'. On the other hand, recall that $\mathcal{P}$ allows for contexts where nothing exists. Since singular claims are false in similar contexts, having $E!^{P}\mathbf{t}$ as a further premise for ∀E guarantees at least the existence of (the thing referred to by) **t**. And with the guarantee that we are not reasoning about a context with no existents, universal elimination can proceed.

When assessing the costs of $\mathcal{P}$, it should be added that free logicians would certainly object to describing the failure of classical ∃I and ∃E as casualties. For, both of these rules are built on the assumption that every term denotes an existent, and the denial of this assumption is precisely a central thesis of free logic in general, and positive free logic in particular. However, a similar line of response does not seem to be available to explain the failure of the classical rules for ∀. Giving up on the assumption that every term denotes an existent should not ideally have an impact on the behaviour of universal quantification. It could be replied that classical ∀E still presupposes that the domain of quantification (of existing things) be non-empty, and this is an assumption which is rejected in $\mathcal{P}$. However, we will see in the next chapter that classical ∀I and ∀E can be held even if not every term denotes an existent *or* nothing at all exists. Hence, the failure of classical ∀I, ∀E is a demerit of $\mathcal{P}$.

Finally, another casualty incurred by $\mathcal{P}$ worth highlighting is the classical principle of substitutivity of co-extensive open formulae. Let **A** and **B** be two formulae containing n free variables $x_1, \ldots, x_n$; then **A** and **B** are co-extensive if, and only if, it is the case that $\forall x_1, \ldots \forall x_n(\mathbf{A} \leftrightarrow \mathbf{B})$. Whilst in $\mathcal{C}$ co-extensive open formulae can always be substituted for one another *salva veritate*, in $\mathcal{P}$ this is no longer the case. For, consider two co-extensive open formulae of $\mathcal{P}$ such as $x = x$ and $x = x \& E!^P x$ - they are co-extensive in that $\vDash_{\mathcal{P}} \forall x(x = x \leftrightarrow x = x \& E!^P x)$. However, suppose now that x picks out a non-existent: the consequence is that $x = x$ is true whilst $x = x \& E!^P x$ is false, and so we have a counterexample to the principle of substitutivity of co-extensive open formulae[25].

Our exposition of $\mathcal{P}$ gave us an overview of one way in which we could solve some problems of adequacy to the data which $\mathcal{C}$ on the Quinean parsing theory incurs in handling non-existent intentional objects, and the implications associated with such an attempt.

We will now turn, in the next chapter, to presenting the second programme of logical revision we will be concerned with. Before, however, we can quickly take stock of what in this chapter has been claimed.

2.4 Conclusion

We have started by distinguishing between two parsing theories of $\mathcal{C}$: the Fregean-Russellian one and the Quinean one. We then focused our attention on four valid principles of $\mathcal{C}$ on the Quinean parsing theory. After having distinguished between *de re* and *de dicto* intentionality, we have argued that the four principles in question are inadequate to the data, and ought to be rejected. We then presented some lines of argument available to proponents of $\mathcal{C}$ on the Quinean parsing theory to oppose this claim, but found all of them unconvincing. Finally, the rest of the chapter was dedicated to presenting the key elements of the free logic programme of logical revision in general, and of its positive ramification in particular. There are, however, other ways

[25] Leeb (2006) however showed that substitutivity of co-extensive open formulae can be restored for positive free logic in his State of Affair Semantics. Yet on this semantics, the extension of a formula is no longer a truth-value, but rather a state of affairs construed essentially as a set.

in which the project of revising logic can be carried out. The next chapter is concerned with one of those.

Chapter 3

Noneism

3.1 Introduction

In taking the phenomenon of *de re* intentionality seriously, we thereby take seriously the idea that reality, besides including things that exist, also includes things, such as purely fictional and mythological objects, that do not. If such is how the real world is, then the system $\mathcal{P}$ of positive free logic delivers an account of reasoning more adequate to the data than $\mathcal{C}$ on the Quinean parsing theory. And we think that this is indeed how the real world is.

As we have seen, the free logic programme assumes the Quinean parsing theory to be correct: existence is captured by $\exists$. Other revisionary traditions have taken another path, and this chapter is concerned with one of them: noneism. We will therefore start by spelling out the revisionary proposal of noneism, and introduce a system of logic, $\mathcal{N}^R$, implementing its principles - the reason for the superscript '^{R}' will become clear shortly. This will give us two candidates systems for logical revision: $\mathcal{P}$ and $\mathcal{N}^R$. Each one of them delivers a certain account of reasoning, and our task at that point will be to single out the one underpinned by the logic with the highest degree of rationality, as codified by the anti-exceptionalist mechanism of theory choice illustrated in **Chapter 1**. As far as adequacy to the data, expressive power, simplicity and adherence to the Maximal of Minimal Mutilation are the criteria guiding rational theory choice, the best theory appears to be $\mathcal{N}^R$, or so we will argue by the end of **§3.2**.

The rest of this chapter is dedicated to looking at noneism from another point of view. Indeed, describing noneism as a programme of logical revision is only part of the story. For, noneism is also a fully-fledged metaphysical theory concerned with providing a systematic account of intentionality. And, if the phenomenon of intentionality calls for a revision of logic, it is important to know more about intentionality itself, and what issues emerge when theorising about it.

First of all, it is important to note that noneism accounts for intentionality in a modal framework, which is essentially required to provide an account of *de dicto* intentional contexts. Since our discussion so far has set such contexts aside, however, our interest in this part of the chapter will be exclusively on the non-modal aspects of noneism. The most important contribution of noneism in this regard is its anti-literalism, or the view that non-existents cannot have in reality existence entailing properties. Of course, *anti*-literalism suggests also a rival view, literalism. We will talk about them in **§3.3**.

The rest of the chapter is dedicated to the most fundamental issue arising when theorising about the non-existent: its ontological dependency on the existent. We will have a first look at the issue in **§3.4**, when we will discuss an account put forward by Crane (2016) on which, roughly, non-existents depend for (almost) the entirety of their properties on the *representational* activities of cognitive agents. This view, we argue, should be resisted.

We then move on, in **§3.5**, to see how the issue of the ontological dependency of the non-existent on the existent is framed within the modal framework of noneism. Here we need to distinguish between *realist* forms of the view and *anti-realist* forms thereof. One way to characterise the distinction is by saying that, on the realist picture, a non-existent is not ontologically dependent on any existent object; it would have still been an object, for example, had nothing ever existed. The anti-realist disputes this.

In **§3.5.1**, we will see the different stories these theories deliver in accounting for the baptism of a purely fictional character. The anti-realist might be thought as having a certain advantage over the realist, being the only one entitled to talk of creation of a purely fictional character, thereby vindicating ordinary intuitions. Moreover, the system $\mathcal{N}^R$, our preferred candidate for logical revision, is more intuitively thought of as implementing realist assumptions (hence, the superscript '^{R}'). So, it might be argued that the predictions made by this system are not as good as we had thought. In **§3.5.2**, we show that the advantage that the anti-realist seems to have is merely apparent. The data which anti-realist noneism claims to be able to account for can also be accommodated in $\mathcal{N}^R$ by expanding it in an obvious way. The expansion provided shows that there is a clear, non-metaphorical sense in which talk of creation of a purely fictional character is not precluded to the realist. There remain residual divergences between realism and anti-realism, but it is far from clear that common sense favours the anti-realist account.

After this last section, we will sum up the content of this chapter.

3.2 Two Candidates

This section is divided into three parts. In the next sub-section, we will introduce the characterising aspect of the noneist programme of logical revision: its non-Quinean parsing theory. We will then present some evidence from linguistics supporting the non-Quinean parsing theory of noneism (**§3.2.2**). Then, in **§3.2.3** we will present the system $\mathcal{N}^R$, which is admittedly a trivial adaption of $\mathcal{C}$, but is still worth looking at for our discussion in the second part of this chapter. Finally, in **§3.2.4**, we will argue from anti-exceptionalist grounds that theory choice is most rationally exercised by favouring $\mathcal{N}^R$ over $\mathcal{P}$.

3.2.1 Non-Quinean Parsing Theory

We saw in the last chapter that the essence of the free logic programme, as described by some of its advocates, is the attempt to embed the Quinean parsing theory within systems other than $\mathcal{C}$ - $\mathcal{P}$ being a case in point.

This sub-section is concerned with another revisionary programme, which despite sharing with free logic the same kind of dissatisfaction with $\mathcal{C}$ on the Quinean parsing theory, could be interpreted as being driven by a different goal: providing $\mathcal{C}$ with a non-Quinean parsing theory. The gist of the Quinean parsing theory is that the 'exists' predicate can be reduced to a combination of identity and $\exists$ which, as we know, presupposes an existentially loaded reading of $\exists$. Thus, a non-Quinean parsing theory will accordingly interpret $\exists$ in *existentially* (or *ontologically*) *neutral* terms. The revisionary programme in question is that of noneism.

In the words of of its initiator,

> There are [...] two main ways of reforming classical quantification theory, by (existence) free logics [...] and, more radically, by (ontologically) neutral logics [...] Free logic changes both the formalism and (therefore) the interpretation of classical quantificational logic. Neutral logic changes the interpretation of quantification and accordingly can retain its formalism; but it augments the formalism in such a way as to include the correct insights and criticisms of free logic (Sylvan (1980: 74-75)).

The insights and criticisms of classical logic put forward by free logic are described as 'correct' by Sylvan. Thus on the one hand, the common root the two revisionary programmes originate from is clearly acknowledged.

At the same time though, the commonalities do not extend much further. The possibility for terms to refer to non-existents on the one hand, and the retention of the Quinean parsing theory on the other, inevitably brought free logicians to revise the classical semantics and rules of inference for $\forall$ and $\exists$ (what Sylvan calls the 'formalism' of classical logic) as we saw earlier. However, in dispensing with the Quinean parsing theory, a logic could by contrast retain the classical formalism as it is, save for the fact that it is now re-interpreted in non-Quinean terms.

Moreover, in the passage above, Sylvan describes this form of revisionism as more radical than the one proposed by free logicians, and a few pages later refers to the free logic programme as a 'halfway house [...] scarcely likely to make the transition to a fully liberated logic easier' (1980: 79). There is a fundamental reason why Sylvan is right, which we have already encountered in the last section of the previous chapter. That is, in free logic one cannot talk generally about non-existents, despite resorting to a semantics, such as that of $\mathcal{P}$, fully acknowledging them as entities. For example, in $\mathcal{P}$ one can truthfully assert that Pegasus does not exist, but not that *some things* do not - which would seem the natural consequence of the previous assertion. To truthfully assert that some things do not exist, the further transition towards a non-Quinean parsing theory is inevitable.

Here is the essence of the non-Quinean parsing theory of noneism, outlined by one its champions:

> [N]oneists such as myself, hold that one can quantify over something without taking it to exist. More specifically, what is most

> naturally called the *particular* quantifier (being the dual of the *universal* quantifier) should not be read as 'there exists' – or even 'there is', there being no real difference between being and existence; it should simply be read as *some*, leaving it open whether the some in question exists or not. This view flies in the face of current orthodoxy, as is witnessed by the fact that nearly every logic textbook will simply call the particular quantifier the *existential* quantifier without further comment and write it as $\exists$, which invites this reading (Priest (2008: 42)).

Priest argues that the Quinean reading of $\exists$ in terms of 'there is' or 'there exists' should be replaced by one that does not carry existential implications, and 'some' is adequate for this job. If 'some' is to leave open whether the some in question exists or not, then being identical with *some thing* is not, *contra Quine*, automatically equivalent with being identical with an existent. Consider Pegasus: being identical with itself, it is identical with something, but that thing (Pegasus itself) is a non-existent. So, existence cannot be reduced to a combination of quantification and identity. To exist, from a noneist point of view, is simply to enjoy the property expressed by the monadic predicate $E!^N$, under the assumption that $E!^N y \neq \exists x(x = y)$.

One quick comment is now in order about the symbolism used throughout this chapter. Priest (2016b: 13) proposes to abandon the usual symbolism of quantification and replace it with one not tied, unlike the old $\forall$ and $\exists$, to the usual Quinean interpretation. In his formalism, universal quantification is thus expressed by the novel symbol $\mathfrak{A}$ (standing for 'all') and particular quantification by $\mathfrak{S}$ (standing for 'some') - *particular*, as he notes above, because it is the actual dual of *universal* quantification. However, we will not follow his proposed convention here, and keep $\exists$ to express (neutral) particular quantification. This is merely a terminological point, but if particular quantification is governed, as Routley observes, by the same principles as existential quantification in classical logic, then changing the symbolism is an unnecessary concession to the Quinean. If the latter has a faulty interpretation of $\exists$, then it seems to us that it is up to her to devise a new symbol expressing her existential quantification. Using $\exists$ to express neutral particular quantification seems to us the most intuitive move to make for the kind of reform that noneism wishes to bring about.

In any case, if $\exists$ is given a neutral reading, then using $\exists$ alone to formalise general existential statements will clearly not do. To formalise general existential statements, the noneist will also have to help herself to her existence predicate $E!^N$. Here are three examples of what this means exactly. Consider the sentence 'there exist wolves'; this is now parsed as $\exists x(E!^N x \& Wx)$. Another example, 'there are tigers'; its parsing is now given as $\exists x(E!^N x \& Tx)$. Moreover, consider 'John is carrying something'; we would have to parse this $\exists x(Cjx \& E!^N x)$, and specify that the thing John is carrying is an existent. This is due to the fact that it would seem that John cannot *carry* something which does not exist; on the Quinean parsing theory, by contrast, a similar specification would be redundant. Finally, 'some things do not exist' now becomes $\exists x(\neg E!^N x)$, a claim which noneism intends to vindicate.

We now have an intuitive understanding of the kind of logical revisionism which noneism proposes, and the new parsing theory that derives from such form of revisionism. In **§3.2.3**, we will give a semantics for the system $\mathcal{N}^R$, implementing the assumptions encountered in this sub-section. Before turning to those matters, however, a few words are needed as to whether the main tenet of the programme of logical revisionism proposed by noneism, its understanding of quantification in existentially neutral terms, could find any ground in linguistic theorising. This issue will occupy us in in the next sub-section.

3.2.2 Linguistic Data

In **§3.2.1**, we described as the main principle of noneism *qua* programme of logical revision its taking quantification as being existentially neutral. A similar view targets the equivalence, holding in $\mathcal{C}$ on the Quinean parsing theory, between the two predicates '... exists' and '... is identical with something'. This sub-section, we noted at the end of **§3.2.1**, is concerned with presenting what linguistic evidence, if any, is available to ground the legitimacy of the noneist form revisionism under discussion in this chapter.

First of all, we can in part rely on our previous discussion in **§2.2.3**. Our discussion has highlighted the presence of accounts, defended by linguists such as Moltmann (2013, 2015, 2020), on which natural language contains several existence predicates which, when occurring in negated sentences in the present tense, may well express truths - for instance of the form '**t** does not exist'. This evidence, notice, does not by itself support noneism; it may as well support a form of free logic such as $\mathcal{P}$, as we have seen in the previous chapter. The thesis at the core of the noneist programme of logical revision, therefore, needs to find a correspondence with further data from natural language not yet considered.

We start by calling attention to a remark by Moltmann (2020) who has proposed an answer (in the affirmative) to the question whether natural language permits a form of existentially neutral quantification. In fact, not only does natural language, according to Moltmann, permit such a form quantification; natural language *primarily* reflects the view that quantification is existentially neutral:

> The common, Quinean view is that existence is expressed by quantification or the *there is/are*–construction. In natural language, however, existential quantifiers and *there is/are* do not as such convey existence. Natural language rather reflects the Meinongian view according to which quantifiers such as *a*, *some*, *two* and *there is/are* are neutral regarding existence and non-existence, as is the use of 'referential' singular terms (names and definite descriptions).
>
> They can all be used to talk about 'nonexistent entities. In natural language, existence is not expressed by quantifiers, but instead by existence predicates such as *exist* in English. This is reflected, for example, in the possible truth of Meinongian statements such as (1), where *there are* ranges over things of which existence is denied:
>
> (1) There are objects of thought that do not exist (Moltmann (ibid.: 314-315).

In this passage, Moltmann first contrasts the Quinean interpretation of quantification with what she calls the *Meinongian* one - the noneist interpretation, rooted in the work of Austrian philosopher Alexius Meinong[1], is subsumed under the latter. Then, Moltmann goes on to claiming that, of those two rival views, it is the Meinongian one which is reflected in natural language. For quantifiers, it is said, are *neutral* with respect to whether the entities they could be used to quantify over exist or not, just as per the noneist account outlined in **§3.2.1**. To hammer the point home, Moltmann concludes by providing an example of true sentence involving noneist (and, so, Meinongian) neutral quantification, namely, sentence (1) in the passage.

[1]See in particular Meinong (1960).

Although perhaps the example provided by Moltmann in the passage may be disputed by appealing to a more sophisticated analysis of it[2], we agree with Moltmann that a much better case for seeing the presence of neutral quantification at work in natural language comes from other constructions. Specifically, those involving noun phrases modified by relative clauses containing intentional predicates.

Consider for example sentences such as I1-I3 below:

I1 There are some events that John read about that did not take place.

I2 There are buildings described in the book that do not exist.

I3 Some buildings the guide mentions do not exist.

We can see that the noun phrases 'some events', 'buildings' and 'some buildings' in I1-I3 respectively, are each modified by a relative clause containing an intentional predicate: 'read about by John', 'described in the book' and 'mentioned by the guide' respectively.

According to Moltmann (2020: 316), I1-I3 represent sentences of ordinary English which 'do not presuppose any form of philosophical reflection'. The thought here is that such sentences are ordinarily used by competent speakers to covey a content which is easily envisaged to be accepted as true.

What makes this possible appears to be crucially due to the fact that I1-I3 contain relative clauses involving an occurrence of in intentional predicate. By removing such clauses, one could hardly imagine that the resulting sentences be accepted by competent speakers. For, consider:

I1* There are some events that did not take place.

I2* There are buildings that do not exist.

[2] If, for example, objects of thought are understood as mental representations, as per the account sketched in **§2.2.4**, then the example referred to by Moltmann as evidence for the presence of neutral quantification in natural language would misfire.

I3* Some buildings do not exist.

In I1*-I3*, the relative clauses appearing in I1-I3 have been removed. Those sentences, if uttered in any ordinary context, would plausibly be deemed as false, and perhaps even infelicitous. The reason seems to be, that general terms such as 'buildings' or 'events' carry an existential force *in absence* of modifiers such as clauses featuring intentional predicates[3].

If this is correct, we think that the right conclusion to draw here is twofold. On the one hand, quantificational expressions of natural language may have an existential import. This is witnessed by the fact that sentences such as I1*-I3* appear at least to be false, if not infelicitous altogether. At the same time, reflection on examples such as I1-I3 equally shows that, if quantification exclusively came with an existential import, we would thereby struggle to make a coherent of sense of such sentences, which we can undoubtedly make. And this, in turn, we take to show that there is a coherent sense to be made of non-existentially loaded quantification in natural language, thereby giving legitimacy to the noneist programme of logical revision.

Having argued that evidence from natural language supporting this programme is available, we now want to look more closely at the formal details of it. We had anticipated towards the end of **§3.2.1**, that in **§3.2.3** we would have provided a semantics for a system, $\mathcal{N}^R$, implementing the main revisionary principles of noneism. Let us now, as promised, carry out this task.

3.2.3 $\mathcal{N}^R$

Providing the required semantics, it turns out, is admittedly a trivial task. For example, the modal semantics given by Priest (2016b: 11-12; 31-32) for the five connectives, quantifiers and identity is exactly as per $\mathcal{C}$ - with the proviso

[3] Or *intensional* predicates as well, such as temporal predicates shifting the time of evaluation of a sentence - as Moltmann (2020: 316) correctly observed.

that since quantifiers are now interpreted as non-existentially loaded, their domain may well include non-existents. From Priest's semantics we could therefore read off a non-modal system, call it $\mathcal{N}^R$, a model $\mathcal{M}^{\mathcal{N}^R} = \langle D, \nu \rangle$ for which is exactly analogous to a model for $\mathcal{C}$. The crucial difference, which distinguishes this system from both $\mathcal{C}$ (on the Quinean parsing theory) and $\mathcal{P}$ concerns the 'exists' predicate ($E!^N$). In the latter two systems, the stipulation concerning the 'exists' predicate, in line with the Quinean parsing theory, was that its extension was identical to the domain of the quantifiers. In this new system by contrast, we simply have that $\nu(E!^N) \subseteq D$, so that there is no guarantee that the domain of the quantifiers is only populated by existents - in fact, nothing prevents that there may be models even without any of them. An appropriate semantic clause for $E!^N$ is thus in order:

N10 $\mathcal{M}^{\mathcal{N}^R}, g \vDash_{\mathcal{N}^R} E!^N\mathbf{t}$ iff $\nu^g(\mathbf{t}) \in \nu(E!^N)$.

Now, it is immediate to see why EP, LNE, GEP, and NGEP all fail given the semantics presented. For the sake of illustration, however, let us give the semantic arguments needed.

As for EP, suppose t stands for Pegasus and let M be the predicate '... is a mythological character'; then presumably, $\nu(t) \in \nu(M)$, but $\nu(t) \notin \nu(E!^N)$. Hence, the principle fails.

LNE is immediately undermined by the condition that $\nu(E!^N) \subseteq D$. Suppose t stands for Sherlock Holmes; then, $\nu^g(t) \notin \nu(E!^N)$, and so $E!^N t$ is false. Hence, it is not the case that, for arbitrary $\mathbf{t}$, $\vDash_{\mathcal{N}} E!^N\mathbf{t}$. In fact, as we mentioned earlier, given that there is no stipulation ruling out the case where nothing exists, namely where $\nu(E!^N) = \emptyset$, there may be models $\mathcal{M}^{\mathcal{N}^R}$ of $\mathcal{N}^R$ such that, for arbitrary $\mathbf{t}$, $\mathcal{M}^{\mathcal{N}^R} \vDash_{\mathcal{N}^R} \neg E!^N\mathbf{t}$.

Now for GEP and NGEP, starting with the former. Let p stand for Ponce De Leon, f for the Fountain of Youth, and S be the dyadic relation '... sought for...'; then consider a model $\mathcal{M}^{\mathcal{N}^R}$ of $\mathcal{N}^R$ where $\nu(p) \in \nu(E!^N)$, $\nu(f) \notin \nu(E!^N)$ and $\nu\langle p, f\rangle \in \nu(S)$. Whilst $\mathcal{M}^{\mathcal{N}^R} \vDash_{\mathcal{N}^R} Spf$, we also have $\mathcal{M}^{\mathcal{N}} \nvDash_{\mathcal{N}} E!^N f$. Thus, here we have a counterexample to GEP.

As for NGEP, suppose j stands for John, g for Gandalf, m for Mickey Mouse and P be the three-place relation '... prefers... to...'; consider a model $\mathcal{M}^{\mathcal{N}^R}$ of $\mathcal{N}^{\mathcal{R}}$ where $\nu(j) \in \nu(E!^N)$, $\nu(g) \notin \nu(E!^N)$, $\nu(m) \notin \nu(E!^N)$ and $\nu\langle j, g, m\rangle \in \nu(P)$. Whilst $\mathcal{M}^{\mathcal{N}^R} \vDash_{\mathcal{N}^R} Pjgm$, we also have $\mathcal{M}^{\mathcal{N}^R} \nvDash_{\mathcal{N}^R} E!^N g$ and $\mathcal{M}^{\mathcal{N}^R} \nvDash_{\mathcal{N}^R} E!^N m$. So, this is a counterexample to NGEP.

As a result, like $\mathcal{P}$, $\mathcal{N}^R$ too can avoid the problems of adequacy to the data, highlighted in the previous chapter, incurred by $\mathcal{C}$ on the Quinean parsing theory.

Now, we should ask whether $\mathcal{N}^R$ is a classical recapture logic. That is, is there a finite constraint which can be imposed on $\mathcal{N}^R$, generating a proper sub-system of it equivalent with $\mathcal{C}$? The answer is yes, and this appears quite clearly if we look at the differences between $\mathcal{N}^R$ and $\mathcal{C}$ from a semantical point of view. The only difference is that, in $\mathcal{C}$, every term denoted an existent, because the extension of the 'exists' predicate was identical with the domain of quantification; that is, we had $\nu(E!^C) = D$. In $\mathcal{N}^R$, terms are allowed to denote non-existents, as the 'exists' predicate singles out a subset of the domain of quantification, that is, we have $\nu(E!^N) \subseteq D$. Now, suppose we restrict $\mathcal{N}^R$ precisely to those formulae such that any term occurring in them, free or bound variable or individual constant, refers in $\nu(E!^C)$. What we obtain is a sub-system of $\mathcal{N}^R$ where $\nu(E!^N) = D$, and this system can be obviously shown to be equivalent to $\mathcal{C}$. Hence, $\mathcal{N}^R$ is a classical recapture logic.

We consider this an important fact, showing that $\mathcal{N}^R$ can still retain $\mathcal{C}$ as a special case[4]. Moreover, as we pointed out earlier in **§2.3**, in $\mathcal{P}$ the classical rules for $\exists$ and $\forall$ are unsound. In $\mathcal{N}^R$, by contrast, they remain sound; although of course they are purged of their existential import. Adherence to the Maxim of Minimal Mutilation is at stake here, as it is when we also consider that $\mathcal{N}^R$ can retain the principle of substitutivity of co-extensive open formulae which, as we know, one looses in $\mathcal{P}$.

In this sub-section, we have given a quick and informal presentation of the noneist system $\mathcal{N}^R$. In the next sub-section, we argue that given certain criteria for theory choice, relying on it instead of $\mathcal{P}$ is the most rational choice to account for the data which *de re* intentionality presents us with.

3.2.4 Logical Theory Choice

As we saw earlier in **§1.2**, we have a methodology to make a rational choice between different logics. It reflects the very same abductive mechanism underlying the rational choice of a scientific theory. Logical theorising, on the methodology assumed here, is a scientific enterprise.

Scientific theories are assessed based on the extent to which they satisfy certain criteria, and a selection between them is the result of determining which one, in terms of cost-benefit, does a better job satisfying those criteria. As we noticed, this requires assigning each criterion considered for theory choice a certain weight, reflecting how important it is for a theory to score well against it. Of course, the weight assigned to a criterion is very much relative to what a theory has to explain, what it is a theory of. Thus for instance, the criterion of adequacy to the data, roughly understood as a theory's capacity of making correct predictions, will presumably be paramount for a theory having to account for empirical phenomena such as, say, the process

[4] Sylvan (1980: 188) too considers the classical recapture result for an analogous system of neutral quantification as showing its generalising $\mathcal{C}$.

of crystallisation of a solid. It may not receive, however, the same importance in other areas such as mathematics, where what counts as correct data is perhaps not equally clear. This also shows that, in order to determine the weight of a criterion, a certain amount of unpacking appears to be required.

In the context at hand, we selected four criteria for theory choice: adequacy to the data, simplicity, expressive power and adherence to the Maxim of Minimal Mutilation. So, let us say a bit about them before giving scores to $\mathcal{N}^R$ and $\mathcal{P}$ - we will not *literally* be giving scores to those systems, but simply note roughly how well (or badly) they perform with respect to each one of the criteria considered; our discussion will be carried out informally.

First of all, one word about why we focused on those four criteria. Every list of criteria for logic choice will inevitably involve some level of arbitrariness[5]. In our case, we have simply relied on pretty standard assumptions, to keep things as clear and uncontroversial as possible. As far as adequacy to the data, simplicity, and power are concerned, we have seen in **§1.2** that for example Priest (2014, 2016a) and Williamson (2017) consider them in their lists of criteria for logic choice. Adherence to the Maxim of Minimal Mutilation, on the other hand, reflects our assumption that $\mathcal{C}$ on the Quinean parsing theory, despite its inadequacies in handling *de re* intentional contexts, is still in some sense correct to reason about standard cases. Accordingly, its revision should be as conservative as possible. Of course, what the standard cases are is a contentious matter; in most contexts of our ordinary life, however, by reasoning classically one would seem to make correct predictions.

