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QUINE BETWEEN RUSSELL'S EXTREME REALISM AND CARNAP'S EXTREME RELATIVISM: A COHERENT ALTERNATIVE?

\mathbf{BY}

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Submitted in fulfilment of the requirements for the degree of Doctor of Philosophy at Trinity College, Dublin University in the Department of Philosophy.

October 2005

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20 th July 2006

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INTRODUCTION

In the philosophical literature of the past century few if any philosophers present a greater wealth of ideas or pose more important problems than W. V. Quine. In spite of the diversity of his contributions to philosophy, it is clear that they form a systematic unity. It is precisely the systematic unity of his thought that has established Quine as the most influential philosopher of the past century. The basis of Quine's system lies in his revival of "naturalism": this is the view that there is no vantage point outside science; philosophy is continuous with science not distinct from it or prior to it; hence, it is science that tells us what exists and science that tells us how we know what exists. The complex system of interlocking positions that make up Quine's naturalism have shaped the concerns of the philosophical community for the past fifty years.

As befitting a philosopher of such influence and stature, there are many recent works on Quine. Some of these are written with great clarity, rigour and scholarship, and more or less comprehensively cover his main positions and arguments. What, then, is my reason for adding to the flood? Originally, I was motivated by questions about what I considered to be "realism" and "relativism" and the relation between these to mathematics. Consequently, the combination of realist and relativist dimensions in Quine's philosophy appealed to me as offering a solution to some of these worries. However, it took only a short time studying Quine to realise that my vague ideas of "realism" and "relativism" could not have been whatever I assumed them to be. But my study of Quine's brilliant and rigorous analysis of these concepts raised two important questions that replaced my initial formless groping.

First, "How are realism and relativism related in Quine's philosophy?" I try to show here that the correct way to understand Quine's philosophical position is as a compromise between the polarities of extreme realism and extreme relativism. However, there is a tendency in works on Quine to emphasis either the relativist dimension of Quine's position to the detriment of the realist dimension, or to do the opposite of stressing Quine's realism at the expense of his relativism. This is not surprising as it is difficult to reflect the subtlety of the balancing act Quine performs between these two positions. In contrast, I argue that the combination of realism and his relativism in Quine's position is not a source of tension in his philosophy; rather it is precisely what is attractive about this position. For it is only by combining important and profound aspects of both realism and relativism, that Quine avoids the problems associated with extreme versions of both of these positions. This interpretation naturally raises the issue of what is required for this compromise position to actually hold these apparently competing tendencies together. I show here, that for Quine, the key is to take naturalism very seriously. That is, judging as earnestly and sincerely as we can from within our on-going scientific conceptual scheme.

The second question to be considered here is, "Does Quine's compromise actually does work?" That is, once we have fully acknowledged both the realistic and the relativistic sides of is philosophy is it the case that Quine actually provides a genuine alternative from either extreme? The answer to this question is more complicated, but ultimately in this thesis I argue that Quine's position, as he sets it out, cannot do the work that he envisaged of it. That is, it does not provide a genuine alternative to the opposing polarities of extreme realism and extreme relativism.

Turning to consider some specifics, in this thesis I characterise the opposing polarities of extreme realism and extreme relativism in terms of the philosophy of Bertrand Russell and Rudolf Carnap respectively. It is clear that Quine is influenced greatly by each of these philosophers, and the promise held out by Quine's approach is that, by accepting enough of Carnap's relativism to avoid Russell's extreme realism, and enough of Russell's realism to avoid Carnap's extreme relativism, he can circumvent the problems associated with both Carnap or Russell. To begin, I want to show how he claims to achieve this compromise.