Which takes us to justify how much we weight our criteria. We clarified in **§1.3** that we are assuming logical theorising as being concerned with delivering an account of correct reasoning. For this reason, the criterion of adequacy to the data is paramount for our discussion; it is the most important criterion.

[5]For discussion, see Quine and Ullian (1970) and Lycan (1988).

And what we are taking the data of logical theorising to be, we have already said in the previous chapter: the validity or invalidity of vernacular arguments. These are the data a logic has to be prepared to accommodate.

As concerns the power of a theory, we distinguished in **§1.4** between expressive and deductive power. We are considering here 'power' in the sense of expressive power, which we defined as a theory's capacity to preserve distinctions. It is certainly a virtue for a theory to be expressive, but by no means as important as being adequate to the data.

Simplicity can certainly be spelled out in many ways. Thus for instance, in context of logical theory choice, Priest (2019) distinguishes between *conceptual* simplicity and *ontological* simplicity. Ontological simplicity can be roughly understood in terms of the costs associated with the kinds of entities a theory requires to account for the data it aims to explain. In the present dispute, ontological simplicity does not seem to be of particular relevance. As for conceptual simplicity, it can be roughly measured by the complexity of a theory, which in turn would require some unpacking. Given our presentation of $\mathcal{P}$ and $\mathcal{N}^R$, we can take it as measured by the complexity of their models. This is admittedly very vague, and perhaps inevitably so. We therefore take simplicity so defined as the criterion with the lightest bearing on the rationality of a logic.

Adherence to the Maxim of Minimal Mutilation has a certain weight for us, but of all the criteria it is the most contentious. Logicians taking what we called in **§1.4** a radical left attitude towards the phenomenon of classical recapture, for instance, would not be particularly impressed by a logic scoring well with respect to this criterion. Thus, let us suppose that it bears more weight than simplicity, but less than expressive power.

To sum up these considerations, here is our ranking of the criteria in decreasing order of weight:

1. Adequacy to the data
2. Expressive Power
3. Adherence to the Maxim of Minimal Mutilation
4. Simplicity

We now have a list of criteria for theory choice and a ranking in terms of their weight. Let us now see how well $\mathcal{P}$ and $\mathcal{N}^R$ score with respect to those criteria.

Adequacy to the Data

We already noted that $\mathcal{P}$ cannot accommodate data from general talk about non-existents, despite admitting such entities in the domain of discourse. This is unfortunate, as for example the fact that people often tell stories about (or think of, or fear) *some things* which do not exist, is a data point which needs to be accommodated. And for this to be possible, non-existentially loaded quantification appears to be required.

It may be replied that the whole issue is not a big deal, for once we can accommodate singular talk of non-existents ('Holmes is a detective', 'Pegasus does not exist', 'Anna thought about Oliver Twist') we have already, at least implicitly, accommodated general talk about them, even if we cannot express it. In response, one could point out how odd a similar claim would be if it were used to justify the (odd) view that general talk of existent objects is not necessary. No one, in other words, would seriously say that once we can accommodate singular talk of existent objects, we could take general talk about them as sorted and be content even if we could not express it. So why the double standard?

One answer may be that most of the time we deal with existent objects, and this justifies having an existentially loaded device. Maybe, but it is at least dubious whether a similar answer could justify not having a a device expressing non-existentially loaded quantification. For, without it we would fail to account for many instances of correct argumentation. Consider for instance the following argument:

- Pegasus does not exist. *Therefore*, some things do not exist.

This is a vernacular inference which most people find correct, and represents a data point that needs to be accounted for. In particular, on the defining criterion for an existence predicate we introduced in **§2.2.3**, the premise of the argument is true. For recall, *exists* on that criterion qualifies as an existence predicate, and this means the present tense sentence '**t** does not exist' comes out true if **t** does not stand, like Pegasus, for an actual individual. As for the conclusion of the inference, it can be hardly maintained to be necessarily false. On the contrary, we have seen earlier in this chapter (**§3.2.2**) that evidence for neutral quantification over things which do not exist is available. A logic capable of accounting for the data, accordingly, will need to vindicating this inference.

In $\mathcal{P}$, however, it is easy enough to construe a model of $\mathcal{P}$ invalidating the argument. Consider any model where $\neg E!^P p$ is true (p stands for Pegasus and denotes outside the inner domain); since 'some' is treated as equivalent to 'some existent', 'some things do not exist' has to be parsed as $\exists x(\neg E!^P x)$, and this formula has no model.

By contrast, $\mathcal{N}^R$ is built precisely on the negation of the equivalence between 'some' and 'some existent', and can therefore account for the validity of the inference: $\neg E!^N p$, in this system, entails $\exists x(\neg E!^N x)$.

Likewise, consider:

- Some things do not exist. *Therefore*, New York is in Brazil.

It is difficult to maintain that anyone reasoning in this way in public would not be corrected. To account for this data point, once again, neutral quantification is essentially required (to model the truth of the premise). Since in $\mathcal{P}$, though not in $\mathcal{N}^R$, we could only account for the argument by treating it as valid, $\mathcal{P}$ appears to make incorrect predictions.

As far as the criterion of adequacy to the data is concerned, we conclude, $\mathcal{N}^R$ does a much better job than $\mathcal{P}$.

Expressive Power

As concerns expressive power, $\mathcal{N}^R$ is certainly more expressive than $\mathcal{P}$. For one thing, as we saw, $\mathcal{N}^R$ can distinguish between quantification and existence. In fact, from a purely formal point of view, the only real difference between $\mathcal{N}^R$ and $\mathcal{P}$ can be described by saying that the former allows quantification over the outer domain, and the latter does not. One, therefore, in $\mathcal{N}^R$, is not forced to treat, say, 'something is identical to a' and 'a exists' as equivalent. The former can be expressed as $\exists x(x = a)$, the latter as $E!^N a$. These formulae have different truth-conditions: if a is a non-existent, then $\exists x(x = a)$ is true whilst $E!^N a$ false.

$\mathcal{P}$, by contrast, collapses the distinction between quantification and existence: to say that something is identical to a is just equivalent to saying that a exists: $\exists x(x = a)$ and $E!^P a$ are treated as logically equivalent.

Moreover, in $\mathcal{P}$ there is only one kind of quantification, and that is existentially loaded. Accordingly, one is forced to treat as false both 'something is such that **A** and does not exist' and 'something is such that not-**A** and does not exist'. These sentences are respectively expressed by $\exists x(\mathbf{A}[x] \,\&\neg E!^P x)$

and $\exists x(\neg\mathbf{A}[x]\ \&\neg E!^{P}x)$, and they are treated as logically equivalent because the second conjunct expresses a contradiction.

By contrast, $\mathcal{N}^R$ can discriminate between the two forms of quantifications. Thus, $\exists x(\mathbf{A}[x]\ \&\ \neg E!^{N}x)$ and $\exists x(\neg\mathbf{A}[x]\ \&\ \neg E!^{N}x)$ are independent from one another.

The discriminatory power of $\mathcal{N}^R$ is superior to the discriminatory power of $\mathcal{P}$, which means that the former fares better than the latter with respect to the criterion under consideration.

Adherence to the Maxim of Minimal Mutilation

This criterion measures the degree of conservativeness of logical revision, that is, the damage we would make to $\mathcal{C}$ by revising it for a certain logic. We have seen that both $\mathcal{P}$ and $\mathcal{N}^R$ are classical recapture logics, and this we found to be an important result. We have already pointed out the costs incurred in revising $\mathcal{C}$ by $\mathcal{P}$. The casualties are the rules for $\forall$ and $\exists$ on the one hand, and the subsitutivity of co-extensive open formulae, on the other. Since $\mathcal{N}^R$ does not force us to depart from any of these principles, the kind revision it brings about is the most conservative of the two. We conclude that $\mathcal{N}^R$ scores better with respect to the criterion at hand.

Conceptual Simplicity

As we said, we are taking simplicity as *conceptual* simplicity, understood in terms of the complexity of a theory's models. If we look at the models of $\mathcal{P}$ and $\mathcal{N}^R$, the latter are simpler, but not in a particularly important way. The main complication which $\mathcal{P}$ incurs here is the distinction between inner and outer domain, which is in itself a very simple addition. In this case, what is probably best to do is score $\mathcal{P}$ and $\mathcal{N}^R$ on a par with respect to the criterion of simplicity.

This was the last of our criteria to consider for theory choice. Before concluding and turning to other matters, let us quickly recap in Table 3.1 below how we scored $\mathcal{P}$ and $\mathcal{N}^R$ - a ✓denotes an advantage, whereas a blank denotes a tie.

	$\mathcal{N}^R$	$\mathcal{P}$	Weight
Adequacy to the Data	✓		High
Expressive Power	✓		Medium/High
Adherence to the MMM	✓		Medium
Conceptual Simplicity			Medium/Low

TABLE 3.1: Theory Choice: $\mathcal{P}$ and $\mathcal{N}^R$.

As shown in Table 3.1, $\mathcal{N}^R$ has an advantage over $\mathcal{P}$ with respect to all the four criteria considered for theory choice, except for simplicity, where the scores are about the same. Choosing $\mathcal{N}^R$, at this point, appears to be the most rational choice to make if we want a good logic accounting for the data that *de re* intentionality presents us with.

We concluded in this sub-section a task which we set out to do on the very first page of **Chapter 1**, that is, offering an account of logic choice when revising logic in light of *de re* intentionality. We started by explaining what we assume to be at stake in logical theorising. This theoretical activity, we said in **§1.3**, is essentially concerned with giving an account of vernacular reasoning. We then went on in the next chapter to clarify what are the data we have to account for when undertaking such a project, and identified those with those inferences in the vernacular which our intuitions acknowledge as (in)valid. Then, we highlighted a class of valid principles of $\mathcal{C}$ on the Quinean parsing theory, which systematically clash with the data coming from phenomena of *de re* intentionality, namely, the fact that through our cognitive abilities we can be related to objects that do not exist. Thus, we introduced the system $\mathcal{P}$ of positive free logic, our first candidate for logical revision, which delivered a better account of reasoning. In this chapter, we first encountered the revisionary programme of noneism, and then presented $\mathcal{N}^R$, a system implementing its non-Quinean parsing theory. The account of reasoning it delivers constitutes an improvement over $\mathcal{P}$. It is the best logic we have to account for the data we have been considering in this work.

Now, the data in question concern intentionality, and as we noted in the introduction, 'noneism' does not just denote a programme of logical revision but also a theory of intentionality itself. Intentionality requires that we take the non-existent seriously. The non-existent is a vast jungle of objects of different kinds: from purely fictional to mythological characters, from objects of erroneous scientific theorising to, according to some, numbers and abstract objects. Such objects are ubiquitous in every day talk and many things are said about them in ordinary contexts. Some of these things are literally true whilst others literally false. This is the main principle of noneism *qua* theory of intentionality, and the next section is about it. This will give us a philosophical framework in which to understand the issue we will take up in two sections, until the rest of the chapter. The issue, namely, of the ontological dependency of the non-existent on the existent. Let us, however, come to that issue after having said something about what is literally true and what is not about non-existents.

3.3 Literalism and Anti-Literalism

Non-existents are objects, and just like existent objects, they are different from one another. Just like the Eiffel Tower is not the Colosseum, it may be said, so Holmes is not Cinderella. Non-existents thus appear to be discriminable in terms of their properties. But in what sense do they have properties? This is the topic of this section. For definiteness, we will restrict our attention to purely fictional and mythological characters. We will first draw a distinction between two contexts in which a property is ascribed to a non-existent of either kind. Then, we will introduce a distinction between two views with different ideas as to what sorts of properties non-existents have in reality. The views in question are literalism and anti-literalism, which we will encounter in this order - noneism, as anticipated in the introduction, has espoused the latter view. We will then take stock before turning, as promised, to talk about non-existents *qua* ontologically dependent objects.

In the previous chapter, we have encountered some examples of properties of non-existents, and relations we bear to them. To some extent, they are all pretty straightforward and not too problematic. At least for those who do not see a problem in saying that reality includes non-existents, it appears obvious that Holmes is a non-existent who has the property of being a purely fictional character, or that the Fountain of Youth is a non-existent related to Ponce De Leon because the latter sought for the former. What these examples have in common is that they involve properties which are not ascribed to non-existents *in the stories* in which they feature. Rather, they are ascribed to them in external discourse *about* those stories. Hereafter, we will say that properties ascribed to fictional and mythological objects in external discourse about *both* fiction *and* myth are *extra-fictionally* ascribed to them. Perhaps we should say that a property ascribed to a mythological object in external discourse about myth is *extra-mythologically* ascribed to it, but we find this terminology quite cumbersome.

Phenomena of extra-fictional ascriptions of properties need to be contrasted with phenomena of *intra-fictional* ascriptions thereof[6]. For example, in his stories Doyle characterised Holmes as being a *real* (not fictional) detective and as living at 221b Baker Street: these are examples of intra-fictional ascriptions. Likewise, according to the legend, the Fountain of Youth would restore the youth of anyone who would drink from, or bathes in, its waters: all these are, again, intra-fictional ascriptions[7]. However, it might not seem equally obvious that a non-existent could live at 221b Baker Street or have waters of any sort (magical or otherwise). So do Holmes and the Fountain of Youth have those properties intra-fictionally ascribed to them?

It seems that in some sense the answer has to be yes; ordinarily, people say all the time that Sherlock Holmes is a detective, that he lives at 221b Baker street and so on. Similarly for the Fountain of Youth and other purely fictional and mythological characters. If such characters lacked the properties they have in the stories in which they feature, what would we be talking about when we talk about them? Claims that people ordinarily make about those characters need somehow to be vindicated. In particular, one way to do

[6]We have borrowed the terminology from Berto (2012a: 92). Another way in which we could try to mark the distinction is by distinguishing between intra-fictional and extra-fictional *properties*. Berto, however, observes that this choice could reveal problematic because there may be cases of properties of non-existents which might not be clearly intra-fictional or clearly extra-fictional. One way to elaborate on this is by imagining a story where a character is ascribed a logical property such as, say, self-identity. Is this an intra-fictional or extra-fictional property? There may be also cases where the distinction between properties intra-fictionally and extra-fictionally ascribed is not as obvious as we would want. For example, Pelletier (2003) has called attention on the phenomenon which in narratology is known as *metalepsis*. This happens, for example, when a real (typically omniscient) narrator performs an intrusion into the world of the story to ascribe, *in the story*, certain properties to the characters. Are these properties intra-fictionally or extra-fictionally ascribed? For more on metalepsis see Genette (1980).

[7]Here is Fine (1982: 97) on the matter:

> On the one hand, [fictional characters] have certain properties within the contexts in which they appear; they love and hate, thrive and fail, and live their varied lives. On the other hand, they also relate to the real world; they are created by authors, read by readers, and compared, for better or worse, with one another and with what is real.

so is by maintaining that purely fictional and mythological characters *literally* have the properties they have in the stories featuring them, that is, in reality. This is *literalism*[8].

We need to be careful here pinning down exactly what could possibly ground literalism. One might think that it is the *prima facie* plausible principle that every time we characterise, or represent, an object as having a certain condition, the object we have characterised does have that condition. This is the naïve form of what usually goes by the label of *characterisation principle*. More precisely, the principle says that if **A** is any condition, then we can always characterise an object **o** as satisfying condition **A**, and rest assured that **o** does satisfy **A**. However, the troubles that the naïve form of the characterisation principle generates for literalism are plain to see, and give rise to the so-called *characterisation problem* which, in fact, involves *two* problems. First, suppose **A** is $F(x)\&E!^N(x)$; by applying the characterisation principle to the condition at hand, an object in reality, say t, is such that it satisfies **A**. So it is the case that $F(t)\&E!^N(t)$, which implies that $\exists x(Fx\&E!^N x)$. Thus, we have a priori proven the existence of Fs in reality and this means that we could in general obtain an existential proof of any kind of thing - just replace $F(x)$ with any other condition whatsoever. Even worse, it turns out that any theory presupposing the naïve characterisation principle becomes trivial. For example, if we apply the characterisation principle to the condition $F(x)\&\mathbf{B}$, we obtain an object, say u, such that $F(u)\&\mathbf{B}$, whence **B** follows in turn. Thus, the principle allowed us to prove an arbitrary condition. It is therefore clear that literalism cannot presuppose the characterisation principle in its naïve form.

However, a number of non-naïve literalist theories have emerged in the past fifty years in an attempt to tackle the characterisation problem - for an

[8]The expression is due to Fine (1982: 97).

overview of which see Berto (2012a: 115-137). Typically, those have restricted the applicability of the characterisation principle to a certain class of conditions, that is, those exclusively made up of so-called *characterising* (or *nuclear*, or *assumptible*) properties of individuals (Parsons (1980), Sylvan (1980), Jacquette (1996)). Roughly, characterising properties are seen as intrinsic to the nature of an object; non-characterising properties, by contrast, simply supervene on the characterising properties that an object has[9]. In particular, existence is not taken as a characterising property. The restricted version of the principle now has it that if **A** is any *characterising* condition, then we can always characterise an object **o** as satisfying condition **A**, and rest assured that **o** does satisfy **A**. So restricted, the resulting form of the characterisation principle no longer exposes literalism to the problems highlighted above. Literalism can now legitimately maintain that, in reality, non-existents do have all the *characterising* properties which they are intra-fictionally represented as having. Holmes, for example, has *in reality* the characterising property of being a detective, and the Fountain of Youth that of being a fountain. So this is how non-naïve literalism vindicates the intuition that purely fictional and mythological characters have the properties they are intra-fictionally characterised with.

One thing should not go unnoticed. As we just saw, amongst the proponents of literalism just mentioned is Sylvan who, as we know from **§3.2.1**, is also the initiator of the noneist programme of logical revision. *Priest*'s noneism however, as we will now see, delivers another, quite different story

[9]For example, Parsons (1980: 22-23), who uses the *nuclear/extra-nuclear* terminology, provides the following examples. Nuclear properties: being blue, being tall, being kicked by Socrates, being golden, being a mountain. He also distinguishes between four kinds of extra-nuclear properties. (*a*) *Ontological*: existence, being fictional, being mythological... (*b*) *Modal*: being possible, being impossible... (*c*) *Intentional*: being thought about by Meinong, being worshipped by someone... (*d*) *Technical*: being complete, being inconsistent...

from Sylvan's. Thus, in our discussion of noneism *qua* theory of intentionality hereafter, 'noneism' should be understood, unless otherwise specified, as referring to Priest's version of the view.

To begin with, Priest (2016b: 83-84) has criticised the distinction between characterising and non-characterising properties as artificial and lacking any real motivation other than providing a solution to the characterisation problem. To account for the intuition that non-existents must have the properties they are intra-fictionally represented as having, Priest (2016b: 83-85) has proposed another solution to the characterisation problem. This consists not in *restricting* the naïve characterisation principle, but rather in *qualifying* it further by resorting to the formal apparatus of worlds[10].

The gist of the idea is in order; for absolutely any condition **A**, when we characterise an object **o** as having condition **A**, we thereby succeed in characterising **o** as satisfying **A** - that much, Priest (2016b: 85) contends, is a priori. Yet, this does not mean that **o** satisfies **A** at every world, or in particular that **o** *actually* satisfies **A**, that is, at the actual world. In fact, this is often not the case. In his stories, for example, Doyle characterised Sherlock Holmes as being a detective and as having his domicile at 221b Baker Street. Although, Priest argues, these are properties of Sherlock Holmes, they are properties that Holmes does *not* have at the actual world. What motivates this thought is a highly plausible, anti-literalist intuition. No detective called 'Sherlock Holmes' has *actually* ever lived at 221b Baker Street. After all, Holmes is a non-existent, and how could a non-existent inhabit an existent place such as 221b Baker Street? In fact, how could a non-existent *inhabit* anything at all? *Pace* literalism, only existents seem to be able to inhabit a place. The property

[10]For a critique of Priest's solution to the characterisation problem see Kroon (2012), and Berto and Priest (2014) for a reply. We should note that the noneist solution to the characterisation problem has also been accepted by theorists, such as Berto (2008, 2011) who, despite sharing with noneism the same *Modal Meinongian* framework, describes himself as not being a noneist (2017: 3742).

of inhabiting a place, in other words, appears to be existence entailing, and it is therefore false to say that a non-existent *actually* has such a property (more on this shortly). Analogously for being a detective and the other existence entailing properties Holmes was intra-fictionally ascribed by Doyle: these are not properties that Holmes has at the actual world.

At the same time, things surely could have gone otherwise! There are possible worlds where Victorian London is populated by a (n existent) detective called 'Sherlock Holmes' who lives at 221b Baker Street, for example, the worlds that realise the Doyle Stories. Well, it is at those worlds, though not at ours, that Holmes has the properties which Doyle intra-fictionally ascribed to him[11]. With a similar world-based solution to the characterisation problem, Priest (2016b: 85) argues that the characterisation principle can be accepted in its full generality: absolutely any condition characterises an object[12]. Each of the two parts of the characterisation problem is blocked. First, an object characterised as satisfying a certain condition may satisfy it only at worlds other than the actual - we have seen how this happens with Sherlock Holmes. Thus, the noneist version of the characterisation principle does not imply that we could a priori establish every condition. Secondly, and accordingly, the noneist version of the characterisation principle does not imply that we could a priori prove the existence in reality of arbitrary kinds of things.

[11]This is one aspect over which a Modal Meinongian such as Berto differs from Priest. In Berto and Priest (2014), it is reported (p. 186) that Berto, though not Priest, takes Holmes as not existing at any possible world, a view which we think seems to follow somewhat naturally from his discussions in Berto (2011, 2012b).

[12]Even inconsistent conditions do so, given that Priest's semantics for noneism allows for impossible worlds. For example, we could characterise an object **i** as having condition $x \neq x \& \mathbf{A}$. Given the characterisation principle, the theory would entail that **i** does satisfy the condition, but the worlds where it does so can only be impossible. See Priest (2016b: 15-18).

The plausible story delivered by noneism is, in sum, this: in reality, non-existents can only have properties which are not existence entailing. Consequently, they typically do not *literally* have in reality the properties intra-fictionally ascribed to them; they have such properties at worlds other than the actual. This is how noneism vindicates the intuition that purely fictional and mythological characters have the properties they are intra-fictionally characterised with.

At this point, one may wonder how we can distinguish existence entailing from not existence entailing properties, but noneism is not committed to any particular answer to this question. As Priest (2016b: 246) put it 'Common sense can, for the most part, determine which properties are existence-entailing; and where common sense provides no verdict on the matter [...] other theoretical considerations will have to determine it'. And this view, we add, seems quite commonsensical. Being purely fictional and being mythological, for example, do not appear to be existence entailing. Same for being sought for by Ponce De Leon, or being thought about by Doyle, or being famous - notice that these properties are all normally *extra-fictionally* ascribed to non-existents. Being blue, by contrast, or being tall, appear to be clear examples of existence entailing properties, for they require spatiotemporal collocation, which non-existents lack. Similarly, being scary, being kind, or being noisy are existence entailing, for they presuppose causal efficaciousness, which non-existents cannot have.

As a final comment, one aspect of the account that should not be overlooked is that it crucially relies on intentional operators. These, as we mentioned in **§2.2.2**, are elements of the logical vocabulary required to formalise intentional verbs introducing a *de dicto* intentional state, the content of which is a proposition. And indeed, when an agent characterises an object as being such and such (in a story, fiction, and so on), she thereby *represents* a certain proposition as holding in the matter at hand. The intentional verb *represents* here introduces a *de dicto* intentional state of the agent, the content of which is the proposition she represents as holding (in the matter at hand). In characterising Holmes as being a detective, for example, Doyle represented the proposition expressed by the sentence 'Holmes is a detective' as holding in his stories. To model acts of characterisation of an object, then, we need an intentional operator, call it Ψ, formalising the intentional construct '... represents... as holding (in the matter at hand)'. Although, as we said, intentional operators will play no role in our discussion, let us quickly see for completeness their functioning on Priest's account. First, if **t** is any term, **A** any formula, and Φ any intentional operator, $\mathbf{t}\Phi\mathbf{A}$ is a formula, reading '**t** Φs **A**'. Priest's noneist semantics is couched in a constant domain S5 framework, supplemented with a K accessibility relation governing the functioning of intentional operators, defined as follows: for any term **t** and operator Φ, $R^{\mathbf{t}}_{\Phi}$ is a binary relation on the set W of worlds. Thus if w, w' are in W, $R^{\mathbf{t}}_{\Phi}ww'$ holds just in case at w' things are how **t** Φs them to be at w. Thus in particular, if Φ is Ψ, then w' is a world realising the facts **t** represented as holding (in the matter at hand)[13].

Since we are about to turn to other matters, we can take stock. In this section, we have talked about noneism *qua* theory of intentionality. We have first of all seen that purely fictional and mythological characters can be ascribed properties in two different contexts: in *internal* fictional discourse and in *external* fictional discourse. Then, we have seen what distinguishes noneism from literalist accounts of non-existents. Literalism maintains that purely fictional and mythological characters have, in reality, the properties they have

[13]One might want to impose certain conditions on some operators. Thus for example, if Φ formalises the intentional construct '...represents... as holding in a fiction', then one might want to stipulate that the world at which the agent Φs is not amongst those realising her representation: $\neg R^{\mathbf{t}}_{\Phi}ww$.

intra-fictionally. Noneism, by contrast, maintains that this is typically not the case. For, those properties are typically existence entailing, and non-existents cannot have in reality similar properties.

The next two sections are dedicated to an issue closely related to our discussion so far. We have said that purely fictional and mythological characters feature in stories, in which they are characterised in certain ways. Stories however, be they fiction or myth, are human creations. They are the product of certain activities of cognitive agents. Thus, one view that one may take at this point is that those non-existents and their properties simply supervene on the activities of existent objects. In taking a similar view, one is thereby advocating some form of ontological dependency of the non-existent on the existent. In the next section, we will illustrate an account of non-existents as ontologically dependent entities recently proposed by Crane (2016). This account, as we will see, is based on the idea that all properties of non-existents (with one notable exception) are grounded in particular on our representational activities. We will argue that a similar idea is problematic and should be resisted. Then, in two sections, we will see how the issue of the ontological dependency of the non-existent on the existent gives rise to a distinction within noneism, between realist and anti-realist forms of the view. Before coming to this distinction, however, let us turn to Crane's account first.

3.4 Crane

Crane (2016: 68-69) characterises non-existents as having only three kinds of properties: logical properties such as self-identity, representation-dependent properties[14] and non-existence[15].

[14]For the origin of the idea of representation-dependent properties see McGinn (2002).

[15]Crane (2016: 66) draws a more general distinction between substantial and pleonastic properties, and characterises all properties of non-existents as pleonastic. Substantial

We do not have much to say about self-identity and other logical properties, except that we agree with Crane on the matter: non-existents have indeed such properties. As concerns representation-dependent properties, Crane characterises them as 'properties which depend upon the fact that the object is being represented in some way: in thought, language, pictures, and so on' (2016: 68). Thus for example, Holmes has the representation-dependent property of being a detective, because there is some fiction where he is represented as being a detective. And pegasus has the representation-dependent property of being a horse, given that there is some myth where it is represented as a horse. Restricting our attention only to fictional and mythological characters, Crane's point might be at first sight read as saying that all the properties *intra-fictionally ascribed* to those non-existents are grounded on the representational activity of cognitive agents. However, putting things in this way would not *exactly* capture what Crane has in mind. For, he then goes on to subsume under the category of representation-dependent *all* properties of non-existents, except for their logical properties and non-existence - "[a]ll properties of non-existents are representation-dependent, with the exception of the property of non-existence itself" (2016: 68)[16]. And since these include extra-fictionally ascribed properties, Crane seems to consider them representation-dependent as well - this, as we will see, will turn out to be problematic.

Non-existence is seen as another property of non-existents, although not

properties are described as "characteriz[ing] the nature of real existing things" (2016: 66), whereas pleonastic properties 'are properties that straightforwardly follow from the truth about something, without any further metaphysical assumptions' (2016: 68). We have not found this distinction immediately obvious, but in any case it is not important fo our goal to comment on it. We can restrict our attention to the three more specific kinds of properties which Crane takes non-existents to have.

[16]Crane does not mention logical properties here, but we take it that he would not think of them as representation-dependent.

a representation-dependent one. Why is non-existence not a representation-dependent property of non-existents? Because, Crane argues, its being enjoyed by non-existents is grounded not on our cognitive activity, but on very worldly facts, namely, that non-existents are nowhere to be found in the realm of existing things. As Crane puts it, "Fix the facts about everything in the world, and you have fixed the truth of the negative existentials" (2016: 75)[17]. Existent things, in other words, are the real truth-makers of negative existentials.

Now, the moral we can draw from Crane's account is that non-existents are dependent on us existents for all the properties they have, both *intra* and *extra*-fictionally. At least as far as extra-fictionally ascribed properties are concerned, we find this thought quite plausible. For example, the property of being a purely fictional character can be truthfully ascribed to Holmes in external fictional discourse, and Holmes seems to be very much dependent for this property of his on the literary activity of Doyle - this issue will come up again in the next section. However, we have seen that Crane also claims that non-existents are dependent for their properties on our *representational* activities in particular. And here, as far as extra-fictionally ascribed properties are concerned, we are generally in disagreement with Crane.

A similar point to the one we want to make was also made by Priest (2016b: 277), who argued that Crane's account appears to break down in certain contexts, such as the following one. This case is interesting in that Priest and Crane gave different interpretations of it. Take the case of Vulcan, a planet (now considered non-existent) which was postulated in 1859 by astronomer Urbain Le Verrier to explain the perturbations in the orbit of Mercury. Then, consider the sentence 'Vulcan was postulated by Le Verrier in 1859'. Crane (2016: 134) took the sentence as illustrative of the idea

[17]See Priest (2016b: 277) for criticism of Crane on this issue.

that Vulcan has the representation-dependent property of being postulated by Le Verrier in 1859. Priest (2016b: 277-278) dissented: "[the property of being postulated by Le Verrier in 1859] does not appear to be representation-dependent".

We agree with Priest. For, Crane here seems to be overlooking a distinction between two different property ascriptions to Vulcan. First of all, Crane (2016: 135) takes the property of being postulated by someone as representation-dependent "for obvious reasons: to postulate something is to say or claim that it exists, and this is a way of representing that thing". Crane is quite right: to postulate something is indeed to say that it exists. And indeed, Le Verrier postulated Vulcan because he ascribed to Vulcan, *inside* the Vulcan theory, the property of being an existent (among others). Because Le Verrier made this property ascription, however, one can infer a further property of Vulcan, which can be ascribed to it in *external* discourse about the Vulcan theory: the property of being postulated by Le Verrier. *Inside* the Vulcan theory, to be sure, Le Verrier did not ascribe to Vulcan the property of being postulated by Le Verrier. Now, even granted that the properties Le Verrier ascribed to Vulcan *inside* the Vulcan theory are dependent upon his representational activity, the property of being postulated by Le Verrier is certainly not. In fact, that Vulcan has the property of being postulated by Le Verrier does not seem to be dependent on the representational activities of *anyone* whatsoever. The fact that Vulcan was postulated by Le Verrier appears to be very much grounded on Le Verrier's *actions*, that is, his putting together the Vulcan theory and claiming there that Vulcan existed.

Here is an even clearer example to illustrate the same point. Consider the extra-fictional ascription 'Ponce De Leon sought for the Fountain of Youth'. Here, it seems that Crane will have to say that the Fountain of Youth has the representation-dependent property of being sought for by Ponce De Leon.

However, the truth of the ascription appears to have little to do with the representational activity of Ponce De Leon or, for that matter, anyone else. The reason why 'Ponce De Leon sought for the Fountain of Youth' expresses a truth seems to be dependent on the *actions* that Ponce performed, not on someone *representing* the Fountain of Youth as being sought for by him.

Notice that these are not isolated cases. Here are other relevant examples of extra-fictional ascriptions, involving relations. Consider 'John has heard of Harry Potter', or 'Homer worshipped Zeus', or 'Mark ignores the characters of Norse mythology'. Hearing of, worshipping and ignoring do not seem to be representation-dependent relations in any obvious sense. And the point extends to extra-fictional ascriptions of monadic properties too. Consider 'Harry Potter is the most famous fictional character of our days'; again, it is not obvious to see how an appeal to our representational activities could contribute to explain the truth of this sentence.

Thus, in this section we have seen how the ontological dependency of the non-existent on the existent is interpreted on Crane's account. Crane takes non-existents as dependent, for all their properties except non-existence, on our representational activities. And this, as we have seen, turns out to be quite problematic. Our *representational* activities alone cannot account for every property of non-existents. So, if this was the end of the story, the alleged ontological dependency of the non-existent on the existent, despite perhaps some initial plausibility, would not be a particularly convincing thesis. Much more, however, remains to be said.

To shed some light on the issue, we should look for cases where matters appear sufficiently clear. To this end, we can consider the case of purely fictional characters. For, we said at the end of **§3.3** that purely fictional characters feature in stories, which we described as human creations. It would thus seem natural, at this point, to extend considerations about creation to purely fictional characters themselves. After all, claims to the extent that, say, 'Doyle created Holmes' are commonplace in usual parlance about fiction. And creation, in some informal sense to be made precise, would seem to be an adequate notion to express the ontological dependency under consideration here. Thus, if theoretical inquiry eventually found our every day claims true, we would have certainly gained some insight into whether the non-existent ontologically depends on the existent. This question takes us directly to the distinction between realist and anti-realist noneism, which we mentioned at the end of **§3.3**. Whether purely fictional characters are created (in some sense to be explained) is precisely what is disputed by the parties to this distinction - the realist, as imaginable, being the nay sayer[18]. The next section has two goals. We will start by illustrating the disagreement between the parties. Then, we will remove some possible advantage which the anti-realist might be thought of as having over the realist. After this section, we will eventually turn to sum up what in this chapter has been claimed.

3.5 Realism and Anti-Realism

This section is divided into two parts. The next sub-section illustrates the realist/anti-realist divide within noneism. Here we will get a better grip as to what is exactly at stake in discussing the creation of a purely fictional character, and clarify the parties' views on the matter. *Prima facie*, we said, it is the anti-realist who has a better claim to plausibility, due to her conforming to standard intuitions. In **§3.5.2**, however, we will show that many of those intuitions can be vindicated also in a realist framework such as that of the system $\mathcal{N}^R$ by expanding its semantics in an obvious way - we will explain why

[18] Priest (2016b: 211-215) for example is a nay sayer, a realist - although see (2016b: 263-267) for his discussion of how an anti-realist account can be formally developed. Forms of anti-realism can be found in Berto (2012b, 2012a).

this framework is realist in due course. And, we will argue, talk of creation is not a prerogative of the anti-realist either. There is a non-metaphorical interpretation of the creation of purely fictional characters available to the realist, on which their actual individuation is conferred to them by the actions of authors of fiction. Before coming to these issues, however, let us look in more detail at the distinction between realism and anti-realism.

3.5.1 Creation and Baptism

Realism and anti-realism, we said, appear to disagree as to whether the literary activities of authors of fictional stories create the characters referred to in those stories: the realist denies the proposition, the anti-realist accepts it. In the context at hand, 'creation' seems to have to do with certain acts performed by authors, which bring purely fictional characters into... what exactly? Let us leave aside this question for just one paragraph, and then resume it immediately afterwards. For the time being, let us simply say that one way in which the creation of a fictional character could be understood is as an act of some kind performed by an author of a fictional story. Of all the possible acts we might consider, the one described in the next paragraph appears to be the most plausible candidate for an act of creation.

When a purely fictional character is introduced in a story, it is introduced with the name an author has chosen for it. In the Holmes stories, Holmes is introduced and presented as 'Holmes', and that is the name Doyle chose for him. However, Doyle could not have *introduced* Holmes in a story, had Doyle not also been the one who performed the act with which, for the first time, someone referred to Holmes with the intention of imposing a name on him. An act of this sort, where someone is called for the first time and attributed a name, is usually known as *baptism*. Doyle, accordingly, is responsible for

Holmes' baptism[19]. If there is an act with which Doyle created Holmes, his baptism would certainly seem to be the one. So let us now resume the question we had left in the first paragraph.

What did Doyle bring Holmes into when he created him on his baptism? We can draw an analogy with a perhaps less obscure process of creation, the creation of an artistic painting. One cannot create a painting, it seems, unless one does things, such as putting paint on canvas, which bring the painting into existence. If that is what creating something means, that is, bringing it into existence, then it seems that Doyle certainly did not create Holmes when he baptised him, given that Doyle could not have brought Holmes into existence (Holmes does not exist).

This may give the realist some advantage over the anti-realist. Insofar as creation has such an existential import, common sense notwithstanding, the baptism of a fictional character cannot be an act of creation. However, that creation, particularly artistic creation, carries such an ontological bearing has been disputed. For instance, Deutsch (1991: 211) argues that "the concept of artistic creation is not even *approximated* by the crude ontological notion of bringing things into existence". The point is also echoed by Berto (2012a) as he notes that

> the process of putting paint on a background, thereby creating painted canvas, can have little to do with the creativity involved in creating an artistic painting, that is, in the creation of an artwork (2012a: 223).

[19]If some version of the causal theory of names is correct (see Kripke (1980)), we have picked up the name 'Sherlock Holmes' from some speaker who used it with the intention to refer to the object baptised by Doyle, who in turn picked it up from another speaker who used it with the same intention, and so on. We have, in other words, a causal chain, starting with Doyle's baptism of Holmes, which continued through time thanks to many speakers before us who have used 'Sherlock Holmes' with the intention to refer to the object of Doyle's baptism.

Berto and Deutsch suggest that phenomena of artistic creation are too complex to be fully captured by the notion of bringing something into existence[20]. There seems to be something to at least some forms of artistic creation, in other words, which is left out if we equate creating and bringing into existence. And indeed, Berto goes on to say, echoing Deutsch again, that in good dictionaries one does not merely find 'bringing into existence' as the only meaning for 'creating'; rather, one also finds "another definition, in which to create is to *invent via (or in) one's imagination*" (2012a: 223). If inventing something through one's imagination is a form of creation, it certainly does not appear to be an existentially loaded form thereof. Moreover, this non-existentially loaded form of creation appears to be importantly relevant for our discussion. Indeed, that purely fictional characters are made up by the imagination of the authors who invented them seems to be precisely what common sense intuitions about purely fictional characters amount to.

The anti-realist now appears to have overturned the disadvantage she had over the realist. For, equipped with this new non-existentially loaded account of artistic creation, entitling her to speak of purely fictional characters as created by authors of fiction, she can now vindicate ordinary intuitions. The question for the anti-realist then becomes: what does an author exactly do to a character when she baptises it?

The answer is: she makes available a new object in the domain of quantification (viz. out of nothing) and attributes a name to it. It is only thanks to its baptism by an agent that the object came to inhabit the domain of quantification; *prior to* its baptism, it was simply nothing at all. Thus, for example, *before* Doyle baptised Holmes, Holmes was nothing at all or, counterfactually, had Doyle never baptised Holmes, Holmes would not have been anything at all.

[20] A somewhat similar view is also defended by Fine (1982: 131).

Anti-realist noneism clearly articulates a view of purely fictional characters as ontologically dependent on the artistic activities of their authors: the non-existent, it may be said, *ontologically* supervenes on the existent. The view is formulated in a variable domain semantics, in which the domain of the quantifiers is allowed to vary across worlds. This way, what fictional characters are included in the domain of quantification of a given world can be made dependent on what exists therein[21]. Priest (2016b: 264-267) has presented two ways in which a semantics for anti-realist noneism could be developed, based on neutral and negative free logic[22] - the key features of which we had encountered in **§2.3**, and we will find again in the next subsection.

How about our realist? We left her a few paragraphs ago having lost her advantage over the anti-realist, when the latter introduced the new non-existentially loaded notion of creation. So what happens, according to her, when an author baptises a character? The account of baptism of a purely fictional character, on this view, is admittedly very different.

According to realist noneism, when an author baptises a fictional character, she attributes a name to an object which she *selected*, not *made available out of nothing*, from a set of pre-available non-existents. The selection of a character, in particular, is achieved by an act of so-called *mental pointing*, which differs from an act of physical pointing only in that it is carried out mentally[23]. And the object thus selected already had the properties the author wanted it to have in her stories, at the worlds that realise them[24]. We could express the

[21]For how this could be formally achieved see Priest (2016b: 267).

[22]See also Berto (2011) for an anti-realist semantics.

[23]Priest (2016b: 142) calls the mental act through which a non-existent is thus selected an act of *primitive intentionality*. For discussion see Priest (2016b: 140-144).

[24]Commentators such as Hale (2007, 2017), have raised concerns to the extent that the act of baptising an object with a name would seem to require some form of causal interaction with the object baptised. But if the object is a non-existent this cannot be, given that causation is an existence-entailing relation. However, see Priest (2016b: 141-13; 208-211) for arguments against the view that causation is generally involved in the act of naming an object.

point of realist noneism, again, both in temporal and counterfactual terms, using Doyle as an example. Temporally, we could say that *prior to* Holmes' baptism by Doyle, Holmes was already something. Counterfactually, had Doyle never baptised Holmes, Holmes would have still been something. Realist noneism, accordingly, delivers an account of purely fictional characters as ontologically independent from the artistic activities of their authors.

One potential problem for such a realist account of purely fictional characters is that when an author imagines a character for her stories as having such and such features, far too many objects always seem to have the features in question. In virtue of what, then, does an author select one object in this immense crowd? For example, when Doyle had to select Holmes for baptism, he must have imagined an object with some properties: a detective, having great powers of deduction, living at 221b Baker Street, and so on. Then, think of how many non-existents matching this description he could have picked from. One of them for instance was right-handed, another one left-handed, and yet another one ambidextrous; one of them loved snails, another one found them revolting; one of them fluently spoke latin, another one only knew a few words of it; one of them weighed 80 kg, one of them was three grams lighter. As far as we know, in his stories Doyle did not say anything as to whether Holmes had any of the properties just mentioned; nor does there seem to be anything in the Holmes stories allowing us to infer anything about these matters. As far as the description Doyle gave of Holmes in his stories is concerned, these objects are exactly alike. So an explanation is needed as to how Doyle could select an object from a bunch of objects between which there is simply nothing to select. This is part of what Sainsbury (2009: 58) calls the *Selection Problem*[25]. According to Priest (2016b:

[25]The issue is discussed at length in Berto (2012a: 207-228). Another important aspect involved in the Selection Problem is this. More often than not, authors do not have determined

211-215), the problem is solved by noticing that mental pointing is arbitrary. Once the class of non-existents satisfying the properties an author wants her character to have is singled out, mental pointing randomly selects a member of this class.

Priest (2016b: 264) describes the modal semantics of noneism referred to earlier in **§3.3** as being underpinned by realist assumptions. Being formulated in constant domain, what fictional characters are included in the domain of quantification is not a fact dependent on what exists at a given world. The resulting picture is one where the non-existent does *not ontologically* supervene on the existent.

This last remark concludes our presentation of the distinction between realist and anti-realist noneism. We have summed up their main differences, as understood in this sub-section, in Table 3.2 below.

Purely Fictional Characters Are...	Realism	Anti-Realism
... Created on their baptism	No	Yes
... Ontologically independent	Yes	No
... Already available before baptism	Yes	No

TABLE 3.2: Differences between Realist and Anti-Realist Noneism

So where are we at now? It is the anti-realist who appears to be in a better position, being capable of accounting for ordinary intuitions about purely fictional characters. On one account, creating was understood as bringing something into existence; since however purely fictional characters are not brought into existence, the anti-realist was left with the task of making her position coherent. This was accomplished with a non-existentially loaded

all the properties of their characters before writing a story. Rather, their characterisation appears to be an incremental process, where features and details are added as the story unfolds. But then, how can the realist ensure that an author added those features and details to the right object? See Priest (2016b: 211-212) and Berto et al. (2020: 5-9) for discussion of this issue.

account of creation, with which the anti-realist could explain the baptism of a purely fictional character as an act through which a new object is made available *ex nihilo* in the domain of quantification. The realist, by contrast, in rejecting the view that purely fictional characters are brought *ex nihilo* into the domain of quantification, accounts for their baptism as an act of mental selection. Of the two, the realist picture appears to be more distant from the ordinary person's judgement, and one may think that the anti-realist has a better claim to plausibility than the realist.

This is important for our discussion, given that, as we said at the beginning of this section, the system $\mathcal{N}^R$, our preferred logic, is naturally thought of as being underpinned by realist assumptions - we will say why shortly. Thus, one could argue, $\mathcal{N}^R$ may not be as adequate a logic as we had first supposed.

It seems that the only thing left to do is to find out whether $\mathcal{N}^R$ can withstand the pressure posed by anti-realist noneism. To do so, we should single the non-modal system that anti-realist noneism presupposes, to see whether the latter is capable of more correct predictions than $\mathcal{N}^R$. As we previously noted, and as we will see more precisely in the next sub-section, anti-realist noneism requires some form of free logic (neutral or negative). We will for definiteness consider the negative free logic-based version of anti-realist noneism - Priest (2016b: 266), in any case, notes that there are reasons to prefer this form of anti-realist noneism.

As we will see in the next sub-section, even granted that anti-realist noneism may have a better claim to plausibility as a modal theory, the non-modal system it requires does not appear to make correct predictions which $\mathcal{N}^R$ cannot make. In fact, the intuitions that anti-realist noneism imported from common sense can be suitably re-interpreted in realist terms and formally implemented in $\mathcal{N}^R$. In particular, as anticipated at the beginning of this section, a non-metaphorical talk of creation of a purely fictional character will turn out to be available to the realist. These matters we take up in the next sub-section, to which we now turn.

3.5.2 Common Sense Realism

What follows is the plan for this sub-section. We will start by explaining why $\mathcal{N}^R$ is more naturally thought of as implementing realist assumptions. Subsequently, we will illustrate the modal semantics of (the negative free logic-based form of) anti-realist noneism, in order to single out the non-modal system it is based upon. This, as we will see, is an immediate variant of the system $\mathcal{P}$, modified in the most obvious way to express the anti-realist account of ontological dependency of the non-existent on the existent. After that, we will isolate which elements of the anti-realist semantics reflect our ordinary views on fictional characters, and argue that they can be suitably re-interpreted philosophically in realist terms. Finally, we will conclude by showing how to expand the semantics of $\mathcal{N}^R$ in accordance with such ordinary views. After that, we will conclude and sum up the content of the present chapter.

The system $\mathcal{N}^R$, we said, encourages a realist interpretation. But as we have seen, realist and anti-realist noneism are formulated in modal settings. So in what sense is a non-modal system like $\mathcal{N}^R$ built on realist assumptions? Simply, in the sense that realist noneism is formulated in a constant domain semantics, and every term, in a similar framework, always refers inside the (unique) domain of quantification. Similarly in $\mathcal{N}^R$; every term we care to consider picks out an object in the domain of quantification. Suppose h is Holmes and we wanted to evaluate $h = h$ in a context where Doyle still has to come into existence. In a similar context, $v(h)$ refers to Holmes, even though Doyle does not exist yet. And $h = h$, in a similar context, is evaluated as true. The clearest interpretation of $\mathcal{N}^R$ is indeed in realist terms[26].

By contrast, the form of anti-realist noneism under consideration here, as we noticed in the previous sub-section, is formulated in a variable domain setting, based on negative free logic. This means that (a) the domain of quantification is relativised to worlds, and (b) terms may refer outside the domain of quantification of a given world. Whether or not they do refer outside the domain of a world, depends on the actions of the existents at that world. At a world w where Doyle has not created Holmes, for example, 'Holmes' will refer outside the domain of w. And when terms refer outside the domain of a world, any atomic formula in which they occur is automatically evaluated as false at that world. Suppose that $h = h$ is evaluated at the actual world (@) at a time where Doyle has not yet created Holmes. In that context, h refers outside the domain of @, and $h = h$ is evaluated as false at @.

The non-modal system which the semantics just illustrated is based upon, call it $\mathcal{N}^N$, is a system of negative free logic, a model $\mathcal{M}^{N^N} = \langle D_O, D, v \rangle$ for which is a structure where: D_O, the outer domain, is a non-empty set; D, the inner domain, is a subset of D_O; and v is a total valuation function defined as usual. Just like in $\mathcal{P}$, D is the domain of the quantifiers. This time however, the stipulation about the 'exists' predicate $E!^{N*}$ is that it singles out a subset of the inner domain, $v(E!^{N^*}) \subseteq D$. Satisfaction relative to a model $\mathcal{N}^N$ and a variable assignment g based on $\mathcal{N}^N$ is defined as per $\mathcal{P}$ except for atomics and the 'exists' predicate:

N^{N}1 $\mathcal{M}^{\mathcal{N}^\mathcal{N}}, g \vDash_{\mathcal{N}^\mathcal{N}} \xi^n(\mathbf{t}_1, \ldots \mathbf{t}_n)$ iff $\langle v^g(\mathbf{t}_1), \ldots, v^g(\mathbf{t}_n) \rangle \in v(\xi)$ and for every $1 \leq i \leq n$, $v^g(\mathbf{t}_i) \in D$.

[26]Notice, also, that the non-modal fragment of the realist semantics is exactly analogous to the semantics for $\mathcal{N}^R$. See (2016b: 11-12; 31-32).

$\mathrm{N}^N 10$ $\mathcal{M}^{\mathcal{N}^N}, g \vDash_{\mathcal{N}^N} E!^{N^*}\mathbf{t}$ iff $\nu^g(\mathbf{t}) \in \nu(E!^{N^*})$.

The definition of satisfaction for atomics now entails that any formula including occurrences of terms referring outside the inner domain is automatically evaluated as false. Informally, we can think of the inner domain as the domain of objects of reality (existent or otherwise). Outside this domain are the objects which have not been made available for quantification.

Now, the anti-realist semantics is reflecting two ordinary intuitions about purely fictional characters, which is important to keep distinct. The first is the intuition that purely fictional characters are created by the actions of existent objects: this is represented in the semantics by the fact that, for example, at any time before Doyle created Holmes, 'Holmes' refers to nothing in the inner domain. The second intuition that the semantics vindicates is that purely fictional characters are individuated by the actions of existent objects: this is shown by the fact that any atomic formula containing 'Holmes' is false if Doyle has yet to create Holmes. This means that purely fictional characters are what they are in terms of their properties (that is, objects distinct from other objects), thanks to the actions that make them available for quantification.

Let us see what sense can a realist make about those intuitions. First, consider the intuition about the individuation of a purely fictional character. As we saw in the previous sub-section, a realist maintains that purely fictional characters are ontologically independent from the actions of authors of fiction. In particular, on the realist account, when an author mentally selects a fictional character for baptism, the character is picked out as already having the properties the author wanted it to have in her stories, at the worlds that realise them. Thus, at the worlds realising the stories in which they feature, purely fictional characters are not individuated by the actions performed by authors of fiction.

However, the realist is perfectly entitled to maintain that purely fictional characters are individuated *in reality* by the actions of authors of fiction. That is, the realist is entitled to maintain, for example, that at any world being just like the actual one except that Doyle has not baptised and written stories about Holmes, Holmes has no properties therein other than logical properties, such as self-identity. Holmes, according to this picture, acquired his non-logical properties, such as that of being purely fictional, only thanks to Doyle's actions. From this point of view, although Doyle's actions do not make available for quantification a new object *tout court*, they nonetheless make available a new object *in the domain of individuated objects*. And although this is not a form of creation *ex nihilo* in the sense of the anti-realist, it is still a form of non-metaphorical creation, which results in the expansion of a subdomain of the domain of the actual world.

The picture we are describing, to be more precise, is one where the non-existent bifurcates into two categories: the category of individuated and that of non-individuated objects. At the actual world, the former category includes, for example, Holmes, Frodo and Gandalf. But Holmes, Frodo and Gandalf are non-individuated at any world in which Doyle and Tolkien are non-existent; for, at any such world, these characters have not been individuated by the actions of their authors. As such, at those worlds, they only have logical properties. The realist, by appealing to this distinction, can account for ordinary intuitions about the creation of purely fictional characters in terms of the transition of a non-existent from the category of non-individuated objects to the category of individuated ones.

Moreover, the fact that non-individuated objects only have logical properties implies that every atomic formula containing terms referring to them is automatically evaluated as false - just as anti-realist noneism treats as false any atomic including occurrences of terms referring outside the inner domain. Thus, before Doyle created Holmes, for some suitable sense of 'created', Holmes was a non-individuated object, and accordingly any formula containing 'Holmes' gets evaluated as false. The difference with anti-realist noneism concerns is self-identity: this is a logical property which non-individuated objects have, and so $t = t$ is always true; for the anti-realist, by contrast, if t denotes outside the inner domain, then $t = t$ is false.

We now expand the semantics for $\mathcal{N}^R$ to accommodate the distinction between individuated and non-individuated non-existents. A model is now a triple $\mathcal{M} = \langle D, \nu, \mathbf{N} \rangle$ where: D and ν are as per $\mathcal{N}^R$ and $\mathbf{N}$ is subset of D, the set of non-individuated objects. $\mathbf{N}$ can be defined as the set of all the things which are self-identical but lack every other property. Formally, for every n-place relation R^n and n-tuple $\langle \mathbf{t}_1, ...\mathbf{t}_n \rangle$,

$$\mathbf{N} = \{x : x = x \,\&\, \text{If} \vDash R(\mathbf{t}_1, ...\mathbf{t}_n), \text{then}\, x \notin \langle \mathbf{t}_1, ...\mathbf{t}_n \rangle\}.$$

That is, $\mathbf{N}$ is the set of the x which are self-identical but lack every other property.

Satisfaction relative to a model and variable assignment g based on that model is defined as usual. The only difference concerns the definition of satisfaction for atomics, given below

$\mathcal{M}, g \vDash_{\mathcal{N}\mathcal{N}} \zeta^n(\mathbf{t}_1, \ldots \mathbf{t}_n)$ iff $\langle \nu^g(\mathbf{t}_1), \ldots, \nu^g(\mathbf{t}_n) \rangle \in \nu(\zeta)$ and for every $1 \leq i \leq n$, $\nu^g(\mathbf{t}_i) \notin \mathbf{N}$.

Equipped with the semantics just presented, the realist will be able to accommodate talk of creation of purely fictional characters, understood as the transition from the set of non-individuated objects to the set of individuated ones. This is important, in that talk of creation was thought to be exclusive to the anti-realist. Admittedly, there appears to be a formally coherent and non-metaphorical sense of creation available to the realist as well.

Before summing up the content of this chapter, let us take stock of what has been claimed in this last section. We started in the last sub-section by illustrating the distinction between realist and anti-realist noneism, which we characterised as a distinction over the issue of the ontological dependency of purely fictional characters on the actions of authors of fiction. After presenting both views, we observed that the anti-realist had an initial advantage over the realist, due to her being able to vindicate talk of creation of purely fictional characters. This section showed that the advantage was merely illusory. The realist can accommodate data from our ordinary judgements on purely fictional characters, and can do so with the best logic we have at disposal to account for the data of *de re* intentionality.

3.6 Conclusion

Noneism has been the protagonist of this chapter, both *qua* programme of logical revision and *qua* theory of intentionality. The first part of this chapter was concerned with the first sense of *noneism*. We started in **§3.2.1** by introducing its logical revisionism, which is characterised by a rejection of the Quinean parsing theory, and an interpretation of quantification in existentially neutral terms. We thus went on to present linguistic evidence for the non-Quinean parsing theory of noneism (**§3.2.2**). We then presented, in **§3.2.3**, the system $\mathcal{N}^R$, which incorporated the tenets of the revisionary programme of noneism. In **3.2.4**, we considered and motivated four criteria for logical theory choice: adequacy to the data, expressive power, adherence to the Maxim of Minimal Mutilation and conceptual simplicity. We then assessed how well each of the systems $\mathcal{P}$ and $\mathcal{N}^R$ performed with respect to those criteria, and finally argued from anti-exceptionalist grounds that the logic that is most rational to accept is $\mathcal{N}^R$; it is our best logic.

The second part of this chapter was concerned with noneism *qua* theory of intentionality. In particular, our interest in this part was in the issue of the ontological dependency of the non-existent on the existent. We thus started in **§3.3** by presenting the distinction between literalism and anti-literalism about the properties of non-existents. Then, we moved on in **§3.4** to present, and criticise, an account by Crane (2016) on which almost the entirety of the properties of non-existents are considered as grounded on the representational activities of cognitive agents. Such an account, we argued, should be resisted: our representational activities alone cannot account for every property of non-existents.

Finally, in **§3.5** we looked at how issues of ontological dependency of the non-existent on the existent are framed within noneism. We distinguished in **§3.5.1** between realist and anti-realist versions of noneism and illustrated the different interpretations they give to the baptism of a purely fictional character. The anti-realist, we noted there, could be thought as having a better claim to plausibility, being the only one properly entitled to speak about purely fictional characters as created by cognitive agents, thereby vindicating ordinary beliefs on the matter. This was important for our discussion, in that $\mathcal{N}^R$, our preferred logic, invites a realist reading. Theoretical scrutiny, however, allowed us to restore (at the very least) parity between the two accounts. Talk of creation of a purely fictional character, we showed, is possible even within a realist framework such as that of $\mathcal{N}^R$, provided it is interpreted as the transition of a non-individuated non-existent into an individuated one. If this was the pressure that anti-realist noneism was putting on the adequacy of $\mathcal{N}^R$, it has been removed. The logic choice made earlier in this chapter was the right one.

Chapter 4

From Collapse Theorems to Proof-Theoretic Arguments

4.1 Introduction

The present chapter and the next one, together, constitute the second part of this work. So far, we have argued that $\mathcal{C}$ on the Quinean parsing theory licenses an account of reasoning inadequate to the data of *de re* intentionality, and ought to be revised. Along our way, we have encountered two revisionary programmes, and eventually argued from anti-exceptionalist grounds that our theory choice is more rationally exercised by relying upon the noneist system $\mathcal{N}^R$.

Our dissatisfaction with $\mathcal{C}$ on the Quinean parsing theory was mainly grounded on its taking as valid principles with admittedly invalid substitution instances. Two chapters ago, we considered four of them; specifically, those which we labelled EP, LNE, GEP and NGEP. Relying on these principles in intentional contexts, as we have seen, will often lead one astray.

A natural thing to say at this point is that a noneist and a proponent of $\mathcal{C}$ on the Quinean parsing theory are in disagreement about the validity of the principles in question, that much seems hard to deny. Following a piece of jargon in use at least since Lewis (1990), we will hereafter call *allist* a proponent of $\mathcal{C}$ on the Quinean parsing theory. Although, we said, a noneist and an allist appear to be in disagreement about the validity of the principles referred to a few lines above, not everyone would accept the reality of their disagreement. Some, such as Williamson (1988), have implied that it turns on an equivocation. The allist and the noneist would be merely talking past each other.

The equivocation in question, according to Williamson, concerns the word 'exist', which would mean one thing in the mouth of the allist, and another one in the mouth of the noneist. The reason he adduces for this striking claim has to do specifically with one of the four principles we discussed two chapters ago, EP. Two theorists disagreeing over its validity, Williamson contends, do not seem able to define 'exists' as the only monadic predicate up to logical equivalence obeying a certain set of rules of inference. And this, Williamson contends, is probably due to an equivocation about the meaning of 'exists'. We will call *proof-theoretic* this style of argument, where the impossibility for two logicians to characterise up to logical equivalence a logical expression results in an equivocation of its meaning.

Even though they face intuitive objections[1], we will grant Williamson that

[1]Two of them were pointed out to us by Graham Priest, whom we thank for the remark, in private conversation. The first objection is to the extent that two logically equivalent propositions often hardly *mean* the same thing. Consider, for instance, the propositions expressed by the sentences 'John will go skiing next week' and 'Either John will go skiing next week, or John will break his legs tomorrow and will go skiing next week'. If P is 'John will go skiing next week' and Q is 'John will break his legs tomorrow', the two sentences become P and $P \vee (P \& Q)$ which, at least in classical propositional logic, are provably equivalent. But it is by no means obvious that the propositions expressed by those two interpreted formulae share the same meaning; taking a hyperintentional position might be a natural option here. On hyperintentionality, see Nolan (2014). Obviously, we are raising this issue just to set it aside, as if we were to press this objection we would be denying one of Williamson's assumptions and his argument could not even get off the ground. Our discussion in this chapter will therefore bracket similar concerns. The second objection is to the extent that it is not a disagreement about *rules of inference* for a concept that determines an equivocation about its meaning. Priest, in private conversation, suggests that philosophers might for example disagree about the KK principle for the concept of knowledge, but not disagree about its meaning - the KK principle saying that if an agent knows a proposition P, then she knows

proof-theoretic arguments are correct. In fact, since Williamson seems to take seriously the possibility, we will even grant him that equivocations about the meaning of a logical expression are *exactly* those where two logicians are not in a position to characterise it up to logical equivalence. This gives us a principled criterion to single out real disputes in logic. We will call it the **Genuineness Criterion**: real disputes are precisely those where the parties can characterise a logical expression up to logical equivalence.

There are three reasons why Williamson's discussion does not say much about whether a logical dispute between a noneist and an allist is real or merely verbal. First, because there are certain domains, comprising non-existents, where some forms of noneism will require EP to be a valid principle. Second, because it is still possible possible for two theorists to disagree about EP and yet be able to characterise 'exists' up to logical equivalence. Third, because the **Genuineness Criterion** criterion undershoots: it fails to license as genuine disagreements it would have to vindicate.

We will start in **§4.2** by illustrating one instance where, for Williamson, we could establish the reality of a logical dispute with a proof-theoretic argument. Then, we will move on in **§4.3** to quickly illustrate a language with an allist and a noneist 'exists' predicates, and explain how their disagreement about the validity of EP disqualifies, according to the account under discussion, the reality of any residual disagreement they could have about the validity of a logical principle. In **§4.4**, we provide our first two results. We start in **§4.4.1** by presenting a system of negative free logic, which we will then expand in **§4.4.2** to provide a system sound for a *weak* form of noneism,

that she knows *P*; see Williamson (2000) for discussion. But Williamson, as we will see more precisely in this chapter, does not maintain that *every* dispute about the rules of inference for a concept turns on a disagreement about its meaning. This needs to be decided on a case by case basis, checking whether the disagreement satisfies what in **§4.2** we will call the **Genuineness Criterion**. Nothing principled, for Williamson, prevents that a disagreement over whether knowledge obeys the KK principle did not turn on an equivocation about the meaning of knowledge.

as we will call it. Weak noneism takes non-existents as lacking absolutely any property, including self-identity, and admits EP as a valid principle. An allist and a proponent of this form of noneism can thus characterise 'exists' up to logical equivalence, while disagreeing on the validity of other principles governing 'exists'. And their disagreements, by the **Genuineness Criterion**, do not turn on equivocations. In **§4.4.3**, we present a refutation of Williamson's thesis that there cannot be a genuine disagreement about the validity of EP. A characterisation of 'exists' up to logical equivalence is provided between an allist and a proponent of *mid noneism*, a view licensing a use of 'exists' not governed by EP. Finally, in **§4.5**, we take issue with the **Genuineness Criterion**: we will show the presence of logical disputes where it is impossible for the parties to provide a characterisation of 'exists' up to logical equivalence whilst licensing deductively equivalent uses of it. By the **Genuineness Criterion**, we should consider as verbal such disagreements, which have all the appearance of being substantive. Williamson's discussion, we conclude, is far from having established anything important about the status of a logical disagreement between an allist and a noneist.

4.2 Collapse Theorems and Proof-Theoretic Arguments

In its general form, what we have called the *proof-theoretic* style of argument is, in Williamson's words, a "technique for arguing that an apparent conflict is a real one" (1988: 110). It takes off from the so-called collapse theorems[2]. Imagine two logics $\mathcal{L}_1$ and $\mathcal{L}_2$ differing only in that $\mathcal{L}_1$ includes a logical constant c_1 in its vocabulary and $\mathcal{L}_2$ a logical constant c_2. c_1 and c_2 possibly

[2]Some of which are known at least since Carnap (1943).

obey different rules of inference. Consider now a logic $\mathcal{L}_3$ whose vocabulary includes both c_1 and c_2. A collapse theorem for c_1 and c_2 in $\mathcal{L}_3$ is a proof that they are intersubstitutable.

An illustrative example given by Williamson (1988) of how proof-theoretic arguments work concerns the disagreement between classical and intuitionist logicians, about whether negation obeys *Double Negation* (DN). First of all, when the rules of inference governing classical and intuitionist negation are those of natural deduction, it is well-known that the two connectives collapse[3].

Consider now two rules that both negations obey, that is, *Ex Falso Quodlibet* (EFQ) and *Reductio ad Absurdum* (RAA). These rules, it turns out, are strong enough to define up to logical equivalence any monadic connective obeying them, as can be quickly shown. For, let $\otimes_1$ and $\otimes_2$ be any two monadic connectives obeying EFQ and RAA. By EFQ for $\otimes_1$, $P, \otimes_1 P \vdash P$ and $P, \otimes_1 P \vdash \otimes_2 P$. So by RAA for $\otimes_2$, $\otimes_1 P \vdash \otimes_2 P$; whence $\vdash \otimes_1 P \rightarrow \otimes_2 P$ by conditional introduction. Similarly, one can derive $\vdash \otimes_2 P \rightarrow \otimes_1 P$. Thus, $\vdash \otimes_2 P \leftrightarrow \otimes_1 P$: there is only one monadic connective (up to logical equivalence) obeying EFQ and RAA.

At this point, we can conclude that the disagreement about DN is real and not merely verbal. If EFQ and RAA govern both classical and intuitionist negation, then the two negations collapse. Moreover, classical and intuitionist logicians can agree to univocally characterise negation as the only monadic connective up to logical equivalence that obeys EFQ and RAA. If so, their beliefs about DN cannot be both correct: either the intuitionist is right and the classicist wrong; or vice versa, the classicist is right and the intuitionist wrong. In any case, there cannot be a logic with two negations,

[3]The proof is originally due to Harris (1982).

only one of which obeys DN[4]. *Hence*, the disagreement about DN is real, not merely verbal.

It is difficult to underestimate Williamson's optimism about the importance and applicability of proof-theoretic arguments. First, their success in singling out real disagreements is not confined to the single case of negation[5]. As he puts it, they "can be extended [...] to the other standard logical constants, conjunction, disjunction, the material conditional, the quantifiers" (1988: 113-14). Nor is their significance limited to distinguish real and verbal disagreements. Indeed, "one might regard the possibility of giving [a proof-theoretic argument] as a *criterion* of a logical constant" (1988: 114).

The proof-theoretic argument for classical and intuitionist negation shows that Williamson takes the possibility to characterise up to logical equivalence an expression (such as 'not') as a sufficient condition for genuine disagreement.

It is not entirely clear whether Williamson also takes proof-theoretic arguments to work in the opposite direction. That is, whether impossibility of characterising an expression up to logical equivalence is sufficient for verbal disagreement. Nonetheless, given some of his remarks it seems at least possible to make this assumption.

Suppose two theorists t_1 and t_2 cannot exhibit a collapse theorem for two logical constants c_1 and c_2, which formalise a certain expression e. *A fortiori*, t_1 and t_2 cannot characterise e up to logical equivalence. Thus Williamson:

> The question is what, if anything, can replace [the proof-theoretic argument] in cases, such as the present one, where it does not

[4]See Hossack (1990), Hand (1993), Raatikainen (2008), Murzi & Hjortland (2009) and especially Schechter (2011) for relevant discussion.

[5]Another proof-theoretic argument has been proposed by McGee (2000), who claims that there is only one domain for unrestricted quantification. As a consequence, disagreements about what exists would not be merely verbal. See Dorr (2014) for more discussion.

> apply. If we can find no replacement, any remaining belief in the non-equivocality of the dispute [...] would be little better than blind faith: for although there may well be an initial presumption that we mean the same by same-sounding words, a given instance of such a presumption hardly deserves to survive the failure to find evidence in its favour, if we have looked in earnest. (1988: 119)

The view is that unless another method can help t_1 and t_2 determine the reality of their disagreement, we ought to conclude that they would be simply verbally disagreeing.

Let us therefore assume that proof-theoretic arguments are the only tool available to assess the reality of a disagreement. If so, they induce a criterion for genuine disagreement, which we call the **Genuineness Criterion**. That is:

> In a dispute about an expression e, the parties are genuinely disagreeing if, and only if, they are able to define e up to logical equivalence.

Genuinely disagreeing about e is equivalent to being able to characterise e up to logical equivalence. We will now apply these considerations to the debate about 'exists' between the allist and the noneist.

4.3 Failure of Collapse

Let ℓ be a language containing countably many variables $x, y, z \ldots$, individual constants $a, b, c, \ldots$, n-place predicates $P, Q, R \ldots$, the five connectives, the universal quantifier $\forall$, and two primitive monadic predicates $E!^A$ and $E!^N$ representing the allist and the noneist's existence predicates respectively.

Let the set of well formed formulae obtainable from the elements of ℓ be recursively defined as usual. As for the semantics, let the range of $E!^A$ be identical to the domain of $\forall$, with the usual stipulation that the latter is not empty. Let the range of $E!^N$ be a possibly empty subset of the domain of $\forall$. The case where the range of $E!^N$ and the domain of $\forall$ are the same set is allowed, although in general this does not happen.

It is not obvious to determine how the allist is to interpret $E!^N$ and the noneist $E!^A$. Indeed, this is a delicate issue. Generally, a standard assumption is that the noneist takes $E!^A$ to mean 'is a thing'[6]. However, virtually any reading of $E!^N$ is compatible with allism. Therefore, we will not make any assumptions about how the allist is to read $E!^N$: she can simply give it her preferred reading[7].

Satisfaction and validity being defined as usual, we call the resulting logic $\mathcal{L}_T$. That is, $\mathcal{L}_T$ is the set of the n-tuples of ℓ_{For} determined by the relation $\vDash_{\mathcal{L}_T}$.

A sound proof-theory for $\mathcal{L}_T$ requires that $E!^A$ and $E!^N$ be governed by different rules of inference. In particular, we consider three; two of which we know from **Chapter 2**.

> LNE (Logical Necessity of Existence): A monadic predicate ξ obeys LNE if, and only if, for any term $\mathbf{t}$, $\vdash_{\mathcal{L}_T} \xi\mathbf{t}$.
>
> EP (Existence Principle): A monadic predicate ξ obeys EP if, and only if for any monadic predicate μ and term $\mathbf{t}$, $\mu\mathbf{t} \vdash_{\mathcal{L}_T} \xi\mathbf{t}$.
>
> NEP (Negative Existence Principle): A monadic predicate ξ obeys NEP if, and only if for any monadic predicate μ and term $\mathbf{t}$, $\neg\mu\mathbf{t} \vdash_{\mathcal{L}_T} \xi\mathbf{t}$.

[6] For instance, Williamson (1988), Lewis (1990) and Woodward (2013) all share this assumption.

[7] Woodward (2013) has argued that the allist should read $E!^N$ as meaning 'is actual and concrete'. See Priest (2013) for problems deriving from this choice.

Whilst $E!^N$ does not obey any of LNE, EP and NEP, $E!^A$ obeys each of them. To remove any doubt, the domain of $\forall$ is stipulatively nonempty and coincides with the range of $E!^A$. Hence, it is a theorem that there is at least a term t of which $E!^A$ holds, and so $E!^A$ obeys LNE. However, the extension of $E!^N$ is sometimes properly included in that of $E!^A$. In these cases, there is at least a term t of which $E!^N$ does *not* hold, and so $E!^N$ does not obey LNE. The remaining cases can be checked by similar reasoning.

It needs to be observed that it is technically possible to formulate a restricted version of EP which $E!^N$ does obey. One way to do this is by introducing a new stock of terms (variables and constants), impose their denotation to fall into the range of $E!^N$, and then formulate EP with respect to this new stock of terms[8].

But even with a restricted version of EP accommodating the noneist's use of 'exists', the two parties would still be in disagreement as to whether 'exists' obeys EP in its unrestricted form.

If (unrestricted) EP were a rule governing both uses of 'exists', then these could be proven to collapse. Furthermore, it could also be shown that there is only one monadic predicate up to logical equivalence obeying (unrestricted) EP.

Indeed, let ξ and μ be any two monadic predicates of $\mathcal{L}_T$ obeying (unrestricted) EP. For any term $\mathbf{t}$, the rule yields both $\mu\mathbf{t} \vdash_{\mathcal{L}_T} \xi\mathbf{t}$ and $\xi\mathbf{t} \vdash_{\mathcal{L}_T} \mu\mathbf{t}$. So, $\vdash_{\mathcal{L}_T} \mu\mathbf{t} \leftrightarrow \xi\mathbf{t}$.

'Exists' would therefore be suitable to be defined by the parties as the only monadic predicate up to logical equivalence obeying (unrestricted) EP. If so, by the **Genuineness Criterion**, any remaining disagreement about 'exists' would be real.

[8]The cases of LNE and NEP are trickier. As they will play an important role in **§4.5**, we momentarily postpone their discussion.

But because (unrestricted) EP governs only one sense of 'exists', a collapse theorem is not available, and the parties cannot accordingly define 'exists' up to logical equivalence - or so says Williamson (1988: 119-120). Imagine now a dispute about whether 'exists' obeys EP, NEP or LNE. By the **Genuineness Criterion**, each of these disputes is merely verbal. Although an allist and a noneist might believe to be disagreeing about some fact of the matter when they dispute about the validity of those principles, they are in fact simply talking past each other.

Let us take stock, before turning to other matters. So far, we have illustrated a criterion by Williamson (1988) to determine the real character of a logical disagreement, which requires the deployment of what we called *proof-theoretic* arguments. Logicians may sometimes disagree about the validity of a principle governing a logical expression. To determine whether their disagreement is due to an equivocation about the meaning of that expression, and is therefore merely verbal, one should determine whether the logicians can characterise the expression up to logical equivalence in terms of shared rules of inference. They are not equivocating if, and only if, they can provide the required characterisation; this, we called the **Genuineness Criterion**. We have seen, in particular, two applications of the **Genuineness Criterion**. First, to a disagreement between classical and intuitionist logicians about the validity of DN; secondly, to a disagreement between a noneist and allist about the validity of EP. Only the former, according to the criterion at hand, would count as a case of real disagreement; the latter being merely verbal.

The rest of this chapter is dedicated to show the limitations incurred in applying the **Genuineness Criterion** to determine the status of a disagreement between an allist and a noneist. In the next section, we present two cases in which, by **Genuineness Criterion**, a disagreement between an allist and a noneist is to be considered real. The first, presented in **§4.4.2**, concerns a form of noneism which validates EP; the second, presented in **§4.4.3**, concerns a form of noneism which does not validate EP. Allists and proponents of such forms of noneism can characterise 'exists' up to logical equivalence, as Williamson demands. Thus, jointly taken, these results illustrate an important consequence for our discussion. Namely, that a disagreement about the validity of EP does not prompt any conclusion about the status of a disagreement, whether it is verbal or otherwise.

4.4 Collapse and Characterisability

In this section, two important results are proven. First of all, we said above that we will here present a form of noneism validating EP. Is this to be interpreted as saying that we are assuming some tacit restriction to the domain of quantification of the logic? The answer is no: we will show how to obtain forms of noneism licensing a use of 'exists' obeying EP, even if the domain of discourse is not restricted in any form whatsoever. Specifically, this will be our concern in **§4.4.2**. The second result proven in this section is a refutation of Williamson's thesis that the **Genuineness Criterion** does not allow for a real disagreement about EP; this will concern us in **§4.4.3**.

We now want to start in the next sub-section by illustrating a disagreement about 'exists' which, given the **Genuineness Criterion**, is not merely apparent. Looking at this case will be extremely illuminating for our discussion about allism and noneism, which we thereby resume in **§4.4.2**.

4.4.1 Negative Free Logic

Imagine a theorist whose use of 'exists' obeys EP, but does not obey either NEP or LNE. Let $\mathcal{L}_N$ be this theorist's logic and let $E!$ be her existence predicate. Then,

1. $\nvdash_{\mathcal{L}_N} E!t$, for some term t (LNE);
2. $Pt \vdash_{\mathcal{L}_N} E!t$, for all terms t (EP);
3. $\neg Pt \nvdash_{\mathcal{L}_N} E!t$, for some term t (NEP).

A similar use of 'exists', licensed for instance by the system N presented by Gratzl (2010), is distinctive of so-called negative free logics.

As we saw in **Chapter 2**, logicians endorsing such systems of logic are representative of a certain research programme within the broader project of free logic. Distinctive of the negative approach to free logic are the philosophical ideas that terms sometimes lack reference and that any atomic containing a non-referring term (such as Pegasus) needs to be automatically evaluated as false[9].

This effect is typically achieved by requiring that the valuation function from terms to the possibly empty domain of quantification is partial instead of, as customary, total.

The truth-condition for atomics is modified accordingly by imposing that $\xi(\mathbf{t}_1, \ldots, \mathbf{t}_n)$ is false when either some of the $\mathbf{t}_i$ are assigned a referent that does not belong to that of ξ *or* some of the $\mathbf{t}_i$ are not in the domain of the valuation function. The truth-condition for $E!$ simply stipulates that to exist is equivalent to being denoted by a term in the domain of the valuation function.

[9]See Morscher & Simons (2001) and Lambert (2001) for philosophical discussion of negative free logic. Notice the difference with the negative free logic-based form of anti-realist noneism discussed in **Chapter 3**: there, terms were not allowed to lack reference.

Formally, let $\mathcal{M}^n = \langle D, \nu \rangle$ be a model where D is a possibly empty set and for every $\mathbf{t}$ (variable or constant), if $\mathbf{t} \in \text{Dom}(\nu)$, then $\nu(\mathbf{t}) \in D$. Satisfaction relative to a model $\mathcal{M}^n$ and a valuation function g based on that model is defined as follows:

N1 $\mathcal{M}^n, g \vDash \xi^n(\mathbf{t}_1, \ldots \mathbf{t}_n)$ iff $\langle \nu^g(\mathbf{t}_1), \ldots, \nu^g(\mathbf{t}_n) \rangle \in \nu(\xi)$ and $\mathbf{t}_1, ..., \mathbf{t}_n \in$Dom($\nu$).

N2 $\mathcal{M}^n, g \vDash E!\mathbf{t}$ iff $\mathbf{t} \in \text{Dom}\ (\nu)$.

That $E!$ does not obey LNE, namely that $E!\mathbf{t}$ fails for some $\mathbf{t}$, follows immediately from the proviso that D is possibly empty - in which case, $\mathbf{t} \notin \text{Dom}(\nu)$. On the other hand, to show that $\neg\xi\mathbf{t}$ does not entail $E!\mathbf{t}$, and so $E!$ does not obey NEP, let $\mathbf{t}$ be a term not in Dom(ν); then, $\xi\mathbf{t}$ is false by N1, and therefore $\neg\xi\mathbf{t}$ true. By N2, $E!\mathbf{t}$ is false.

An allist and a user of 'exists' in the sense of negative free logic differ over which rules of inference exactly govern 'exists'. Nonetheless, their uses of 'exists' collapse, given that they both obey EP. Thus, they can characterise 'exists' as the only monadic predicate up to logical equivalence obeying EP - the proof is analogous to the one outlined in **§4.3**

Considerations analogous to the classicist/intuitionist dispute apply here: by the **Genuineness Criterion**, the disagreements about LNE and NEP between the allist and our proponent of negative free logic are not merely apparent.

Our discussion of negative free logic will inform our discussion of allism and noneism in an important sense. For, a slight addition to the previous semantic apparatus gives rise to a version of noneism licensing a use of 'exists' which collapses into the allist's use thereof.

4.4.2 Outer Domains, Partial Interpretations: Weak Noneism

We begin with a helpful comment by Da Costa & Bueno (1999), who identify two philosophical pictures coming out from the development of free logic. As they put it,

> According to the *Meinongian* picture, the interpretation function introduced by the semantics is total; a singular term always has a value, which is either an existent or a non-existent object. As a result, all singular terms have reference. According to the *Russellian* picture, the interpretation function is partial; thus some singular terms lack reference (1999: 219).

Being designed in such a way that terms could fail to refer, the system of negative free logic outlined in the previous section is subsumed under the Russellian picture.

The Meinongian picture is given by two conditions. The interpretation function must be total, so that no term would fail to refer. Moreover, the reference of each term must be either an existent or otherwise. According to this account, the system $\mathcal{P}$ of positive free logic encountered in **Chapter 2** is an example of Meinongian free logic.

However, certain tweaks here give rise to interesting results. It is possible to ensure, in the spirit of positive free logic, that every term is assigned a referent (existent or otherwise), while at the same time force terms referring to non-existents to behave as the non-referring terms of negative free logics. One way to obtain this is by splitting the total interpretation function typical of positive free logic into two partial ones, and leave the truth-condition for atomics as per negative free logic. In a way, this gives rise to a mixed system of free logic, upheld by a philosophical view which we call *weak noneism*.

Fix a language with countably many individual constants $a, b, c \ldots$, variables $x, y, z \ldots$, n-place predicates $P, Q, R...$, the five connectives, the universal quantifier $\forall$ and the existence predicate $E!$. The set of wffs is defined as usual.

Let a model $\mathcal{M}^W = \langle D_O, D_I, \nu, \rho \rangle$ be a quadruple where: D_O is a nonempty set (the outer domain); D_I is a possibly empty set such that $D_I \subseteq D_O$ (the inner domain). Moreover, ν and ρ are partial functions such that:

W1 For each term $\mathbf{t}$ (constant or variable), if $\mathbf{t} \in \text{Dom}(\nu)$, then $\nu(\mathbf{t}) \in D_I$.

W2 For each term $\mathbf{t}$ (constant or variable) such that $\mathbf{t} \notin \text{Dom}\ (\nu)$, $\rho(\mathbf{t}) \in D_O - D_I$.

W3 For each n-place predicate ξ^n, $\nu(\xi) \subseteq D_O^n$.

Satisfaction relative to a model $\mathcal{M}^W$ and a valuation function g based on that model is defined as follows (the clauses for the remaining connectives are as usual):

W4 $\mathcal{M}^W, g \vDash \xi^n(\mathbf{t}_1, \ldots \mathbf{t}_n)$iff $\mathbf{t}_1, ..., \mathbf{t}_n \in \text{Dom}(\nu)$ and $\langle \nu(\mathbf{t}_1), ..., \nu(\mathbf{t}_n) \rangle \in \nu(\xi)$.

W5 $\mathcal{M}^n, g \vDash E!\mathbf{t}$ iff $\mathbf{t} \in \text{Dom}\ (\nu)$.

W6 $\mathcal{M}^W, g \vDash \mathbf{t} = \mathbf{u}$ iff $\mathbf{t}, \mathbf{u} \in \text{Dom}\ (\nu)$ and $\nu(\mathbf{t}) = \nu(\mathbf{u})$.

W7 $\mathcal{M}^W, g \vDash \forall \mathbf{x}\, \mathbf{A}$ iff $\mathcal{M}^W, g[o/\mathbf{x}] \vDash \mathbf{A}$ for each $o \in D_O$.

Call the resulting logic $\mathcal{L}_W$. What deserves consideration is W4, the truth-condition for atomics. Intuitively, there are two ways for an atomic $\xi(\mathbf{t}_1, ..., \mathbf{t}_n)$ to come out false. One, of course, is when not all the referents of $\mathbf{t}_1, ..., \mathbf{t}_n$ fall under the extension of ξ. Yet another is when not all of the $\mathbf{t}_i$ are in the domain of ν. In a similar case, however, this would not mean, as per negative free logic, that the $\mathbf{t}_i$ in question would lack reference. For by W2, ρ provides a referent to those terms in the outer domain.

W6 deserves some comment too. Since this clause implies that $\mathbf{t} \neq \mathbf{t}$ is true when $\mathbf{t}$ is not in the domain of ν, identity here receives a non-standard treatment just as it does in negative free logic. As a consequence, the proof theory of $\mathcal{L}_W$ can only admit a weakened form of Identity Introduction, as outlined below.

Weak noneism is perhaps more adequately thought of as belonging to a third picture, in addition to the Russellian and Meinongian ones highlighted by Da Costa and Bueno. It is not fully Russellian, in that some terms may refer to non-existents. However, it is not fully Meinongian either, in that it treats as false each atomic including an occurrence of a term denoting a non-existent. To put it briefly, weak noneism characterises non-existents as things that lack absolutely every property, including self-identity.

Rules of inference adequate to the above semantics for weak noneism include the usual ones for the five connectives, in addition to the following ones:

WR1 From $\forall \mathbf{x}\mathbf{A}$ and $E!\mathbf{t}$, infer $A[\mathbf{t}/\mathbf{x}]$.

WR2 If $A[\mathbf{t}/\mathbf{x}]$ follows from a set of undischarged assumptions Γ, then infer $\forall \mathbf{x}\mathbf{A}$, provided $\mathbf{t}$ is new does not occur in Γ or $\mathbf{A}$.

WR3 From $E!\mathbf{t}$, infer $\mathbf{t} = \mathbf{t}$.

WR4 From $\mathbf{t} = \mathbf{t}$ infer $E!\mathbf{t}$.

EP From $\xi\mathbf{t}$, infer $E!\mathbf{t}$.

Having EP as an admissible rule of inference may strike someone as a bad outcome for a noneist theory. This explains why the version of noneism resulting from $\mathcal{L}_W$ could only aspire to be a weak form of it. The admissibility of EP depends on the fact that $\xi\mathbf{t}$ is always false if $\mathbf{t}$ is a non-existent, and so truth would be trivially preserved if one were to infer $E!\mathbf{t}$ from it.

However, even granted that admissibility of EP is not desirable for noneism, there are three additional reasons why, though weak as it may be, the philosophical view yielded by $\mathcal{L}_W$ *is* certainly a form of noneism. That is,

1. $E!$ still fails to obey NEP;
2. $E!$ still fails to obey LNE;
3. $\forall x E!x$ is not a theorem of $\mathcal{L}_W$.

Whilst the first two results are in some sense expected, the third one is not at all obvious. Indeed, one would normally expect $\forall x E!x$ to come out as a theorem when EP is an admissible rule, as per classical and negative free logic. What makes $\forall x E!x$ fail is the combination of W2 and W4. W2, inspired by positive free logics, ensures referents to non-existents; W4, inspired by negative free logic, implies that an atomic be false when a term is not in the domain of ν. The result is that a model with non-existents is a countermodel for $\forall x E!x$, which from a noneist point of view is nothing but delightful.

The attractiveness of this result is that it shows how a use of 'exists' governed by EP can be demarcated from a use of 'exist' licensing 'every thing exists' as a theorem. In $\mathcal{L}_W$, one can have the former while avoiding the latter.

There are three disputes to be had between a proponent of weak noneism and an allist: about whether 'exists' obeys LNE, NEP, and about whether 'everything exists' should be taken to be a theorem. Yet, due to their obeying EP, the parties' uses of 'exists' collapse. And again, they could characterise 'exists' as the only monadic predicate up to logical equivalence obeying EP. So by the **Genuineness Criterion**, none of those disputes are merely verbal.

We described $\mathcal{L}_W$ as a mixed system of free logic. We now turn to a second application of free logics to our discussion.

4.4.3 Collapse without Existence Principle

In this section, two important facts are shown. First, another way of providing truth-conditions for atomics, more in the spirit of positive free logic, gives rise to a second view which we call *mid noneism*. This is the view licensing a use of 'exists' not governed by any of EP, NEP, LNE and in which $\forall x E!x$ is not a theorem.

However, unexpectedly, the uses of 'exists' of allism and mid noneism do collapse. Even more strikingly, there are rules of inference common to both uses of 'exists', which are strong enough to allow for a characterisation of 'exists' up to logical equivalence. *Pace* Williamson, the **Genuineness Criterion** does not exclude a real disagreement about EP.

Suppose W4, the clause for atomics of weak noneism, was replaced with the following W4^M.

W4^M $\mathcal{M}^M, g \vDash \xi^n(\mathbf{t}_1, \dots \mathbf{t}_n)$ iff either $\langle \nu(\mathbf{t}_1), \dots, \nu(t)_n) \rangle \in \nu(\xi)$ or, for some $\mathbf{t}_i$ amongst $\mathbf{t}_1, \dots \mathbf{t}_n$, $\mathbf{t}_i \notin \text{Dom}(\nu)$.

Call *mid noneism* the theory resulting from weak noneism by replacing W4 with W4^M and leaving everything else unchanged. Call $\mathcal{L}_M$ the logic of mid noneism, and suppose that 'exists' in $\mathcal{L}_M$ is expressed again by the predicate $E!$.

The usual rules of inference for the five connectives are adequate to the semantics of $\mathcal{L}_M$, as are all of WR1-WR4.

Unlike $\mathcal{L}_W$, however, $\mathcal{L}_M$ cannot admit EP. For some ξ and $\mathbf{t}$, $\xi\mathbf{t} \nvdash_{\mathcal{L}_M} E!\mathbf{t}$. For, let $\mathbf{t}$ be such that $\mathbf{t} \notin$ Dom (ν). Then, $\xi\mathbf{t}$ is true by W4^M but $E!\mathbf{t}$ false by W5.

Sure enough, mid noneism may be thought of as having a very artificial account of non-existents. By W4^M, it has it that non-existents have any property. By W5 and W6, this does not hold without exceptions: they lack self-identity and existence.

Of course, these two claims have been advocated independently from one another. For instance, that non-existents (trivially) enjoy any property is a consequence of $\mathcal{C}$ on the Quinean parsing theory. Similarly, that non-existents lack self-identity and existence is an important assumption of negative free logic. Yet, as far as we know, the combination of both is a novelty.

It is absolutely not our goal in this chapter to advocate or justify mid noneism. We only submit that mid noneism represents a formally coherent account of non-existents. Its attractiveness for our goals is that, as we now demonstrate, it sanctions a use of 'exists' which, despite failing to obey EP, nevertheless collapses into the allist's use thereof.

Indeed, under standard assumptions, the allist's use of $E!^A$ obeys corresponding versions of both WR3 and WR4 - non-standard assumptions are discussed in the next section. To put this last point precisely, let $\mathcal{L}^1_C$ be a logic whose language includes $E!$ and $E!^A$. Then, both $E!^A$ and $E!$ obey rules R3 and R4 below.

> **R3:** A monadic predicate ξ obeys R3 if, and only if, $\xi\mathbf{t} \vdash_{\mathcal{L}^1_C} \mathbf{t} = \mathbf{t}$, for any term $\mathbf{t}$.
>
> **R4:** A monadic predicate ξ obeys R4 if, and only if, $\mathbf{t} = \mathbf{t} \vdash_{\mathcal{L}^1_C} \xi\mathbf{t}$, for any term $\mathbf{t}$.

This is enough to secure a collapse theorem for $E!$ and $E!^A$ in $\mathcal{L}^1_C$.

Theorem 4.1. For any term $\mathbf{t}$, $\vdash_{\mathcal{L}^1_C} E!^A\mathbf{t} \leftrightarrow E!\mathbf{t}$.

Proof.

(→) By R3 for $E!^A$, $E!^A\mathbf{t} \vdash_{\mathcal{L}^1_C} \mathbf{t} = \mathbf{t}$, and by R4 for $E!$, $\mathbf{t} = \mathbf{t} \vdash_{\mathcal{L}^1_C} E!\mathbf{t}$. By reiterated applications of →I and →E, $\vdash_{\mathcal{L}^1_C} E!^A\mathbf{t} \to E!\mathbf{t}$.

(←) By R3 for $E!\mathbf{t}$, $E!\mathbf{t} \vdash_{\mathcal{L}^1_C} \mathbf{t} = \mathbf{t}$, and by R4 for $E!^A$, $\mathbf{t} = \mathbf{t} \vdash_{\mathcal{L}^1_C} E!^A\mathbf{t}$. By reiterated applications of →I and →E, $\vdash_{\mathcal{L}^1_C} E!\mathbf{t} \to E!^A\mathbf{t}$.

□

Are the proponent of mid noneism and the allist really disagreeing when the former denies and the latter asserts that 'exists' obeys EP? By the **Genuineness Criterion**, the answers has to be yes! For, by generalising over any two monadic predicates obeying R3 and R4, they can now prove that there is only one monadic predicate up to logical equivalence obeying these two rules of inference. The proof is identical to that of **Theorem 4.1** but $E!$ and $E!^A$ are replaced by any two monadic predicates ξ, μ obeying R3 and R4. Consequently, they can characterise 'exists' up to logical equivalence as *the monadic predicate which obeys R3 and R4*.

This is tantamount to a refutation of Williamson's thesis that the **Genuineness Criterion** is incompatible with a real disagreement about EP. And now, we want to conclude our discussion with an analysis of the philosophical significance of the **Genuineness Criterion**.

4.5 Collapse and Non-Characterisability

We think it is a mistake to rely on the **Genuineness Criterion** as a tool to assess the reality of a disagreement. Our claim is that the **Genuineness Criterion** fails to vindicate many disagreements, which its advocates would instead want to do justice to.

For example, suppose two logical constants c_1 and c_2 are both intended to formalise a certain expression e. Sometimes, c_1 and c_2 are provably unique up to logical equivalence thanks to some rules of inference governing either only c_1 or only c_2, and whether e should be governed by such rules constitutes the object of disagreement between two parties. Given the uniqueness of c_1 and c_2, one would expect that such cases be treated as instances of real disagreements. But because the rules responsible for the uniqueness of c_1 and c_2 are at stake between the parties, it is impossible for them to characterise e up to logical equivalence. And so by the **Genuineness Criterion**, one is bound to accept that similar disagreements are merely verbal. The significance of what at first glance appeared to be a powerful philosophical tool, we conclude, actually turns out to be very thin.

Consider the earlier proof of **Theorem 4.1**. This invoked R3 and R4 for $E!^A$. Now, whilst it is uncontroversial to assume that the allist's use of 'exists' be obedient to R3, Williamson (1988) suggests that it is technically possible for an allist to assume that 'exists' fails to obey R4.

For instance, the allist's logic could be couched in a language with complex monadic predicates, such as the language $\hat{\mathbf{L}}$ developed by Stalnaker (1977). Let $E!^{A^-}$ be the new allist's existence predicate and let $\hat{\mathbf{L}}_{E!^{A^-}}$ be like $\hat{\mathbf{L}}$ except that it contains $E!^{A^-}$. $\hat{\mathbf{L}}_{E!^{A^-}}$ is equipped with a variable binding device ˆ, such that if $\mathbf{A}$ is any formula, then we can form a complex monadic predicate $\hat{x}\mathbf{A}$, subject to the usual provisos about variable-binding.

For our purposes, let $\mathbf{A}$ be $t = t$ and consider the complex monadic predicate $\hat{x}(x = x)$. By EP, the allist can infer $\hat{x}(x = x)t \vdash E!^{A^-}t$. However, as Williamson (1988: 126) points out, one might want to resist the inference, often known as abstraction, from $t = t$ to $\hat{x}(x = x)t$. A reason offered by Williamson is that abstraction fails in quotational contexts ('Churchill' = the name of a British PM, but Churchill is not such such that 'he' = the name of a British PM).

In any case, by rejecting abstraction the allist would not be able to infer

$E!^{A^-}t$ from $t = t$. If so, $E!^{A^-}$ would not obey R4. Of course, by rejecting abstraction the allist would thereby give up the equivalence between $E!^{A^-}t$ and $t = t$. Yet, Williamson (1988: 126) is nonetheless happy to concede that the allist does not require that much, but only the equivalence of $E!^{A^-}t$ and $\hat{x}(x = x)t$.

But even if the allist resorted to a similar technique, and $E!^{A^-}$ did not obey R4, a collapse theorem could equally be proven for $E!^{A^-}$ and $E!$ - where $E!$ is the existence predicate of mid noneism. Indeed, let $\mathcal{L}^2_C$ be a logic containing in its vocabulary both $E!$ and $E!^{A^-}$.

Theorem 4.2. For any $\mathbf{t}$, $\vdash_{\mathcal{L}^2_C} E!^{A^-}\mathbf{t} \leftrightarrow E!\mathbf{t}$.

Proof.

(→) By R3 for $E!^{A^-}$, $E!^{A^-}t \vdash_{\mathcal{L}^2_C} \mathbf{t} = \mathbf{t}$, and by R4 for $E!$, $\mathbf{t} = \mathbf{t} \vdash_{\mathcal{L}^2_C} E!\mathbf{t}$. By reiterated applications of →I and →E, $\vdash_{\mathcal{L}^2_C} E!^{A^-}t \rightarrow E!\mathbf{t}$.

(←) By EP for $E!^{A^-}$, $E!\mathbf{t} \vdash_{\mathcal{L}^2_C} E!^{A^-}t$, whence, directly by →I, $\vdash_{\mathcal{L}^2_C} E!\mathbf{t} \rightarrow E!^{A^-}\mathbf{t}$.

□

Moreover, the result can be generalised to any pair of monadic predicates obeying R3, such that one of the two also obeys R4 (though not EP) and the other EP (though not R4). Such predicates are unique up to logical equivalence.

Indeed, let ξ and μ be any two such predicates; say, ξ obeys R3 and R4 and μ obeys EP and R3. Let now $\mathcal{L}^3_C$ be a logic containing both of them.

Theorem 4.3. For any term $\mathbf{t}$, $\vdash_{\mathcal{L}^3_C} \mu\mathbf{t} \leftrightarrow \xi\mathbf{t}$.

Proof.

($\rightarrow$) By R3 for μ, $\mu\mathbf{t} \vdash_{\mathcal{L}^3_C} \mathbf{t} = \mathbf{t}$. By R4 for ξ, $\mathbf{t} = \mathbf{t} \vdash_{\mathcal{L}^3_C} \xi\mathbf{t}$. Thus, by reiterated applications of $\rightarrow$I and $\rightarrow$E, $\vdash_{\mathcal{L}^3_C} \mu\mathbf{t} \rightarrow \xi\mathbf{t}$.

($\leftarrow$) By EP for μ, $\xi\mathbf{t} \vdash_{\mathcal{L}^3_C} \mu\mathbf{t}$, whence, directly by $\rightarrow$I, $\vdash_{\mathcal{L}^3_C} \xi\mathbf{t} \rightarrow \mu\mathbf{t}$.

□

Now, the allist and the noneist disagree in two respects: about whether 'exists' obeys EP and about whether it obeys R4. By the **Genuineness Criterion**, such disagreements are real just in case the parties can characterise 'exists' up to logical equivalence.

But they cannot do this. The only rule of inference that $E!^{A^-}$ and $E!$ both obey is R3, and R3 is not strong enough to bring about this result. For instance, if ξ and μ are any two monadic predicates *exclusively* obeying R3, then ξ and μ cannot even be proven to collapse, let alone be characterised up to logical equivalence. Therefore, we ought to conclude that those disagreements are merely apparent. If so, the parties to these disputes could very well be both correct.

But it seems quite clear that the proponent of the **Genuineness Criterion** would want to say otherwise. For, with the usual proof-theoretic style of argument she can show that it is actually *impossible* for the parties to be both correct. Indeed, given **Theorem 4.3**, any two monadic predicates obeying R3, such that one of them also obeys R4 and the other EP, are unique up to logical equivalence. So in particular, $E!^{A^-}$ and $E!$ are in fact equivalent. This means that actually, either the allist is wrong and $E!^{A^-}$ also obeys R4; or else the noneist is wrong and $E!$ also obeys EP. It does not matter which party is wrong. What matters is that either way, it is impossible for *both* parties to be correct.

One would have to treat similar disagreements, where it is impossible for both parties to be correct, as real instead of merely verbal. In fact, the whole attractiveness of the **Genuineness Criterion** was its vindicating this plausible intuition.

But the impossibility of characterising 'exists' up to logical equivalence remains. If the allist, though wrong as she may be, uses 'exists' as *not* obeying R4, then, trivially, she could not agree with the noneist to characterise 'exist' as the only monadic predicate up to logical equivalence obeying, amongst other rules, R4! Analogous considerations obviously apply to the noneist with respect to EP.

So now, the **Genuineness Criterion** falls short of our expectations: since the required characterisation of 'exists' up to logical equivalence is not available, the parties are engaging in merely verbal disputes.

It seems possible to offer a new version of the **Genuineness Criterion** capable of fixing the problems just brought to light. One natural way to do it is by abandoning the condition that real disagreements require *characterisability* of two logical constants up to logical equivalence. This condition had better be replaced by the possibility of simply proving that such logical constants are deductively equivalent. We will make use, and explain, this reformulation of the **Genuineness Criterion** in the next chapter. There, we will use it to defend the genuineness of another dispute criticised by Williamson as turning on an equivocation of the terms of the question. This is a dispute in modal metaphysics, between proponents of two conflicting views about a specific kind of non-existents which we have not encountered in the previous chapters. These are merely possible objects or, as they are often referred to, *possibilia*: things that could have existed but, in fact, do not. The next, and final, chapter is about them. Before coming to that, however, let us conclude *this* chapter by summing up what we have claimed here.

4.6 Conclusion

We started in **§4.2** by presenting what we called *proof-theoretic* arguments. These are a technique proposed by Williamson (1988), the main application of which is to determine which logical disputes are real, and which merely verbal. When two parties, in disagreement over the validity of a logical law governing a certain expression, can characterise it up to logical equivalence in terms of some shared rules of inference, their disagreement is real. For only then can they be sure that they are not equivocating on the meaning of the logical vocabulary. When they cannot provide such a characterisation, their disagreement is most likely to be due to an equivocation, and we should therefore consider it merely verbal. This induces a principled criterion to single out real disagreements in logic, which we have called the **Genuineness Criterion**: in a dispute over a logical expression, the parties are genuinely disagreeing if, and only if, they can characterise this expression up to logical equivalence. Deployed in the context of a dispute, between classical and intuitionist logicians, over the validity of Double Negation, the **Genuineness Criterion** has it that the parties are genuinely disagreeing.

By contrast, we saw in **§4.3**, in a dispute between two parties over the validity of the Existence Principle (EP), Williamson interpreted the **Genuineness Criterion** as giving the opposite verdict: the parties cannot characterise 'exists' up to logical equivalence, and are thus engaging in a merely verbal dispute. A consequence is, for example, that an allist and a noneist, who are typically in disagreement about the validity of EP, would simply be talking past each other. In the rest of the chapter, we provided three reasons why Williamson's discussion fails to shed any important light on the status of such disagreements between allists and noneists.

First, as we showed in **§4.4.1-§4.4.2**, there is a form of *weak* noneism, as we called it, on which EP is valid, as shown by the semantics we provided for it. An allist and a proponent of such form of noneism can characterise 'exists' up to logical equivalence, thereby meeting the **Genuineness Criterion**.

Secondly, in **§4.4.3** we showed that two parties can differ over the validity of EP and yet characterise 'exists' up to logical equivalence, thereby refuting Williamson's assertions. We provided a semantics for another form of noneism (*mid* noneism), on which EP was invalid. The proponent of mid noneism and the allist, it turned out, could meet the **Genuineness Criterion**.

Thirdly, in **§4.5**, we showed why it is a mistake to rely on the **Genuineness Criterion** as a tool to single out real disagreements in logic. The criterion, we have shown, undershoots. There are logical disagreements which it would have to do justice to, but it does not.

Chapter 5

Actual Disputes, Logical Pluralism, and Bayesianism

5.1 Introduction

Two chapters ago, we described the non-existent as a miscellaneous crowd, comprising objects of many sorts. From purely fictional to mythological characters, from objects of erroneous scientific theorising to *abstracta* of many kinds. Some philosophers also add to this list past and future existents, objects that once were and are now no more, and objects that now are not but one day will be, respectively. This chapter is, in part, about yet another kind of objects in this list. These are *possible* existents or, as they are often called, *possibilia*: things that could have existed, but in fact do not. Representatives include the possible child that Wittgenstein could have fathered, the possible knife that would have been assembled from a certain handle and a certain blade, or the possible child that could have resulted from a sperm and an egg that were never brought together.

This chapter considers two metaphysical theories about such merely possible objects, which often go by the name of actualism and possibilism; we can call this the AP-distinction. On a rough characterisation, actualism is the view that necessarily, everything that could have been actual already is; possibilism is the negation of actualism (possibly, something could have been actual but is not). Such theses, we could have equally well formulated by using talk of existence instead of actuality, so that actualism would be view that necessarily, everything that could have existed already does, and possibilism would be the view that this is not the case. Although there is nothing that one formulation of the AP-distinction tracks that the other does not, our presentation hereafter will follow the more usual talk of actuality instead of existence.

There seems to be an obvious connection between what is at stake with the AP-distinction, and the content of the previous chapters: the protagonist, once again, is the non-existent, though this time of a more specific sort. The rough characterisation of the AP-distinction given earlier should be sufficient to clarify that the actualist, just like the allist from the previous chapter, denies that some objects are not actual; the possibilist, just like the noneist, denies what the actualist says. We have a disagreement.

Timothy Williamson has criticised this disagreement on several occasions (2010, 2013c, 2016b). The AP-distinction would be "badly confused" (2010: 662), and even "hopelessly muddled"(2013c: 25). The implication, in sum, is that "the apparent disagreement between actualism and possibilism is merely verbal"(2013c: 306). Using the terminology of Williamson (2013b), his position can therefore be described as a form of logical pluralism *about* the AP-distinction. This chapter considers, and rejects, two arguments that are meant to support his view.

The first is to the extent that the conflict between the parties' theses would be merely apparent. Williamson (2013c: 305-308) finds support for this claim in translation schemata proposed by Correia (2007), Forbes (1989: 31-33), Pollock (1985: 130-132) and Fine (1977: 118-119), which purport to show that any pair of actualist and possibilist formulae would be true in exactly the same models. Throughout **§5.3**, our focus will be on the most recent of those translation schemata, that is, those proposed by Correia - which improved on the work of the other authors, particularly Forbes (1989). We will show that, in the framework where we will formulate the AP-distinction, Correia's translations break down. And therefore, Williamson could not resort to those translation schemata to argue for the merely apparent nature of the conflict between actualism and possibilism.

The second argument takes over from our previous discussion in **Chapter 4**, where we encountered Williamson's **Genuineness Criterion**. According to this criterion, real disputes about a logical expression were precisely those where the parties could *characterise* that expression up to logical equivalence in terms of some shared rules of inference. However, we also saw that the **Genuineness Criterion** is too strong, and indicated a replacement for it. To establish that they are genuinely disagreeing about a logical expression, two logicians should only prove that they use it in deductively equivalent ways - this point is also made in Williamson (2013b: 226). Notice that, as we saw in **Chapter 4**, failure to provide similar proofs, for Williamson (1988), was sufficient to deem a dispute equivocal, and actualists and possibilists do not seem to be in a position to show that their uses of 'is actual' are deductively equivalent. This may ground his *Uniqueness Challenge* for the AP-distinction: unless parties to this distinction can show that their uses of 'is actual' are deductively equivalent, he may say, one had better maintain that they equivocate the meaning of 'is actual'. Logical pluralism *about* the AP-distinction ensues.

In **§5.4**, we illustrate the Uniqueness Challenge precisely and then consider six ramifications of the AP-distinction. In one of them, as we will show, the Uniqueness Challenge can be met (**§5.5**). Given this result, we ask whether it is plausible to suppose that 'is actual' is being equivocated in the remaining five ramifications. Williamson's answer, we noted above, is yes. More precisely, Williamson's view, based on some remarks from his (1988: 117), is formulated in probabilistic terms. That is, specifically: our confidence in the hypothesis that an equivocation about 'is actual' is occurring between the parties to those disputes should be (much) higher than in the hypothesis that it is not. An equivocation of 'is actual', occurring behind the parties' backs, is thus for Williamson the likeliest scenario. Nobody, as far as we are aware of, has ever seriously attempted to determine whether the evidence available, concerning those ramifications of the AP-distinction, actually supports Williamson's verdict. This task, we will carry out in **§5.6**. At least as concerns four of those five ramifications, we will argue from Bayesian grounds that, given the body of evidence we will consider, not only do we lack, *pace* Williamson, the required level of confidence to believe in his hypothesis about the equivocation of 'is actual'; we actually have good reason to believe that a similar hypothesis is false. To postpone technical details, we will start by supposing that Williamson's hypothesis has a very strong prior probability - specifically, it is certain to be true before taking into account any relevant evidence. Then, after the evidence we will have gathered in this chapter is introduced and taken into account, we will aim to determine the hypothesis' posterior probability, or its probability given the evidence in question. To this end, will run two mental simulations which, as indicated, yield a contrary verdict to Williamson's own one about the probability of the equivocation hypothesis. We take such results to indicate that Williamson's logical pluralism *about* those four ramifications of the AP-distinction requires, at the very least, more job to be established - either additional evidence not considered here, capable of overturning our findings, or an argument showing a flaw in the way they were achieved. Until then, we are justified in maintaining that logical pluralism *about* almost the entirety of the ramifications of the AP-distinction does not appear to be in a very strong footing.

We should start, in any case, by presenting the AP-distinction in more detail. To this end, we will follow the presentation of the AP-distinction given by Menzel (2020), which we introduce in the next section.

5.2 AP-Distinction: The Subsistence Conception

Central to Menzel's defence of the AP-distinction is what he labels the *subsistence conception* thereof, on which actualism and possibilism amount to the following two formulae respectively.

Act $\Box\forall x(\Diamond E!x \rightarrow E!x)$.

Pos $\Diamond\exists x(\Diamond E!x \,\&\, \neg E!x)$.

The monadic predicate $E!$ stands for 'is actual', so that actualism is the claim that necessarily, every thing that could have been actual already is; possibilism, that this is not the case. As Menzel (2020: 1982) notes, what the AP-distinction on the subsistence conception amounts to should now be clear: the parties disagree as to whether there could be merely possible objects (or *possibilia*)[1].

One could attempt to cast the AP-distinction in other ways, such as by letting 'is actual' be expressed by a combination of quantification, identity and the operator @ (see Hazen (1976), Hodes (1984) and Stephanou (2005)). But the job done by @ is purely adverbial: prefixed to a formula, @ shifts its

[1]Menzel takes great pains to show that versions of the subsistence conception *avant la lettre* have existed since at least the late antiquity, both in the western and the eastern world. In particular, for discussion of the Arabic contributions to the debate see Read (Forth.) and Hodges (2020).

world of evaluation to the world that happens to be actual. Actualism then becomes trivial and possibilism inconsistent.

Act$_@$ $\Box\forall x(\Diamond\exists y(x = y) \rightarrow @\exists y(y = x))$.

Pos$_@$ $\Diamond\exists x(@\neg\exists y(y = x)\&\Diamond\exists y(y = x))$.

So at this point, either the AP-distinction is wrong-headed, or else the merely adverbial interpretation of the AP-distinction simply misses the point. Menzel's preferred option, the latter, is the one assumed throughout this chapter.

We will couch both actualism and possibilism, understood as per **Act** and **Pos**, in constant domain S5. Actualists tend to favour a variable domain interpretation for their logic, so as to avoid the consequence that every thing is a necessary existent. But as Menzel (2020: 1986) points out, there are well-known ways available to the actualist, if not to avoid, at least to make this outcome more acceptable (see Linsky and Zalta (1994, 1996)). Our chosen framework for the debate, therefore, is legitimate.

Moreover, by relying on this framework we will be able to show that a certain line of argument pressed by Williamson against the AP-distinction does in fact break down. In the previous section, we noted that several translation schemata between actualist and possibilist languages have been proposed in the literature. Such schemata have brought to light the presence of recursively definable mappings, showing that it is possible to find one to one correspondences between the theories' logical entailments. This has in turn been interpreted by Williamson (2013c: 305-308) as showing that the contrast between actualism and possibilism, for instance over the validity of **Act**, would in fact be merely apparent. As we will show in more detail in

§5.3.1, Williamson's idea here, that the presence of similar mappings suggests the merely apparent nature of the contrast between actualism and possibilism, does appear to have some initial plausibility. But as the next section shows, for Williamson's argument to be conclusive, a number of contentious assumptions need to be in place. Notably, Williamson needs to assume that the AP-distinction is *not* formulated in constant domain S5, the framework in which *we* are assuming that it is formulated - which, incidentally, also happens to coincide with Williamson's preferred modal logic. For here, as we will show throughout **§5.3.2-§5.3.3** by taking into account the translation schemata proposed by Correia (2007), the mappings in question turn out not to be available. Thus, insofar as the debate is formulated in constant domain S5, Williamson's argument could not even get off the ground. The strength of this Williamsonian line of argument for the merely apparent character of the disagreement between actualism and possibilism, therefore, appears to be in fact very thin.

5.3 Reductions Between Actualism and Possibilism

5.3.1 Williamson on Translations

We just noted that Williamson has interpreted the presence of entailment-preserving mappings between actualism and possibilism as indicating the merely apparent character of their disagreement. The consequence being, for Williamson, that the disagreement in question would be not real, but merely verbal. We also indicated that a similar line of argument incurs important limitations, shown by the fact that the mappings in question do not succeed in the framework in which we are assuming that the debate between actualism and possibilism is conducted. As we said, we will offer a proof of this fact later in this section (**§5.3.2-§5.3.3**). In this sub-section, we want to quickly outline what motivates Williamson's thought in the first place.

To begin with, just as actualism and possibilism could be formulated in constant domain S5, they could be equally formulated in *variable* domain S5 - sometimes known as S5 on the Kripke semantics. In a similar setting, the domain function is relativised to worlds, and what happens to be in the domain of one world may well not be in the domain of another. On one formulation of the AP-distinction, first due to Fine (1977) and subsequently Pollock (1985), Forbes (1989) and Correia (2007), the theories would differ in what range they assign to the quantifiers. On the actualist interpretation, they range, at every world w, over an inner domain restricted so as to comprise exactly the things beloginging to domain of w - which may well form a proper subset of the domain of another world. On the possibilist interpretation, by contrast, quantifiers are understood as ranging, at every world, over an unrestricted outer domain.

Given this formulation of the AP-distinction, the authors just mentioned have shown how to define, for each formula $\mathbf{A}$ in the actualist language, a corresponding formula $(\mathbf{A})^{Pos}$ in the possibilist language; and for each formula $\mathbf{B}$ in the possibilist language, a corresponding formula $(\mathbf{B})^{Act}$ in the actualist language such that: the actualist accepts $\mathbf{A}$ just when the possibilist accepts $(\mathbf{A})^{Pos}$; and the possibilist accepts $\mathbf{B}$ just when the actualist accepts $(\mathbf{B})^{Act}$. Informally, the driving intuition is that possibilist quantification is interpreted in actualist terms as quantification over what could have existed, whilst actualist quantification is interpreted in possibilist terms as quantification restricted to what in fact exists. Under this translation schema, it turns out that, in S5 on the Kripke semantics, the mixed formulae $\mathbf{A} \leftrightarrow (\mathbf{A})^{Pos}$

and $\mathbf{B} \leftrightarrow (\mathbf{B})^{Act}$ are both logical truths; they are true at every world of every model. As a consequence, the mappings $()^{Act}$ and $()^{Pos}$ are mutually inverse: both $\mathbf{A} \leftrightarrow ((\mathbf{A})^{Pos})^{Act}$ and $\mathbf{B} \leftrightarrow ((\mathbf{B})^{Act})^{Poss}$ are logical truths of S5 on the Kripke semantics. Thus, let $\mathcal{L}_{Act}$ and $\mathcal{L}_{Pos}$ be the the actualist and possibilist logics respectively. Under $()^{Act}$, for any possibilist formulae $\mathbf{B}_1, \ldots, \mathbf{B}_n, \mathbf{B}$, we have $\vDash_{\mathcal{L}_{Pos}} \mathbf{B}$ if, and only if, $\vDash_{\mathcal{L}_{Act}} (\mathbf{B})^{Act}$; whence $\mathbf{B}_1, \ldots, \mathbf{B}_n \vDash_{\mathcal{L}_{Pos}} \mathbf{B}$ if, and only if, $(\mathbf{B}_1)^{Act}, \ldots, (\mathbf{B}_n)^{Act} \vDash_{\mathcal{L}_{Act}} (\mathbf{B})^{Act}$. Under $()^{Pos}$, for any actualist formulae $\mathbf{A}_1, \ldots, \mathbf{A}_n, \mathbf{A}$, we have $\vDash_{\mathcal{L}_{Act}} \mathbf{A}$ if, and only if, $\vDash_{\mathcal{L}_{Pos}} (\mathbf{A})^{Pos}$; whence $\mathbf{A}_1, \ldots, \mathbf{A}_n \vDash_{\mathcal{L}_{Act}} \mathbf{A}$ if, and only if, $(\mathbf{A}_1)^{Pos}, \ldots, (\mathbf{A}_n)^{Pos}, \vDash_{\mathcal{L}_{Pos}} (\mathbf{A})^{Pos}$.

Now, the mappings $()^{Act}$ and $()^{Pos}$, Williamson (2013c: 306) notices, were described by their proponents as *translations*. However, Williamson continues, translations are meant to preserve meaning. Thus, if $()^{Act}$ and $()^{Pos}$ have this property, then the following case could be made for thinking that the disagreement between actualism and possibilism is merely verbal. Suppose, Williamson (2013c: 306) argues, that the actualist accepts $\mathbf{A}$ just when the possibilist accepts $(\mathbf{A})^{Pos}$, the possibilist accepts $\mathbf{B}$ just when the actualist accepts $(\mathbf{B})^{Act}$, and the actualist accepts a sentence $\mathbf{D}$ the orthographic negation of which, $\neg\mathbf{D}$, the possibilist accepts. *Prima facie*, the actualist and the possibilist seem to have incompatible beliefs - the former accepting $\mathbf{D}$, whilst the latter accepting its orthographic negation. However, since the actualist accepts $\mathbf{D}$, the possibilist will accept $(\mathbf{D})^{Pos}$. Thus, if $()^{Pos}$ is a translation, the possibilist accepts something synonymous with the actualist's $\mathbf{D}$. But then, if the possibilist is consistent, in accepting $\neg\mathbf{D}$, she will not accept something contradicting what the actualist means by $\mathbf{D}$. For otherwise, in virtue of the synonymy between $\mathbf{D}$ and $(\mathbf{D})^{Pos}$, $\neg\mathbf{D}$ would also contradict what $(\mathbf{D})^{Pos}$ means, which by hypothesis the possibilist accepts. Likewise, if the possibilist accepts $\neg\mathbf{D}$, then by hypothesis the actualist accepts $(\neg\mathbf{D})^{Act}$. Thus, if $()^{Act}$ is a translation, the actualist accepts something synonymous with the possibilist's $\neg\mathbf{D}$. But then, if the actualist is consistent, in accepting $\mathbf{D}$, she will not accept something contradicting what the possibilist means by $\neg\mathbf{D}$. For otherwise, in virtue of the synonymy between $\mathbf{D}$ and $(\mathbf{D})^{Act}$, $\mathbf{D}$ would also contradict what $(\neg\mathbf{D})^{Act}$ means, which by hypothesis the possibilist accepts. Thus, Williamson (2013c: 307) concludes, "the apparent first-order modal dispute between the actualist and the possibilist is an illusion".

This argument rests on the assumption that $()^{Act}$ and $()^{Pos}$ are understood as translations. But even if they were not understood in this way, Williamson (2013c: 307) argues, a similar argument could be run on the (weaker) assumption that $()^{Act}$ and $()^{Pos}$ preserve logical, as opposed to semantical, features. Suppose that $\mathbf{A} \leftrightarrow (\mathbf{A})^{Pos}$ and $\mathbf{B} \leftrightarrow (\mathbf{B})^{Act}$ are true at every world w of any model $\mathcal{M}$ - for $\mathbf{A}$ any actualist formula and $\mathbf{B}$ any possibilist formula. Like before, the actualist accepts $\mathbf{A}$ just when the possibilist accepts $(\mathbf{A})^{Pos}$; and the possibilist accepts $\mathbf{B}$ just when the actualist accepts $(\mathbf{B})^{Act}$. Now, suppose that everything the actualist accepts is true at w in $\mathcal{M}$, and that the possibilist accepts $\mathbf{B}$. The actualist will then accept $(\mathbf{B})^{Act}$, which is therefore true at w in $\mathcal{M}$. But then, given that $\mathbf{B} \leftrightarrow (\mathbf{B})^{Act}$ is also true at w, it follows that so is $\mathbf{B}$. And therefore, anything that the possibilist accepts is also true at w. Consequently, Williamson concludes, possibilism follows model-theoretically from actualism. And, by running an exactly symmetrical argument, the converse implication could be established as well. The upshot being, that actualism and possibilism are model-theoretically equivalent: nothing of what the actualist accepts is not already accepted by the possibilist and, conversely, nothing of what the possibilist accepts is not already accepted by the actualist. The merely verbal character of their disagreement, once again, seems to ensue.

As we said, we grant Williamson that his reasons for thinking that the disagreement between actualism and possibilism is merely verbal, as per the two arguments just illustrated, have a certain degree of plausibility. Notice that in saying this, we are making an important concession to Williamson. For, among other things, we are setting aside issues concerning the *philosophical* adequacy of the translations $()^{Act}$ and $()^{Pos}$. For example, one may seriously question whether the actualist is really entitled not to take the possibilist at her word and treat her quantification as quantification over what could have existed. Likewise for the possibilist: it *not* obvious that she is entitled to treat actualist quantification as a form of restricted quantification.

Specifically, what such worries call into question is the philosophical value of the non-homophonic character of $()^{Act}$ and $()^{Pos}$. Attacking a translation schema on the grounds of its own non-homophonic character is by no means unheard of; quite the contrary, one need not go too far to find a move along those lines. For instance, elaborating on some ideas by Lewis (1990), Woodward (2013) has defended an entailment preserving, non-homophonic translation schema between noneism and allism - see also Berto and Schoonen (2017) for further discussion. The adequacy of Woodward's non-homophonic account was rejected by Priest (2013), who even questioned the methodological correctness itself of a non-homophonic translation. In fact, Priest (2011) had already taken up the issue some years before in direct opposition to Lewis (1990), who had defended a non-homophonic translation schema between allism and noneism by appealing to its bringing about mutual intelligibility between the theories. In relation to the argument that mutual intelligibility between theories justifies a non-homophonic translation between them, Priest's gloss comes in the following terms:

> The argument is flawed methodologically. There is absolutely no reason why, in a dispute between noneists and Quineans, everything said by one side must be translated into terms intelligible

> to the other. No one ever suggested that the notions of the Special Theory of Relativity need to be translated into categories that make sense in Newtonian Dynamics (or vice versa); no one ever suggested that Marxian economics (with its labor theory of value) need be translated into the categories of Keynesean economics (or vice versa). Though there may be partial overlap, each side may just have to learn a new language game (Priest (2011: 251)).

Priest is here rejecting the legitimacy itself of demanding that (at least seemingly) rival theories have to be perforce mutually intelligible. Accordingly, grounding a non-homophonic translation on the need of securing mutual intelligibility is in itself methodologically flawed. As far as we can see, worries *à la* Priest, about the adequacy of non-homophonic translations, could be very easily carried over, *mutatis mutandis*, to the debate under consideration in this chapter.

But as we said, we are raising those issues just to set them aside. Rather, the rest of this section is dedicated to attack Williamson's arguments from another point of view. We will now show that, *even if* we were to bracket concerns about the non-homophonic character of $()^{Act}$ and $()^{Pos}$, there are quite independent reasons why one should be very careful in attributing them much insightfulness about the status of the disagreement between actualism and possibilism. From now on, we will focus our attention on the most recent formulation of those mappings, due to Correia (2007). As we will now show, when actualism and possibilism are formulated in our selected framework for the AP-distinction, constant domain S5, Correia's translations fail. And Williamson's two arguments, accordingly, are immediately undercut.

5.3.2 Some Definitions

We start by defining the key concepts resorted to in the remainder of this section. First, some notational conventions. We will use bold capital letters $\mathbf{A}, \mathbf{B}, \mathbf{C}$... as metavariables for formulae; bold lower case letters $\mathbf{a}, \mathbf{b}, \mathbf{c}...\mathbf{x}, \mathbf{y}, \mathbf{z}$ as metavariables for terms, where $\mathbf{a}, \mathbf{b}, \mathbf{c}$ are used for individual constants, $\mathbf{x}, \mathbf{y}, \mathbf{z}$ for variables and $\mathbf{t}$ for a generic term; lower case greek letters α, β, γ... as metavariables for predicates, followed where needed by a superscript indicating the arity of a predicate; italicised capital letters A, B, C... for predicate letters, also possibly followed by an arity-indicating superscript; the monadic predicate $E!$, *always* followed by a superscript, for the actuality predicate; italicised lower case letters $a, b, c...x, y, z$ for terms; the lower case greek letter τ, *always* followed by a subscript, for translation functions.

Suppose $\mathcal{L}^1$ and $\mathcal{L}^2$ are two logics in languages ℓ_1 and ℓ_2 respectively. Call a pair of translations τ_1, τ_2 between ℓ_1 and ℓ_2 a *reduction* just in case τ_1 and τ_2 are mutually inverse, in the following sense. That is, just in case (i) τ_1 assigns to each formula $\mathbf{A}$ of ℓ_1 a formula $\mathbf{A}'$ of ℓ_2, and $\mathbf{A}$ and $\mathbf{A}'$ are true in exactly the same models; (ii) τ_2 assigns to each formula $\mathbf{B}$ of ℓ_2 a formula $\mathbf{B}'$ of ℓ_1, and $\mathbf{B}$ and $\mathbf{B}'$ are true in exactly the same models . If a reduction between $\mathcal{L}_1$ and $\mathcal{L}_2$ exists, we say that $\mathcal{L}_1$ and $\mathcal{L}_2$ are *equally expressive*, and indicate this by $\mathcal{L}^1 \cong \mathcal{L}^2$.

Let ℓ_A and ℓ_P be the languages of actualism and possibilism respectively. They both contain: an infinite stock of individual variables $x, y, z \ldots$, constants $a, b, c \ldots$ and n-place predicates $A, B, C \ldots$; the connectives $\neg$ and &; the identity symbol $=$; the alethic necessity operator $\Box$. Moreover, ℓ_A and ℓ_P both have a universal quantifier $\forall^A / \forall^P$ and an actuality predicate $E!^A / E!^P$.

The sets ℓ_A^{For} and ℓ_P^{For} of wffs of ℓ_A and ℓ_P are recursively defined below.

$$(\ell_A^{For}) \quad \mathbf{A} ::= |\xi^n(\mathbf{a}_1, \ldots, \mathbf{a}_n)|\neg\mathbf{A}|\mathbf{A}\&\mathbf{B}|\mathbf{t}_m = \mathbf{t}_n|\forall^A \mathbf{x}\mathbf{A}|E!^A\mathbf{t}|\Box\mathbf{A}$$

$$(\ell_P^{For}) \quad \mathbf{A} ::= |\xi^n(\mathbf{a}_1, \ldots, \mathbf{a}_n)|\neg\mathbf{A}|\mathbf{A}\&\mathbf{B}|\mathbf{t}_m = \mathbf{t}_n|\forall^P \mathbf{x}\mathbf{A}|E!^P\mathbf{t}|\Box\mathbf{A}$$

For simplicity, we will use $\mathbf{A} \to \mathbf{B}$ as an abbreviation for $\neg(\mathbf{A}\&\neg\mathbf{B})$, and so on for the remaining connectives.

Let $\mathcal{M}^A = \langle W, D, \mathfrak{a}, \nu\rangle$ be an actualist model, where: W and D are non-empty sets, $\mathfrak{a}$ is a member of W and ν is function such that $\nu(\mathbf{a}) \in D$, for each individual constant $\mathbf{a}$ and $\nu(\xi^n, w) \subseteq D^n$, for each n-place predicate ξ and $w \in W$. Given a variable assignment g based on $\mathcal{M}^A$, the valuation function ν is extended to a function ν^g whose domain is the union of the set of variables and the set of constants of ℓ_A, being defined as follows: for any term $\mathbf{t}$, $\nu^g(\mathbf{t}) = \nu(\mathbf{t})$ if $\mathbf{t}$ is an individual constant, and $\nu^g(\mathbf{t}) = g(\mathbf{t})$ if $\mathbf{t}$ is a variable. Call $\mathcal{L}^A$ the logic resulting from the class of $\mathcal{M}^A$-models for the language ℓ_A.

Satisfaction relative to a model $\mathcal{M}^A$, a variable-assignment g based on that model and a world w of the set of worlds of $\mathcal{M}^A$ is defined as usual.

$\mathcal{M}^A, g, w \vDash_{\mathcal{L}^A} \xi^n(\mathbf{t}_1, \ldots \mathbf{t}_n)$ iff $\langle \nu^g(\mathbf{t}_1), \ldots, \nu^g(\mathbf{t}_n)\rangle \in \nu(\xi, w)$.

$\mathcal{M}^A, g, w \vDash_{\mathcal{L}^A} \neg\mathbf{A}$ iff $\mathcal{M}^A, g, w \nvDash_{\mathcal{L}^A} \mathbf{A}$.

$\mathcal{M}^A, g, w \vDash_{\mathcal{L}^A} \mathbf{A}\&\mathbf{B}$ iff $\mathcal{M}^A, g, w \vDash_{\mathcal{L}^A} \mathbf{A}$ and $\mathcal{M}^A, g, w \vDash_{\mathcal{L}^A} \mathbf{B}$.

$\mathcal{M}^A, g, w \vDash_{\mathcal{L}^A} \mathbf{t}_1 = \mathbf{t}_2$ iff $\nu^g(\mathbf{t}_1) = \nu^g(\mathbf{t}_2)$.

$\mathcal{M}^A, g, w \vDash_{\mathcal{L}^A} \forall^A \mathbf{x}\,\mathbf{A}$ iff $\mathcal{M}^A, g[o/\mathbf{x}], w \vDash_{\mathcal{L}^A} \mathbf{A}$ for each $o \in D$.

$\mathcal{M}^A, g, w \vDash_{\mathcal{L}^A} E!^A\mathbf{t}$ iff $\nu^g(\mathbf{t}) \in D$.

$\mathcal{M}^A, g, w \vDash_{\mathcal{L}^A} \Box\mathbf{A}$ iff $\mathcal{M}^A, g, w' \vDash_{\mathcal{L}^A} \mathbf{A}$ for every $w' \in W$.

Truth in a model is defined as truth at $\mathfrak{a}$, the actual world.

It is worth pointing out a fact which will be invoked later. As the reader can check, the formula $\Box\forall^A x(\Diamond E!^A x \rightarrow E!^A x)$ is a logical truth of $\mathcal{L}^A$. After all, this formula expresses the thesis of actualism, captured in **§5.2** by the formula **Act**, in the language of $\mathcal{L}^A$. Logically equivalent to this formula is the formula $\Box\forall^A x(E!^A x \rightarrow \Box E!^A x)$, which says that what is actual is necessarily so.

Another logical truth of $\mathcal{L}^A$ is $\Box\forall^A x E!^A x$, which expresses the claim that necessarily, every thing is actual. Together, $\Box\forall^A x(E!^A x \rightarrow \Box E!^A x)$ and $\Box\forall^A x E!^A x$ entail that necessarily, every thing is necessarily actual: **Fact 1.**

$\vDash_{\mathcal{L}^A} \Box\forall^A x \Box E!^A x$.

Possibilist models $\mathcal{M}^P$ are defined very much in analogy to actualist models, thereby generating the logic $\mathcal{L}^P$ - the logic resulting from the class of $\mathcal{M}^P$-models for the language ℓ_P. The only, crucial, difference concerns the clause for the actuality predicate, given below.

$\mathcal{M}^P, g, w \vDash_{\mathcal{L}^P} E!^P\mathbf{t}$ iff $\nu^g(\mathbf{t}) \in D$ and $\nu^g(\mathbf{t}) \in \nu(E!^P, w)$.

In other words, according to possibilism, for something to be actual it is not enough for it to be in the domain of the universal quantifier; the additional constraint is put that the thing in question falls under the range of the actuality predicate, and there is no guarantee that this happens.

More precisely, we are assuming that, at each world w, the range of $E!^P$ is a subset of D, possibly identical with it. The thesis of possibilism, expressed in **§5.2** by the formula **Pos**, corresponds to the claim that there may be something that could have been actual but is not. Such a claim, now represented by the formula $\Diamond\exists x(\Diamond E!^P x \,\&\, \neg E!^P x)$, is not a tautology of $\mathcal{L}^P$ - it fails for instance in a model where at every world the extension of $E!^P$ and that of D coincide. To obviate this, one could impose the stronger condition that, at each world, the range of $E!^P$ be a *proper* subset of D. Since, however, Correia does not consider this strengthened form of possibilism, there is no need for us to do it either.

The next section is concerned with refuting Correia's translation schemata. Such schemata require that (pairs of) Vlach operators be added to the languages of actualism and possibilism. After explaining the kind of expansion that these sentential operators could bring about, the vocabularies of $\mathcal{L}^A$ and $\mathcal{L}^P$ are enriched with such operators. Semantically, the addition of Vlach operators will result in an expansion of $\mathcal{M}^A$ and $\mathcal{M}^P$-models. Correia's translation schemata, at that point, are shown not to be a reduction between the resulting logics.

5.3.3 Introducing Vlach Operators

Vlach operators $\uparrow, \downarrow$ were first introduced in alethic modal logic by Fine (1977) as the analogues of the temporal operators for 'once' and 'then' due to Vlach (1973) - see Meyer (2009) for a discussion of such operators in tense logic.

A simple use of the Vlach operators is described by Forbes (1989), who first gave a reduction between actualism and possibilism exploiting their expressive power.

Typically, $\uparrow$ is *suffixed* to modal operators, whereas $\downarrow$ is *prefixed* to a sub-formula within their scope. In the course of evaluating a formula, the operator $\uparrow$ stores a world introduced by a modal operator, and when it next comes to evaluate a sub-formula prefixed by $\downarrow$, this is evaluated at the previously stored world.

For example, consider the sentence ‘there are two worlds such that what is blue in one is red in the other’. Such a sentence can be rendered, in a language containing Vlach operators, as follows:

$$\Diamond \uparrow \Diamond \forall x(Bx \rightarrow \downarrow Rx).$$

Here, the first world of evaluation introduced by a diamond is stored by $\uparrow$, and later retrieved by $\downarrow$ (despite the fact that, after $\uparrow$ occurred, a second diamond introduced another world).

However, Forbes’ reduction between actualism and possibilism requires a syntactic restriction on the Vlach operators, one effect of which is that apparently legitimate formulae such as $\Diamond \uparrow \Diamond \forall x(Bx \rightarrow \downarrow Rx)$ cannot be taken as wffs - see Forbes (1989: 31-33) . Correia (2007) avoids this artificial restriction by resorting not to one but infinitely-many pairs of Vlach operators. As this solution is meant to constitute an improvement on Forbes’ account, we will follow Correia here.

Let us thus enrich ℓ_A and ℓ_P with infinitely-many pairs $\langle \uparrow^n, \downarrow^n \rangle$ of Vlach operators, one for each $n \in \mathbb{N}$, and call the enriched languages $\ell_{A\uparrow\downarrow}$ and $\ell_{P\uparrow\downarrow}$.

The sets $\ell^{For}_{A\uparrow\downarrow}$ and $\ell^{For}_{P\uparrow\downarrow}$ of wffs of $\ell_{A\uparrow\downarrow}$ and $\ell_{P\uparrow\downarrow}$ are obtained from ℓ^{For}_{A} and ℓ^{For}_{P} respectively, by adding the following clauses concerning the Vlach operators.

> If $\mathbf{A}$ is a wff of either $\ell_{A\uparrow\downarrow}$ or $\ell_{P\uparrow\downarrow}$, then so are $\uparrow^n \mathbf{A}$ and $\downarrow^n \mathbf{A}$, where $n \in \mathbb{N}$.

Let o and o' be occurrences of $\uparrow^n$ and o'' an occurrence of $\downarrow^n$, for some $n \in \mathbb{N}$. We say that o binds o'' iff (i) o'' is in the scope of o and (ii) if o' occurs in the scope of o, then o'' is not in the scope of o'.

The classes of models for $\ell_{A\uparrow\downarrow}$ and $\ell_{P\uparrow\downarrow}$ are obtained by expanding the definition of $\mathcal{M}^A$ and $\mathcal{M}^P$-models respectively. First, let $\int$ be an infinite tuple of $w \in W$, call it a *store list*. Then, let the store list $\int^{n \to w}$ be the tuple which results from replacing the n-th item of $\int$, indicated by $\int(n)$, with w.

A model $\mathcal{M}^{\uparrow\downarrow} = \langle \mathcal{M}, \int \rangle$ for $\ell_{A\uparrow\downarrow}$ or $\ell_{P\uparrow\downarrow}$ is a structure where $\mathcal{M}$ is an $\mathcal{M}^A$ or $\mathcal{M}^P$-model and $\int$ a store list. Call $\mathcal{M}^{A^{\uparrow\downarrow}}$ and $\mathcal{M}^{P^{\uparrow\downarrow}}$ a model for $\ell_{A\uparrow\downarrow}$ and $\ell_{P\uparrow\downarrow}$ respectively, and call $\mathcal{L}^{A^{\uparrow\downarrow}}$ and $\mathcal{L}^{P^{\uparrow\downarrow}}$ the resulting logics.

Satisfaction relative to a model $\mathcal{M}^{\uparrow\downarrow}$, a variable assignment g based on $\mathcal{M}^{\uparrow\downarrow}$, a store list $\int$ and a world w is defined as usual. The only addition concerns the clauses, given below, for the Vlach operators, where $\mathcal{L}^{\uparrow\downarrow}$ is either $\mathcal{L}^{A^{\uparrow\downarrow}}$ or $\mathcal{L}^{P^{\uparrow\downarrow}}$.

$\mathcal{M}^{\uparrow\downarrow} g, \int, w \vDash_{\mathcal{L}^{\uparrow\downarrow}} \uparrow^n \mathbf{A}$ iff $\mathcal{M}, \int^{n \to w}, g, w \vDash_{\mathcal{L}^{\uparrow\downarrow}} \mathbf{A}$.

$\mathcal{M}^{\uparrow\downarrow} g, \int, w \vDash_{\mathcal{L}^{\uparrow\downarrow}} \downarrow^n \mathbf{A}$ iff $\mathcal{M}, \int, g, \int(n) \vDash_{\mathcal{L}^{\uparrow\downarrow}} \mathbf{A}$.

Now for Correia's translation. We need to consider two mappings: the first, translating actualist into possibilist discourse, is the mapping $\tau_1 : \ell_{A\uparrow\downarrow} \longmapsto \ell_{P\uparrow\downarrow}$ from $\ell_{A\uparrow\downarrow}$ to $\ell_{P\uparrow\downarrow}$:

1.*a* $\tau_1(\mathbf{A}) \longmapsto \mathbf{A}$, if $\mathbf{A}$ is atomic.

1.*b* $\tau_1(\neg\mathbf{A}) \longmapsto \neg\tau_1(\mathbf{A})$.

1.*c* $\tau_1(\mathbf{A}\&\mathbf{B}) \longmapsto \tau_1(\mathbf{A})\&\tau_1(\mathbf{B})$.

1.*d* $\tau_1(\mathbf{t}_1 = \mathbf{t}_2) \longmapsto \mathbf{t}_1 = \mathbf{t}_2$.

1.*e* $\tau_1(\forall^A x\mathbf{A}) \longmapsto \forall^P x(E!^P x \to \tau_1(\mathbf{A}))$.

1.*f* $\tau_1(\Box\mathbf{A}) \longmapsto \Box\tau_1(\mathbf{A})$.

1.*g* $\tau_1(\uparrow^n \mathbf{A}) \longmapsto \uparrow^n \tau_1(\mathbf{A})$.

1.*h* $\tau_1(\downarrow^n \mathbf{A}) \longmapsto \downarrow^n \tau_1(\mathbf{A})$.

The reverse mapping $\tau_2 : \ell_{P\uparrow\downarrow} \longmapsto \ell_{A\uparrow\downarrow}$ from $\ell_{P\uparrow\downarrow}$ to $\ell_{A\uparrow\downarrow}$ is defined as follows:

2.a $\tau_2(\mathbf{A}) \longmapsto \mathbf{A}$, if $\mathbf{A}$ is atomic.

2.b $\tau_2(\neg\mathbf{A}) \longmapsto \neg\tau_2(\mathbf{A})$.

2.c $\tau_2(\mathbf{A}\&\mathbf{B}) \longmapsto \tau_2(\mathbf{A})\&\tau_2(\mathbf{B})$.

2.d $\tau_2(\mathbf{t}_1 = \mathbf{t}_2) \longmapsto \mathbf{t}_1 = \mathbf{t}_2$.

2.e $\tau_2(\forall^P x\mathbf{A}) \longmapsto \uparrow^n \Box\forall^A x \downarrow^n \tau_2(\mathbf{A})$, where n is the first $m \in \mathbb{N}$ such that $\tau_2(\mathbf{A})$ does not include free occurrences of $\downarrow^m$.

2.f $\tau_2(\Box\mathbf{A}) \longmapsto \Box\tau_2(\mathbf{A})$.

2.g $\tau_2(\uparrow^n \mathbf{A}) \longmapsto \uparrow^n \tau_2(\mathbf{A})$.

2.h $\tau_2(\downarrow^n \mathbf{A}) \longmapsto \downarrow^n \tau_2(\mathbf{A})$.

And we can, for clarity, augment τ_1 and τ_2 with the following two homophonic clauses concerning $E!^A$ and $E!^P$ respectively.

1.i $\tau_1(E!^A\mathbf{t}) \longmapsto E!^P\mathbf{t}$.

2.i $\tau_2(E!^P\mathbf{t}) \longmapsto E!^A\mathbf{t}$.

Intuitively, the idea underpinning the translation is the following. Whilst actualist universal quantification is interpreted in possibilist terms as quantification restricted to actual things, possibilist universal quantification is interpreted in actualist terms so as to include unrestrictedly every thing.

It is now shown that, under τ_1 and τ_2, $\mathcal{L}^{A^{\uparrow\downarrow}}$ and $\mathcal{L}^{P^{\uparrow\downarrow}}$ are not equally expressive.

Theorem 5.1. $\mathcal{L}^{A^{\uparrow\downarrow}} \overset{\tau_1,\tau_2}{\not\cong} \mathcal{L}^{P^{\uparrow\downarrow}}$.

Proof. We need to show that a formula and its translation are not true in exactly the same models. Consider $\Diamond \uparrow^n \Diamond\forall^P x((Cx \vee \neg Cx) \rightarrow\downarrow^n \neg E^P x)$.

This is an $\ell_{P\uparrow\downarrow}$-formula which says that there are two worlds such that everything that is either C or otherwise at one of them, call this world w_2, is not actual at the other world, call it w_1. This formula is true at $\mathfrak{a}$ in an $\mathcal{M}^{P^{\uparrow\downarrow}}$-model, for instance, when something C at w_2 is not actual at w_1. It follows that, $\mathcal{M}^{P^{\uparrow\downarrow}} \vDash_{\mathcal{L}^{P\uparrow\downarrow}} \Diamond \uparrow^n \Diamond \forall^P x((Cx \vee \neg Cx) \rightarrow \downarrow^n \neg E^P x)$ for some $\mathcal{M}^{P^{\uparrow\downarrow}}$. By reiterated applications of τ_2, our $\ell_{P\uparrow\downarrow}$-formula is eventually mapped to the $\ell_{A\uparrow\downarrow}$-formula $\Diamond \uparrow^n \Diamond \uparrow^m \Box \forall^A x \downarrow^m x((Cx \vee \neg Cx) \rightarrow \downarrow^n \neg E^A x)$. This formula says that there are two worlds w_1 and w_2, such that everything at every world that is C or otherwise at w_2 fails to be actual at w_1 - here, $\langle \uparrow^m, \downarrow^m \rangle$ store and retrieve w_2, whereas $\langle \uparrow^n, \downarrow^n \rangle$ store and retrieve w_1. However, a similar scenario is ruled out by **Fact 1**, establishing that necessarily, every thing is necessarily actual. So, for every $\mathcal{M}^{A^{\uparrow\downarrow}}$, $\mathcal{M}^{A^{\uparrow\downarrow}} \nvDash_{\mathcal{L}^{A\uparrow\downarrow}} \Diamond \uparrow^n \Diamond \uparrow^m \Box \forall^A x \downarrow^m x((Cx \vee \neg Cx) \rightarrow \downarrow^n \neg E^A x)$. $\Box$

Thus, given τ_1 and τ_2, $\mathcal{L}^{A^{\uparrow\downarrow}}$ and $\mathcal{L}^{P^{\uparrow\downarrow}}$ are *not* equally expressive.

As promised, we have shown that, in the constant domain S5 framework in which we have formulated the AP-distinction, Correia's mappings break down. Of course, a reduction between $\mathcal{L}^{A^{\uparrow\downarrow}}$ and $\mathcal{L}^{P^{\uparrow\downarrow}}$ will probably be found via different mappings. For instance, the homophonic clauses for 'is actual', mapping $E!^A$ to $E!^P$ and $E!^P$ to $E!^A$, could be replaced with non-homophonic substitutes. And this in turn may well bring about the desired reduction. One option here, explored for instance by Woodward (2013) elaborating on a previous suggestion by Lewis (1990), comes in roughly the following terms. On the one hand, the actualist's $E!^A$ is mapped to the possibilist's predicate 'is a thing' and, on the other hand, the possibilist's $E!^P$ is mapped to the actualist's predicate 'is concrete'.

But whilst finding some mappings capable of bringing about a reduction between two logics is one thing, establishing their philosophical significance is another. Two sub-sections ago, we had already pointed out that the legitimacy of Woodward's non-homophonic mappings was called into question (by Priest (2013)). And so, whatever the merit of Woodward's account, if its underlying idea were imported into the AP-distinction, the resulting account will *ipso facto* face precisely the legitimacy issues which Priest originally pressed against Woodward. Thus, at the very least, this shifts the burden of proof on Williamson. If he intends to argue for the merely verbal character of our formulation of the AP-distinction along the lines of the two arguments given in **§5.3.1**, he ought to carry out a twofold task. First, he needs to find (non-homophonic) mappings which can in fact bring about a reduction between actualism and possibilism. Secondly, he needs to show that they can withstand well known arguments concerning the legitimacy itself of non-homophonic translations. Until then, we conclude, the arguments outlined in **§5.3.1** have little, if any, significance for our discussion.

This sub-section concludes our discussion of Correia's mappings. From now on, our focus will be on the logic of 'is actual'. In general, actualists and possibilists do not seem to have deductively equivalent uses of 'is actual'. And as we have noted in the introduction to this chapter, according to Williamson (1988, 2013b), this fact may be used to justify a form of logical pluralism *about* their disagreement. As we will explain shortly, being a logical pluralist *about* a dispute corresponds for Williamson to the view that the parties to such dispute are engaging in a merely verbal disagreement. Whilst **§5.5** and **§5.6** are jointly dedicated to develop our objection against Williamson's logical pluralism *about* the AP-distinction, the next section is dedicated to setting the stage for our argument. For, we need to explain in more detail what Williamson's case for logical pluralism *about* the AP-distinction amounts to and, equally importantly, rests upon. So we now turn to these matters, before getting into the details of our objection to Williamson.

5.4 Equivocation and Logical Pluralism

5.4.1 The Uniqueness Challenge

The view put forward by Williamson (1988, 2013b) is pretty simple: logical pluralism *about* a dispute is justified if this is known to turn on an equivocation. He takes the actualism/possibilism dispute to be a case in point, whence his logical pluralism *about* this dispute (2010, 2013c, 2016b).

Being a logical pluralist *about* a dispute, as Williamson (2013b: 224) put it, is tantamount to denying that this reflects a real disagreement; in this sense, being a logical pluralist *simpliciter* would correspond to maintaining that no logical dispute reflects a real disagreement. Distinguishing between logical pluralism and logical pluralism *about a dispute* is important, in that a denier of logical pluralism may well be a logical pluralist *about a dispute*. For example, Williamson (2013b) rejected logical pluralism, but defended it *about* the actualism/possibilism dispute (2010, 2013c, 2016b).

The motivation put forward by Williamson for the non-reality of the actualism/possibilism disagreement is strongly reminiscent of what Steinberger (2019) calls *operational* logical pluralism. On this view, logical disputes are reflective of merely verbal disagreements arising from object-language equivocations about the meaning of logical constants (Carnap (1937), Morton (1973), Haack (1978b), Quine (1970)). This is exactly what Williamson (2010, 2013c, 2016b) has argued at length about the actualism/possibilism dispute: it reflects a merely verbal disagreement arising from an equivocation of 'is actual'.

In §**5.3**, we have seen that invoking Correia's mappings is not a promising strategy for thinking that the actualism/possibilism dispute is equivocal in the sense just outlined. However, as we said, Williamson (1988, 2013b) has another option available to deem a logical dispute equivocal.

By 'logical dispute' here we mean a disagreement between two parties about the validity of a logical law. To exclude that a logical dispute is equivocal, Williamson may demand that the logical constants used by the parties to express the logical law in question be deductively equivalent; when this demand cannot be met, we have ground to deem the dispute equivocal. We call this the *Uniqueness Challenge* - the reference is to Belnap (1962), who had argued that deductive equivalence of two logical constants is tantamount to their being unique.

There are several putative logical laws, concerning 'is actual', which actualism and possibilism disagree about, at least provided they are presented as per **§5.3**. An interesting example, which will play an important role in the remainder of the chapter, is represented by what we call the *Actuality Principle* (AP). This says that having a property expressed by a monadic predicate is sufficient for being actual:

AP $\zeta\mathbf{t} \vdash E!\mathbf{t}$.

Given our presentation in **§5.3**, actualism and possibilism are not expected to license deductively equivalent uses of 'is actual'. Williamson could therefore invoke the Uniqueness Challenge and consider equivocal both a disagreement about AP and in general any other disagreement actualists and possibilists would incur. Two possible responses to this argument, however, are in order.

5.4.2 Accepting the (Uniqueness) Challenge

First of all, one could argue with Read (2000) that Belnap's thesis, which Williamson re-elaborated to devise the Uniqueness Challenge, is too stringent. Specifically, to claim that the lack of deductive equivalence for two logical constants entails their being different is too much. For two logical constants to be unique, Read (2000: 126) argues, '[i]t is sufficient that in-equivalence not be provable'. Thus, the parties' inability to pass the Uniqueness Challenge would not imply an equivocation of 'is actual'; logical pluralism *about* their dispute would therefore be unwarranted. We now leave this worry aside for the time being; we simply anticipate that our argument later in **§5.6** could be interpreted as providing reason for the correctness of Read's claim.

Secondly, and perhaps more importantly, one could argue that the Uniqueness Challenge poses an illegitimate demand altogether. The reason is that for the possibilist 'is actual' expresses a non-logical property, just like many other predicates do ('is happy', 'is friendly' and so on). Then, how could one expect actualists and possibilists to be able to show that their uses of 'is actual' are deductively equivalent?

To illustrate this point further, let us consider the distinction, encountered in **Chapter 2**, between *blanket* and *non-blanket* properties. A blanket property is a property trivially possessed by any thing whatsoever; a non-blanket property, accordingly, one that some things have and some things lack. For the actualist, 'is actual' expresses a *blanket* property, reducible to a combination of the existential quantifier and identity: two logical constants. A similar use of 'is actual' is governed by logical laws. All this does not apply to the possibilist, according to whom actuality is a non-blanket property, enjoyed by some things and lacked by others. Clearly then, one may observe, the possibilist's use of 'is actual' is simply not suited to be characterised by means of logical laws.

Of course, Williamson could turn the point on its head. The fact that the possibilist takes 'is actual' as not expressing a blanket property does not disqualify the Uniqueness Challenge; it rather confirms the equivocality of the actualism/possibilism dispute. We have thus reached a stalemate.

To make some progress, we want to highlight a fact that has gone largely unnoticed. Even if 'is actual' is taken to express a non-blanket property, it is still possible to maintain that there are logical laws governing it. This is true in particular with respect to AP, the logical law introduced at the end of **§5.4.1**. We will now present a non-standard form of possibilism which licenses a use of 'is actual' governed by AP, despite taking it as expressing a non-blanket property. Our interest in this form of possibilism is mainly due to the fact that its use of 'is actual' is necessarily equivalent to the one licensed by a form of actualism which takes 'is actual' to be governed by AP too. Thus, these theories can pass Williamson's Uniqueness Challenge. The form of actualism involved here is often known as *serious actualism*; for uniformity, we will accordingly call the new form of possibilism *serious possibilism*.

5.5 Serious Possibilism

Let us start by recalling what AP amounts to. Where $E!$ expresses 'is actual' and ξ is a monadic predicate, AP is the schema: $\xi\mathbf{t} \vdash E!\mathbf{t}$. This principle plays a key role in our discussion. For, two parties *disagreeing* over its validity will not exhibit deductively equivalent uses of 'is actual', something not happening to two parties agreeing over its validity, as shown in this section. Thus, any two parties to the actualism/possibilism dispute license deductively equivalent uses of 'is actual' if, and only if, they take it to be governed by AP.

As we noted earlier, a form of actualism has dispensed with AP. Dubbed by Plantinga (1985: 316) *frivolous actualism*, this has been advocated for instance by Fine (1985) and Pollock (1985). Likewise, we can speak of *frivolous* *possibilism* to denote standard forms of possibilism, which reject AP - see **§5.3.1**.

This AP-centred taxonomy of the actualism/possibilism debate gives us in total four theories: two forms of actualism (serious and frivolous), and two forms of possibilism (ditto). Since there are six pairwise combinations of those theories, there are correspondingly many ramifications the actualism/possibilism may take. In this section, we will take into account the serious actualism vs serious possibilism ramification; the remaining ones are considered in **§5.6**.

Serious actualism has received large attention in the literature and represents a widely held view (Plantinga (1983, 1985), Forbes (1989), Bergmann (1996), Stephanou (2002, 2007), Jacinto (2019)). In addition to AP, serious actualism also accepts its generalisation to n-place predicates; we can call this the *Generalised Actuality Principle* (GAP). Informally, GAP represents the claim that things cannot relate to one another whilst failing to be actual. For any n-place predicate θ with $n \geq 1$, GAP corresponds to the following schema, where as usual $E!$ expresses 'is actual' and $\mathbf{t}_i$ is any member of $\{\mathbf{t}_1, \ldots, \mathbf{t}_n\}$:

GAP $\theta(\mathbf{t}_1, \ldots, \mathbf{t}_n) \vdash E!\mathbf{t}_i$.

Thus, serious actualism is adequately characterised as the conjunction of the theses that things cannot relate to one another whilst not being actual and that necessarily, everything that could have been actual already is - this last claim was expressed in **§5.2** by the formula **Act**. Let us assume that the logic $\mathcal{L}^A$, outlined in **§5.3.1**, is sound for serious actualism. Given the S5 semantics of $\mathcal{L}^A$, the following are adequate rules for $\Box$ - in fact, without loss of completeness, $\Box$I could even be slightly weakened, as shown by Humberstone

(2016).

$$\Box\text{E} \quad \Box\mathbf{A} \vdash \mathbf{A}$$

$$\Box\text{I} \quad \frac{X \vdash \mathbf{A}}{\Box\mathbf{A}}$$

provided each wff in X is fully modalised.

A formula is fully modalised just in case every atomic formula in it is inside the scope of a modal operator.

We now present serious possibilism. We call its logic $\mathcal{L}_2^P$; this is based on a modal signature ℓ_{P_2} with an actuality predicate $E!^{P_2}$ and is induced by the class of $\mathcal{M}_2^P = \langle W, D_I, D_O, \mathfrak{a}, \sigma\rangle$ models where: W, D_O (outer domain) and D_I (inner domain) are nonempty sets and $D_I \subseteq D_O$; $\mathfrak{a}$ is a member of W; σ is a function such that for each individual constant $\mathbf{a}$, $\sigma(\mathbf{a}) \in D_O$ and $\sigma(\xi^n, w) \subseteq D_O^n$, for each n-place predicate ξ and world w, with the proviso that, at every w, $D_I(w) = \sigma(E!^{P_2}, w)$.

Given a variable assignment g based on $\mathcal{M}_2^P$, the valuation function σ is extended to a function σ^g whose domain is the union of the set of variables and the set of constants of ℓ_{P_2}, being defined as follows: for any term $\mathbf{t}$, $\sigma^g(\mathbf{t}) = \sigma(\mathbf{t})$ if $\mathbf{t}$ is an individual constant, and $\sigma^g(\mathbf{t}) = g(\mathbf{t})$ if $\mathbf{t}$ is a variable.

Satisfaction relative to a model $\mathcal{M}_2^P$, a variable-assignment g based on that model and a world w of the set of worlds of $\mathcal{M}_2^P$ is defined as follows.

$\mathcal{M}_2^P, g, w \vDash_{\mathcal{L}_2^P} \xi^n(\mathbf{t}_1, \dots \mathbf{t}_n)$ iff $\sigma^g(\mathbf{t}_1), \dots, \sigma^g(\mathbf{t}_n) \in D_I$ and $\langle\sigma^g(\mathbf{t}_1), \dots, \sigma^g(\mathbf{t}_n)\rangle \in \sigma(\xi, w)$.

$\mathcal{M}_2^P, g, w \vDash_{\mathcal{L}_2^P} \neg\mathbf{A}$ iff $\mathcal{M}_2^P, g, w \nvDash_{\mathcal{L}_2^P} \mathbf{A}$.

$\mathcal{M}_2^P, g, w \vDash_{\mathcal{L}_2^P} \mathbf{A}\&\mathbf{B}$ iff $\mathcal{M}_2^P, g, w \vDash_{\mathcal{L}_2^P} \mathbf{A}$ and $\mathcal{M}_2^P, g, w \vDash_{\mathcal{L}_2^P} \mathbf{B}$.

$\mathcal{M}_2^P, g, w \vDash_{\mathcal{L}_2^P} \mathbf{t}_1 = \mathbf{t}_2$ iff $\sigma^g(\mathbf{t}_1) = \sigma^g(\mathbf{t}_2)$.

$\mathcal{M}_2^P, g, w \vDash_{\mathcal{L}_2^P} \forall^P \mathbf{x}\, \mathbf{A}$ iff $\mathcal{M}_2^P, g[o/\mathbf{x}], w \vDash_{\mathcal{L}_2^P} \mathbf{A}$ for each $o \in D_O$.

$\mathcal{M}_2^P, g, w \vDash_{\mathcal{L}_2^P} E!^P\mathbf{t}$ iff $\sigma^g(\mathbf{t}) \in D_I(w)$.

$\mathcal{M}_2^P, g, w \vDash_{\mathcal{L}_2^P} \Box\mathbf{A}$ iff $\mathcal{M}_2^P, g, w \vDash_{\mathcal{L}_2^P} \mathbf{A}$ for every $w' \in W$.

The semantics of $\mathcal{L}_2^P$ being that of S5 too, □E and □I are adequate rules of inference for the system.

It is a consequence of serious possibilism that the thesis of actualism expressed by **Act**, captured in $\mathcal{L}_2^P$ by the formula $\Box\forall x(\Diamond E!^{P_2}x \rightarrow E!^{P_2}x)$, fails to express a logical truth, as the reader can check. Consequently, $\mathcal{L}_2^P$ is compatible with the thesis of possibilism, expressed by the formula **Pos** in **§5.2**: there may be something that could have been actual but is not - $\Diamond\exists x(\Diamond E!^{P_2}x \,\&\, \neg E!^{P_2}x)$, in the language of $\mathcal{L}_2^P$. On our previous characterisation in **§5.3.1**, possibilism does not require **Pos** to be a logical truth, but only satisfiable. Since $\mathcal{L}_2^P$ meets this requirement, it is sound for possibilism.

The account of *possibilia* delivered by serious possibilism is certainly atypical. Sure enough, serious possibilism does not take 'is actual' to express a blanket property, given that *possibilia* lack this property. However, the clause for atomics of $\mathcal{L}_2^P$ entails that a thing can fail to enjoy any property expressed by a monadic predicate by simply falling outside the inner domain; specifically, under the set $D_O - D_I$, which is the one containing the *possibilia*. Thus, not only are *possibilia* taken as lacking actuality, they lack any property expressed by any monadic predicate.

For this reason, AP is a principle of serious possibilism. Indeed, let ξ be any monadic predicate and w any world. If **t** is one of the *possibilia* at w, then the inference from $\xi\mathbf{t}$ to $E!^{P_2}\mathbf{t}$ is trivial, given that $\xi\mathbf{t}$ is false. On the other hand, if **t** is actual at w, the inference stands.

But serious possibilism rejects GAP as a principle of actuality. There is a way in which things could relate to at least themselves whilst failing to be actual, that is, being self-identical. Indeed, the clause for identity of $\mathcal{L}_2^P$ is standard, so that all things at each world - actual things, as well as *possibilia* - are self-identical. Then, if **t** is amongst the *possibilia* at a world, **t** will fail to be actual there whilst being self-identical, which corresponds to a counterexample to GAP.

We now have a conflict between serious actualism and serious possibilism over a putative principle of actuality, namely GAP. And obviously, these theories also conflict over whether there are *possibilia*, and whether 'is actual' expresses a blanket property.

Logical pluralism *about these conflicts* is now ruled out as Williamson demands, namely, by showing that the parties pass the Uniqueness Challenge.

In fact, not only can we show that the parties' uses of 'is actual' are deductively equivalent: in the S5-logical framework we have been working with, we can also strengthen the result to the extent that this is necessarily so.

Theorem 5.2. Let $\mathcal{L}_A^{P_2}$ be a logic including two monadic predicates K and Λ both obeying AP. Then, $\vdash_{\mathcal{L}_A^{P_2}} \Box\forall\mathbf{x}\,(K\mathbf{x} \leftrightarrow \Lambda\mathbf{x})$.

Proof.

1. By AP for Λ and the Deduction Theorem, $\vdash_{\mathcal{L}_A^{P_2}} K\mathbf{t} \to \Lambda\mathbf{t}$.

2. By AP for K and the Deduction Theorem, $\vdash_{\mathcal{L}_A^{P_2}} \Lambda\mathbf{t} \to K\mathbf{t}$.

3. From 1. and 2., by $\leftrightarrow$I, $\vdash_{\mathcal{L}_A^{P_2}} \Lambda\mathbf{t} \leftrightarrow K\mathbf{t}$.

4. From 3., by $\forall$I, $\vdash_{\mathcal{L}_A^{P_2}} \forall\mathbf{x}\,(K\mathbf{x} \leftrightarrow \Lambda\mathbf{x})$.

5. From 5., by $\Box$I, $\vdash_{\mathcal{L}_A^{P_2}} \Box\forall\mathbf{x}\,(K\mathbf{x} \leftrightarrow \Lambda\mathbf{x})$.

□

This means a rejection, by Williamson's standards, of logical pluralism *about* this specific ramification of the actualism/possibilism debate.

Throughout this chapter, we could appreciate the complexity of the actualism/possibilism debate. This is partly due to the number of theories taking part in the debate, partly to the number of issues at stake. In particular, we have encountered five issues over which the theories manifest their disagreements; these are listed in Table 5.1 below, together with each theory's stance towards them. We finally turn to the remaining five ramifications of the actualism/possibilism debate. An analysis of such ramifications in terms of the Uniqueness Challenge justifies logical pluralism *about* them all, in that they would all turn on equivocations of 'is actual' between the parties. More specifically, as we mentioned at the end of **§5.1**, and as we will explain in more detail in **§5.6.1**, Williamson's view entails that our confidence in the hypothesis that 'is actual' is being equivocated in those disputes should in fact be higher than in the hypothesis that it is not. In the next section, we will subject this probabilistic claim of Williamson's to critical scrutiny. In particular, we are interested in determining whether Williamson's verdict is supported by the relevant evidence at our disposal, which we have collected in Table 5.1 below.

Our argument will take the following shape. We will start by granting Williamson that the prior probability of his hypothesis about the equivocation of 'is actual' in the disputes under consideration, namely the probability that this hypothesis is true absent any relevant evidence, is very strong - so strong, in fact, to be certain. The data collected in Table 5.1 is then introduced, in order to determine to what extent, if at all, it disconfirms Williamson's hypothesis. To this end, we will run two simulations, the main assumptions of which will be described in more detail towards the end of **§5.6.1**. What they both show, however, is that not only does the data at our disposal not ground

Williamson's hypothesis; it in fact gives us good reason to believe that such a hypothesis is false. But recall that the hypothesis that 'is actual' was equivocal in those disputes was what grounded logical pluralism *about* them in the first place - recall, in particular, the Williamsonian account of logical pluralism *about* a dispute presented earlier in **§5.4**. Thus, we conclude, if we have little reason to believe in the equivocation hypothesis of 'is actual', then we equally seem to have little reason to believe in logical pluralism about *about* the disputes considered in the next section. So to those disputes, we now turn to.

5.6 A Bayesian Challenge

5.6.1 Setting the Stage

We will use this sub-section to set the stage for our two simulations, which will occupy us throughout **§5.6.2** and **§5.6.3**. The goal of this sub-section is threefold. We will first of all present the evidence relative to the AP-distinction made available throughout this chapter. Subsequently, we will get into more detail about Williamson's probabilistic view about an equivocation occurring in each of the five ramifications of the AP-distinction listed in Table 5.2 below. Then, we will conclude by spelling out the assumptions our two simulations rest upon.

At the end of **§5.5**, we mentioned that there are five main issues at stake in the actualism/possibilism debate, at least as understood in this chapter. These issues are listed in Table 5.1 below, together with the position expressed by the theories to the debate over each one of them - a ✓ represents acceptance of a thesis, a ✗ rejection thereof.

Thesis	Ser. Actualism	Fri. Actualism	Ser. Possibilism	Fri. Possibilism
A. 'Is actual' is governed by AP.	✓	✗	✓	✗
B. 'Is actual' is governed by GAP.	✓	✗	✗	✗
C. Everything that could have been actual already is.	✓	✓	✗	✗
D. 'Is actual' expresses a blanket property.	✓	✓	✗	✗
E. There are *possibilia*.	✗	✗	✓	✓

TABLE 5.1: Varieties of Actualism and Possibilism

There are six pairwise combinations of the four theories listed in Table 5.1, each one resulting in a ramification of the actualism/possibilism debate. Logical pluralism *about* one of them was rejected in **§5.5**. So now, let us divide the remaining five ramifications into two groups, and call *internal* those involving either two forms of actualism or two forms of possibilism; call the remaining ramifications *external*. These ramifications are given an enumeration in Table 5.2 below.

Dispute Number	Internal Disputes	External Disputes
1	Ser. Possibilism vs Fri. Possibilism	
2	Ser. Actualism vs Fri. Actualism	
3		Ser. Actualism vs Fri. Possibilism
4		Fri. Actualism vs Ser. Possibilism
5		Fri. Actualism vs Fri. Possibilism
	Total Internal Disputes	**Total External Disputes**
	2	3

TABLE 5.2: Internal and External Disputes of the Actualism/Possibilism Debate

The parties to any dispute in Table 5.2 disagree over whether 'is actual' is governed by AP (thesis **A** in Table 5.1); a fact entailing their not using it in deductively equivalent ways. In an attempt to invoke the Uniqueness Challenge, at this point Williamson might argue that logical pluralism *about* those five disputes is justified, relying on the claim that the parties equivocate on 'is actual' in each of those five ramifications of the AP-distinction. After all, we know from the previous chapter that Williamson took logicians holding seemingly incompatible beliefs, about a logical expression not being used by them in deductively equivalent ways, as equivocating on its meaning.

We can draw a comparison with the dispute, encountered in the previous chapter, between allists and noneists. As we know, not all forms of allism and noneism share deductively equivalent uses of 'exists'. A relevant example here is the case of an allist and a noneist, whereby the latter uses 'exists' as obeying neither EP, nor the rules **R3** nor **R4** mentioned in **§4.4.3**. Thus, to the question 'are those theorists justified in believing that they are not equivocating on the meaning of *exists*?', Williamson's answer comes in the following terms (our italics):

> They certainly do not have the reason that the two proponents of EP had, for they cannot agree to define the 'existence' predicate as that which obeys EP. *At the same time, they have a stronger reason than any in the previous case to believe that they are equivocating* (Williamson (1988: 117)).

Williamson argues here that the confidence that the theorists in question should have in thinking that they are equivocating is stronger than any other reason which could lead them to think otherwise. Now, the parties to the five ramifications of the AP-distinction listed in Table 5.2, as we know, happen to find themselves in exactly the same situation in which the theorists referred to by Williamson in the passage above find themselves in. That is to say, just as the latter, the former lack deductively equivalent uses of a logical expression ('is actual') about which they hold seemingly inconsistent beliefs.

Therefore, by applying Williamson's reasoning to their case, we get the probabilist claim we will critically examine in the remainder of this chapter: our confidence in the hypothesis that 'is actual' is being equivocated in those disputes should be higher than our confidence in the hypothesis that it is not.

At least with respect to four of the five disputes listed in Table 5.2, which we will indicate vey shortly, we found that things do not obviously look as per Williamson's reasoning. Quite the contrary, we have found that, given the evidence available, we seem to have quite a solid ground to think that Williamson's conclusion, applied to the four disputes in question, is false. In other words, the four disputes we will take into consideration in the remainder of the section are likely to be characterised by no equivocation at all about the meaning of 'is actual'. If we are correct, then the crucial hypothesis supporting logical pluralism *about* these disputes, namely the equivocation of 'is actual', is in fact an improbable one. Of course, if this hypothesis is improbable given the evidence available, then we have no good reason to believe it. But logical pluralism *about* those disputes, based on the Williamsonian account given in **§5.4**, was precisely grounded on the hypothesis of the equivocation of 'is actual'. And so, we conclude, if we are unjustified to believe such a hypothesis, then logical pluralism *about* these four disputes, given the evidence available, appears to be unwarranted as well.

As already observed, every dispute listed in Table 5.2 is characterised by a disagreement over whether 'is actual' obeys AP - represented as a disagreement over thesis **A** in Table 5.1. Moreover, recall that, as we noted in **§5.5**, any two parties to the actualism/possibilism dispute share deductively equivalent uses of 'is actual' if, and only if, they both take it to be governed by AP. Thus, in no dispute listed in Table 5.2 do the parties share deductively equivalent uses of 'is actual'. By Williamson's argument above, in each of those disputes, due to a disagreement over thesis **A**, the parties are likelier than not to equivocate on 'is actual'. In order to find evidence against Williamson's claim, the question we need to address is the following. Given the data in Table 5.1 concerning the four theses **B**, **C**, **D** and **E**, how likely is it to suppose that an equivocation of 'is actual' is occurring? To determine this, as anticipated, we will carry out two simulations; one concerning internal dispute 1, and the other internal dispute 2.

In §**5.6.2**, we will run our first simulation. This will aim to determine to what extent we are entitled to believe that 'is actual' is being equivocated on by the parties to internal dispute 1, namely, serious possibilism and frivolous possibilism. As shown by Table 5.1, the parties to this dispute agree on each of the four theses **B**-**E**. Thus, about this dispute, we ask: how likely is it to suppose that the parties equivocate on 'is actual', given that they agree on each of these theses? We will imagine two subjects, S_1 and S_2, asked to register their beliefs about some subject matter in a four question questionnaire. Their answers to the questionnaire will constitute our evidence. We will thus suppose that S_1 and S_2, upon taking the questionnaire, end up with four matching answers out of four, just like the parties to internal dispute 1 do with respect to theses **B**-**E** in Table 5.1. The hypothesis whose probability we want to determine in light of our evidence is that S_1 and S_2 equivocate the subject matter of questionnaire. We will first measure how likely it is for S_1 and S_2 to give four matching answers if we assume that they equivocate on the subject matter of the questionnaire. Then, prior to considering our evidence, we will assume that the equivocation hypothesis is certain, just as we are granting Williamson that his claim, that parties to internal dispute 1 are equivocating on the meaning of 'is actual', is certain. Finally, after considering the evidence, a simple application of Bayes' Theorem will reveal that the likelihood of the hypothesis, that S_1 and S_2 are equivocating on the subject matter of the questionnaire, is actually exactly 24%.

In **§5.6.3**, the same kind of simulation is carried out, this time with the goal of shedding some light on internal dispute 2. The parties to this dispute are serious actualism and serious possibilism which, as shown in Table 5.1, agree on theses **C**, **D** and **E**, but disagree over thesis **B**. Therefore, serious actualism and serious possibilism agree on three of the theses listed in Table 5.1, and disagree on one. We will thus imagine two subjects, S_3 and S_4, asked to register their beliefs about some subject matter in a four question questionnaire, and ending up with three matching answers. By following the same reasoning applied in the first simulation, the result we have obtained is that S_3 and S_4 are only just more than 44% likely to equivocate the content of the questionnaire.

Our two simulations contribute to the present debate by giving us an indication of the extent to which we are entitled to believe Williamson's hypothesis that 'is actual' is equivocated in internal disputes 1 and 2. To give a better taste of the kind of reasoning we will deploy later on in this section, we can now elaborate a bit on the previous paragraph and consider, for definiteness, internal dispute 1 (serious vs frivolous possibilism). First of all, although he never resorted to a similar label, Graham Priest has expressed views which are very much in the vicinity of frivolous possibilism - see in particular Priest (2016b). We can thus take Priest as a representative of the view. We can, on the other hand, consider us as representatives of serious possibilism. So suppose that what we called subjects S_1 and S_2 in the previous paragraph are in fact Priest and us, respectively. Thus, based on Table 5.1, Priest and us disagree over a thesis concerning the expression 'is actual', namely, thesis **A** in that table: Priest takes 'is actual' as not obeying AP; we do. Our disagreement is by hypothesis due, according to the Williamsonian line of argument illustrated above, to our equivocating on the meaning of 'is actual'. We would mean, in other words, different things by that same expression. Determining to what extent we are entitled to believe Williamson's hypothesis about our disagreement with Priest is, as we said, the goal that our simulation in **§5.6.2** aims to achieve. So how will we attempt to carry out such a task? Our idea is that detecting an equivocation between two speakers about the meaning of a term is just the kind of activity that can be carried out by testing their willingness to accept, or reject, whether certain statements apply to the term in question. Our driving intuition, as we will explain more extendedly later on in **§5.6.2**, is that an equivocation about the meaning of a term *decreases*, rather than not, the probability that two subjects agree on whether a certain statement applies to it. Thus, if we consider again Table 5.1, we will see, in addition to thesis **A**, four other theses about the expression 'is actual', namely, theses **B**-**E**[2]. So imagine Priest and us took a questionnaire in which we were asked to register our beliefs about theses **B**-**E**. And suppose that, upon taking the questionnaire, for each thesis among **B**-**E** individually taken, Priest and us always agreed as to whether it applies to 'is actual' - just as per Table 5.1. This, as far as we can see, makes it harder to believe that the hypothesis that Priest and us equivocate on 'is actual' is true. So much harder, we will argue in **§5.6.2**, that we should only be 24% confident in believing such a hypothesis - being this the value we have obtained for its posterior probability. Precisely the same kind of reasoning, but this time with different data, will be at work in **§5.6.3**, discussing the equivocation hypothesis of 'is actual' in internal dispute 2 (between serious and frivolous actualism).

Now, up to this point we have described the kind of simulations we will

[2]Thesis **C** ('Everything that could have been actual already is') may not look as being directly about 'is actual' itself, but rather about the *property* it denotes. But nothing prevents us to reformulate thesis **D** in the following terms: Everything of which 'could have been actual' can be truthfully predicated is already something of which 'is actual' can be truthfully predicated. Analogous considerations apply to thesis **E**.

carry out about internal disputes 1 and 2, and have specified the level of confidence we should attribute to the equivocation hypothesis of 'is actual' in them. From there, we will make two further claims, this time about external disputes 3 and 4. The first claim, which we will make at the end of **§5.6.2** is that the hypothesis that 'is actual' is equivocated on in external dispute 3 is just as likely as in internal dispute 1. The second claim, which we will make at the end of **§5.6.3** is that the hypothesis that 'is actual' is equivocated on in external dispute 4 is just as likely as in internal dispute 2. Our arguments for these claims share exactly the same, following form.

In the case of external dispute 3, the argument goes as follows. Recall, the parties to external dispute 3, as shown in Table 5.2, are serious actualism and frivolous possibilism. First of all, given our results from **§5.5**, we have a principled refutation, *by Williamson's standards*, that 'is actual' is equivocated on by serious actualists and serious possibilists. In other words, what the former mean by 'is actual' is just what the latter mean. Given our first simulation (about internal dispute 1) our confidence in the hypothesis that 'is actual' is equivocated on by serious and frivolous possibilists should be 24%. Therefore, since what serious possibilists mean by 'is actual' is equivalent to what serious actualists mean, our confidence in an equivocation of 'is actual' between serious actualists and frivolous possibilists should be exactly analogous to the confidence in an equivocation of 'is actual' between serious possibilists and frivolous possibilists. That is, 24%.

In the case of external dispute 4, the argument goes as follows. Recall, the parties to external dispute 4, as shown in Table 5.2, are serious possibilism and frivolous actualism. Again, our results from **§5.5** established that serious actualists and serious possibilists mean by 'is actual' equivalent things. Given our second simulation (about internal dispute 2) our confidence in the hypothesis that 'is actual' is equivocated on by serious and frivolous actualists should be just more than 44%. Since what serious possibilists mean by 'is actual' is equivalent to what serious actualists mean, our confidence in an equivocation of 'is actual' between frivolous actualists and serious possibilists should be exactly analogous to the confidence in an equivocation of 'is actual' between serious actualists and frivolous actualists. That is, just above 44%.

This means that, by the end of this section, we will have managed to provide evidence against logical pluralism *about* five of the six ramifications of the actualism/possibilism debate considered in this chapter. Before turning to our simulations, let us highlight the main characteristics of our questionnaire and our assumptions about it.

Our questionnaire contains four statements about a certain subject matter. As in Table 5.1, there are only two possible answers for each statement: ✓ (acceptance of the statement) and ✗ (rejection thereof). If the subjects give matching answers about the same statement (two ✓s or two ✗s), then call this event an *agreement*; a *disagreement* being the event that an agreement does not occur.

We make three assumptions. First, a subject's acceptance and rejection of a statement have equal probability (50% each). This captures the intuition that, for each statement, the two answers are equally plausible. A neutral observer of the actualism/possibilism debate will make that assumption too.

Secondly, we take one subject's answers to the questionnaire as independent events, with no influence on each other. One could question this assumption on the grounds that, in the internal disputes, the parties' acceptances and rejections of theses **A**–**E** in Table 5.1 are related. However, this point is irrelevant for our goal. In principle, accepting or rejecting any of these theses does not dictate which other theses one could or could not accept[3]. Of course some combinations will result in extravagant theories, but it would be a mistake to rule ahead of enquiry that some form of justification for them could not in principle be found - or in any case, this would be a substantive claim. Thus, acceptances and rejections of theses **A**–**E** are better thought of as independent events, as are acceptances and rejections in our questionnaire.

Finally, we assume that the subjects take the questionnaire independently of one another, so that either subject's answers have no impact on the other's.

5.6.2 Simulation 1

We compare here the case of serious and frivolous possibilism, the parties to internal dispute 1, to the case of subjects S_1 and S_2. Let h_1, our hypothesis, stand for the proposition that S_1 and S_2 equivocate the content of the questionnaire; and let e_1, our evidence, stand for the proposition that, upon taking the questionnaire, S_1 and S_2 end up with four agreements (so, no disagreements). What we want to determine with Bayes' Theorem is $Pr(h_1|e_1)$: the conditional probability that our hypothesis occurs given the evidence available. This requires us to assign a value to $Pr(e_1)$, $Pr(e_1|h_1)$ and $Pr(h_1)$. However, we said earlier that, prior to considering any evidence, we take h_1 to be certain. Therefore, we can already set $Pr(h_1) = 1$. We are thus left with determining $Pr(e_1)$ and $Pr(e_1|h_1)$.

Let us start with $Pr(e_1)$, the probability that S_1 and S_2 end up with four agreements. Since all events are independent, we can directly compute $Pr(e_1)$

[3] This seems to be the case even for theses **C** and **E**. An acceptance of the former is surely more frequently accompanied by a rejection of the latter. But as Menzel (2020: 1984) notes this need not be so; a theory could in principle rule out non-actual but possible objects, whilst allowing for non-actual but impossible ones. In such a theory, it seems that one could accommodate both thesis **C** and **E**.

by elevating to the fourth the the probability that an agreement obtains about a random statement.

First, let $S_1^{\checkmark}$ and $S_1^{\text{✗}}$ stand for the propositions that S_1 answers with a ✓and that S_1 answers with an ✗ respectively; similarly for S_2. Consider a random statement of the questionnaire; we said that each subject is equally likely to answer with a ✓ or an ✗. Hence,

$$Pr(S_1^{\checkmark}) = Pr(S_1^{\text{✗}}) = Pr(S_2^{\checkmark}) = Pr(S_2^{\text{✗}}) = 0.5 \ \ (50\%).$$

Since the subjects' answers are independent, the probability of obtaining two ✓s is

$$Pr(S_1^{\checkmark}) \times Pr(S_2^{\checkmark}) = 0.5 \times 0.5 = 0.25 \ \ (25\%).$$

Likewise, the probability of obtaining two ✗s is

$$Pr(S_1^{\text{✗}}) \times Pr(S_2^{\text{✗}}) = 0.5 \times 0.5 = 0.25 \ \ (25\%).$$

Adding these two values gives us the probability of an agreement about the statement. Thus,

$$Pr(1 \text{ Agr}) = (Pr(S_1^{\checkmark}) \times Pr(S_2^{\checkmark})) + (Pr(S_1^{\text{✗}}) \times Pr(S_1^{\text{✗}})) = 0.5 \ \ (50\%).$$

Since an agreement and a disagreement exhaust all the possible events, the probability of a disagreement about a random statement is the complement of the probability of an agreement. Thus, we can set

$$Pr(1 \text{ Dis}) = 1 - Pr(1 \text{ Agr}) = 0.5 \ \ (50\%).$$

The value of $Pr(e_1)$ is now computed in formula (1) below.

$$Pr(e_1) = Pr(1 \text{ Agr})^4 = 0.5^4 = 0.0625 \ \ (6.25\%) \tag{5.1}$$

This means that S_1 and S_2 are 6.25% likely to end up with four agreements in the questionnaire.

Now we need to determine $Pr(e_1|h_1)$, the probability that S_1 and S_2 end up with four agreements *given that* they equivocate the content of the questionnaire.

Finding an objective value for $Pr(e_1|h_1)$ is a difficult task, perhaps an impossible one. Nonetheless, we can help ourselves to some general principles and exploit them to arrive at a satisfactory approximation. For instance, it should be pretty obvious that $Pr(e_1|h_1) < Pr(e_1)$. For, knowing that S_1 and S_2 equivocate the subject matter of the questionnaire should certainly decrease the probability that they end up with no disagreements at all. Assuming an equivocation, we would in fact expect to see disagreements, rather than agreements, occurring with a higher frequency.

For example, in a normal conversation between Person 1 and Person 2 about banks, the event that Person 1 and Person 2 agree on every respect may well happen. However, if we knew that Person 1 took *bank* as a financial institution and Person 2 as one side of a river, we would reasonably expect the probability of this event occurring to be surely lower.

To make sense of this intuition, the principle we assume is that an equivocation has two correlated effects on our questionnaire. On the one hand, an equivocation decreases the probability of an agreement occurring about a random statement, whilst increasing the probability of a disagreement.

So, let $Pr(1 \text{ Agr}|h_1)$ be the probability of obtaining an agreement about a random statement *given that* S_1 and S_2 equivocate its content, and $Pr(1$

Dis$|h_1)$ the probability of obtaining a disagreement under the same conditions.

Since Pr(1 Agr)= Pr(1 Dis)= 0.5, we can set $Pr(1 \text{ Agr}|h_1) < 0.5$, and therefore $Pr(1 \text{ Dis}|h_1) > 0.5$.

A reasonable value for $Pr(1 \text{ Agr}|h_1)$ and $Pr(1 \text{ Dis}|h_1)$ is in order:

$$Pr(1 \text{ Agr}|h_1) = 0.35 \ \ (35\%);$$

$$Pr(1 \text{ Dis}|h_1) = 0.65 \ \ (65\%).$$

This way, we are assuming that an equivocation decreases by 30% the probability of S_1 and S_2 ending up with an agreement about a random statement, whilst increasing by the same amount the probability of a disagreement. It is thus more difficult, but far from impossible, for S_1 and S_2 to obtain an agreement; at the same time it is easier, but far from certain, for them to obtain a disagreement.

The value of $Pr(e_1|h_1)$, computed in formula (2) below, is then obtained by elevating to the fourth the probability of obtaining an agreement about a random statement, *given* an equivocation of the content of questionnaire.

$$Pr(e_1|h_1) = Pr(1 \, \text{Agr}|h_1)^4 = 0.35^4 =\approx 0.0150 \, (\approx 1.5\%). \tag{5.2}$$

Assuming that S_1 and S_2 equivocate the content of the questionnaire, they are 1.5% likely to end up with four agreements.

We are now in a position to apply Bayes' Theorem and calculate $Pr(h_1|e_1)$, the probability of our hypothesis, *given* the evidence available.

$$Pr(h_1|e_1) = \frac{Pr(e_1|h_1) \times Pr(h_1)}{Pr(e_1)} = \frac{0.0150 \times 1}{0.0625} = 0.24 \ (24\%). \quad (5.3)$$

If S_1 and S_2 end up with four agreements, they are 24% likely to be equivocating the content our questionnaire. This entails that the evidence available heavily disconfirms the equivocation hypothesis. At this point, we should set our degree of confidence in such a hypothesis to 24 %, which is the value of $Pr(h_1|e_1)$ - or at least, this is a standard move in Bayesian Confirmation Theory. Hence, in light of the evidence, the equivocation hypothesis is by far unlikelier than not.

If our simulation succeeds in informing internal dispute 1 of the actualism/possibilism debate, then we should set our degree of confidence in the hypothesis of 'is actual' being equivocated therein to the same value. Then, not only is the resulting degree of confidence clearly insufficient to justify a belief in the hypothesis; given the evidence available, we have strong reason to disbelieve such a hypothesis. The equivocation of 'is actual' was the only ground for logical pluralism *about* this dispute. If this hypothesis is unlikelier than not, so is logical pluralism *about* this dispute.

This result immediately impacts on the probability that logical pluralism is true *about external* dispute 3 of the actualism/possibilism debate, involving frivolous possibilism vs serious actualism. As a corollary of our findings in this simulation, we can derive that our degree of confidence in 'is actual' being equivocated in this ramification of the actualism/possibilism debate should too be set to 24 %.

Our argument for this claim is in order. Given our result from **§5.5**, we have a principled refutation that serious possibilism and serious actualism equivocate 'is actual'. Thus, a theory's probability to equivocate 'is actual' with serious possibilism must be analogous to the probability of equivocating it with serious actualism. Given our result in this section, frivolous possibilism is 24% likely to equivocate 'is actual' with serious possibilism. Hence, it must also be 24% likely to equivocate 'is actual' with serious actualism. Therefore, we should set our level of confidence in 'is actual' being equivocated in external dispute 3 to 24 %. Placing such a low level of confidence in the equivocation of 'is actual' in external dispute 3 entails that our confidence should be higher in logical pluralism being *false about* this dispute.

We now turn to our second simulation, where the parties to internal dispute 2, serious and frivolous actualism, are compared to subjects S_3 and S_4, obtaining three agreements in our four question questionnaire.

5.6.3 Simulation 2

The simulation to be carried out here is exactly analogous to the previous one, so most of the key data used there carry over here. Let h_2 be the hypothesis that S_3 and S_4 equivocate the subject matter of the questionnaire. Again, the probability of this hypothesis prior to considering any evidence is certain; so we set $Pr(h_2) = 1$.

Let e_2, our evidence, stand for the proposition that S_3 and S_4 obtain one disagreement and three agreements. Since our evidence is different than before, we need to calculate its probability in a different way, even though the result will not vary. Like before, $Pr(1 \text{ Agr}) = Pr(1 \text{ Dis}) = 0.5$. Thus, $Pr(e_2)$ is the result of multiplying $Pr(1 \text{ Dis})$ by the *cube* of $Pr(1 \text{ Agr})$:

$$Pr(e_2) = 0.5^4 = 0.0625 \ (6.25\%). \tag{5.4}$$

Now for $Pr(e_2|h_2)$, the probability that our new evidence occurs given the equivocation hypothesis of S_3 and S_4. We still assume that knowing that

S_3 and S_4 equivocate the content of the questionnaire makes them 30% less likely to obtain an agreement about a random statement, and 30% likelier to obtain a disagreement. So, we set $Pr(1 \text{ Agr}|h_2) = 0.35$ and $Pr(1 \text{ Dis}|h_2) = 0.65$. Then, $Pr(e_2|h_2)$ is calculated by multiplying $Pr(1 \text{ Dis}|h_2)$ by the cube of $Pr(1 \text{ Agr}|h_2)$:

$$Pr(e_2|h_2) = 0.65 \times 0.35^3 =\approx 0.0279 \ (\approx 2.79\%). \tag{5.5}$$

We calculate $Pr(h_2|e_2)$ in formula (6) below, corresponding to the probability that S_3 and S_4 equivocate the content of the questionnaire given the evidence available.

$$Pr(h_2|e_2) = \frac{0.0279 \times 1}{0.0625} = 0.4464 \ (44.64\%). \tag{5.6}$$

As promised, S_3 and S_4 are thus shown to be 44.64 % likely to equivocate the subject matter of the questionnaire. Given the analogy between these subjects and the parties to internal dispute 2 (serious and frivolous actualism), we should conclude that the latter are 44.64 % likely to equivocate 'is actual'.

This result has a direct bearing on external dispute 4, involving frivolous actualism and serious possibilism. For, knowing that frivolous actualism is 44.64 % likely to equivocate 'is actual' with serious actualism, and knowing (from **§5.5**) that serious actualism and serious possibilism mean the same by 'is actual', frivolous actualism must also be 44.64 % likely to equivocate 'is actual' with serious possibilism.

This was the last result to show. To complete the picture, we would have to examine the case of external dispute 5, involving the frivolous versions of actualism and possibilism . Given the results obtained so far, it is reasonable to suppose that the equivocation hypothesis be likelier to be false here as well. However, we leave a more precise analysis of the case for future work. Before taking stock of what has been shown in this chapter, a few words are needed on what this section has claimed, and illustrate a possible line of response by Williamson to the arguments here presented.

The two simulations carried out in the past two sub-sections, as we have seen, showed us that Williamson's verdict about the equivocation hypothesis of 'is actual', about internal disputes 1 and 2, does not obviously withstand the evidence available, which we had collected in Table 5.1 in **§5.6.1**. Then, by invoking our results from **§5.5**, we extended this conclusion to external disputes 3 and 4 as well. We take such results to indicate that Williamson's logical pluralism *about* those four ramifications of the AP-distinction is by no means obvious. In light of the probabilistic nature of the arguments proposed in this section, Williamson's rebuttal could come in at least two forms. On the one hand, Williamson may protest that we have failed to consider all the evidence necessary to carry out simulations of the sort proposed here. And, nothing in principle prevents that, if this line were successfully pressed, the new evidence could overturn our findings and show that the equivocation hypothesis of 'is actual' is in fact likelier than not. Alternatively, Williamson may point to a flaw in the way our findings were achieved. Perhaps a methodological case could be made for thinking that the probabilistic reasoning deployed in this section is of little significance given the abstract character of the notion around which the AP-distinction is centred, actuality. But whilst such lines of response are entirely legitimate, a case for them still has to be made. To our opponent, the challenge is therefore to undertake this task.

5.7 Conclusion

The aim of this chapter was to reject two reasons meant to provide support for the non-reality of the disagreement between actualism and possibilism, a view defended by Williamson (2010, 2013c, 2016b). First of all, we followed Menzel (2020) in his presentation of the disagreement. This was important, in that as we saw, there are other ways to express the distinction between actualism and possibilism, but we set those aside. We then refuted a translation schema by Correia (2007), invoked by Williamson (2013c: §7.1) to show that actualism and possibilism do not really express contradictory claims. We subsequently turned to the claim that logical pluralism *about* the actualism/possibilism dispute is justified by the fact that the parties equivocate 'is actual', due to their not using it in deductively equivalent ways. We considered six ramifications of the actualism/possibilism debate. By Williamson's standards, one of those ramifications is certainly not characterised by an equivocal disagreement. As for four of the remaining five ramifications, we have shown that we have strong reason to disbelieve an equivocation of 'is actual'. Having finally indicated two ways in which a rebuttal to our arguments could be put forward, the ball, we submit, is back in Williamson's court.

Conclusion

In this final part of our work, we want to draw some conclusions, summing up the issues that we have encountered and the claims we have made along the way. This will also be the occasion to highlight possible future developments of the present research, and indicate connections that we could not explore in the present context.

Our starting point was an empirical datum, the fact that agents engage in many sorts of cognitive activities; they think and imagine, for example. And when they think or imagine, they often think or imagine *some thing*, an object. We have always struggled to see the cogency of the view that the thing in question, on pain of irrationality, should be tacitly understood as being an existent. Thoughts of this sort prompted the present research.

We started in **Chapter 1** by presenting the methodological account assumed in our work: anti-exceptionalism about logic. The picture of logic delivered by this methodology is that of a scientific discipline, much more concerned with empirical data than one would normally think. Research on what actually constitute the data of logic has attracted the attention of many commentators in recent years, and certainly our attention as well. It is certainly a topic we will explore in future research in the next years. The anti-exceptionalist account of theory choice played a crucial role at the end of the first part of our **Chapter 3**, where we argued that the noneist system $\mathcal{N}^R$ represented the most rational choice to make in revising logic in light of *de re* intentionality.

Intentionality, principally *de re*, was introduced in this work in **Chapter 2**. There we argued that classical logic on it Quinean parsing theory fails to account for the data of intentionality, and ought to be revised. We there presented a first candidate system for logical revision: the system $\mathcal{P}$, expression of the positive school of the free logic tradition. It certainly delivered an account of reasoning more adequate to the data of intentionality than that of classical logic, but not the best possible.

Indeed, we went on in **Chapter 3** to present another revisionary programme, that of noneism. Noneism, as Routley would probably say, made the transition towards a fully liberated logic possible. The system $\mathcal{N}^R$, characterised by quantifiers interpreted neutrally and an 'exists' predicate not definable in terms of those and identity, was the logic that scored comparatively best, in terms of cost-benefit, amongst those considered. **Chapter 3** was also the occasion to say something about the non-existent from a metaphysical point view. We there considered the issue of the ontological dependency of the non-existent on the existent. We spent much time discussing the distinction between realist and anti-realist noneism. As we have noticed, our preferred logic, $\mathcal{N}^R$, naturally invites a realist interpretation. Realist noneism, probably because of its invoking notions such as those mental pointing and primitive intentionality, unfortunately does not have a great reputation amongst contemporary metaphysicians. We argued in **Chapter 3**, however, that the predictions made by our realist logic $\mathcal{N}^R$ are just as commonsensical as those made by a negative free logic implementing anti-realist principles. We hope that our arguments could contribute to make the view more appealing. Exploring the possible applications of realist noneism will also be a topic for future research.

In **Chapter 4** and **Chapter 5**, we addressed the topic of the reality of a logical disagreement between friends of non-existent objects and their detractors. Typically, philosophers who claim that disputes about existence are merely verbal tend to be classical logicians. In **Chapter 4** and **Chapter 5**, for example, the arguments we confronted have been all put forward by Timothy Williamson, possibly the most prominent advocate of classical logic.

In **Chapter 4**, we saw Williamson claiming that a dispute about the validity of the Existence Principle is merely verbal, and presented three reasons against his view. **Chapter 5**, was concerned with Williamson's dissatisfaction towards a distinction which have always find very clear, namely, between philosophers saying that there are no merely possible objects (actualists), and philosophers denying this view (possibilists). Also in that case the arguments presented were three. Such arguments were of very different natures: some of them were formulated proof-theoretically, some of them considered mappings, some of them offered probabilistic analyses.

There is something which these arguments have in common: that they all aim to show that disagreements are to be taken seriously and not dismissed as mere talking past each other. We think that the general thesis we have accepted here, that some things do not exist, is to be taken seriously as well. We hope with this work, we have contributed to show why.

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