In chapter 1, I characterise extreme realism in terms of Bertrand Russell's philosophy between his break from Absolute Idealism at the end of the nineteenth century and circa 1914. I characterise extreme realism as a metaphysical view about reality as it is in itself. To be precise, it is the view that reality comes to us "pre-carved up"; that is, completely independent of our interaction with it. This view emphasises the distinction between the question of what exists and the question of how we know what exists. Russell holds that the metaphysical existence of reality as it is in itself is a completely separate issue from any issues in epistemology or semantics. The central point running through extreme realism is that ontology doesn't rest on either of these two; quite the opposite in fact. Russell holds that what can be known or can be meaningfully said depends on what exists.

In general, Russell holds that in knowledge the mind gains direct and un-mediated contact with reality *as it is in itself*. This is his doctrine of "acquaintance". Russell believes that in knowledge we are acquainted both with particular objects, namely – sense data, i.e., the appearances of physical objects, and general objects, such as relations,

universals, propositions, and so on. For Russell, all of these are part of reality as it is in itself; while only the particular objects have existence, general objects "subsist" in a separate realm of being. Russell also develops a philosophy of language in keeping with this notion of acquaintance; be holds that the meaningfulness of sentences containing proper names presupposes acquaintance with, and hence the existence of, the entity named, and that the meaningfulness of a sentence presupposes acquaintance with, and the existence of, a proposition that is the meaning of that sentence. Consequently, Russell holds that analysing language reveals the actual constituents and structure of reality as it is in itself. Ultimately, for Russell, acquaintance provides a transcendent connection between the knower and reality as it is in itself, allowing the knower to escape from her theory-bound, immanent perspective.

Following on from this I outline Quine's rejection of extreme realism in terms of his specific rebuttal of Russell's philosophy. I argue that the basis for Quine's rejection of Russell's extreme realism is his argument that all inquiry is inevitably immersed in our on-going conceptual scheme, and while we can change our conceptual scheme bit-by-bit from within, there is no possibility of escaping from all conceptual schemes. This cuts against Russell's extreme realism because it rules out Russell's assumed transcendent connection in acquiescence between the knower and reality as it is in itself.

I show that Quine develops this central insight of working from within our ongoing conceptual scheme into a rebuttal of extreme realism in terms of, what I call
"strong-global" under-determination. Quine holds that from our immanent perspective,
immersed in on-going inquiry, we must accept that all theory is an extrapolation from the
empirical checkpoints that count as evidence for or against it, but that every theory goes

far beyond what is directly supported by this evidence. It follows that while a theory is based on evidence, because the same evidence supports numerous radically different theories equally, any theory is under-determined by the evidence that supports it. In addition to this basic thesis, however, Quine holds that our conceptual scheme is under-determined in a strong-global sense. That is, if we take all the observation sentence in language used for reporting observable events in the external world, and apply dates and positions to them in all combinations irrespective of whether they were actually observed at the place and time, those that are true by virtue of the observable though unobserved past and future events in the world gives us the totality of possible evidence. I have called this idealised situation in which the totality of all evidence has been collated "end-of-inquiry", and the conceptual scheme that accounts for this totality of evidence our "idealised conceptual scheme".

Quine then applies this notion of strong-global under-determination to rebut Russell's version of extreme realism. Russell assumes that in knowledge we have acquaintance with either sense data, or universals, both of which are aspects of reality as it is in itself, and that in knowledge we break through our conceptual scheme to gain access to reality as it is in itself. But, in contrast to this, Quine holds that from our perspective immanent to our on-going conceptual scheme there is no possibility, even unto eternity, that we can formulate any one systematisation of our surface irritations that is better than all possible others; rather, he holds that countless alternative conceptual schemes will be tied for first place. Thus, strong-global under-determination recognises that our conceptual scheme is just one of a series of possible conceptual schemes, equally as good as one another, but logically incompatible with one another. This implies that the

sense data, or for Quine "observation sentences", that constitute the evidence for scientific theory is not, as Russell assumed, part of reality *as it is in itself*, but is rather a theoretical posit, constructed immanent to our on-going conceptual scheme. Hence, in contrast to acquaintance, in knowledge we do not escape from our immanent perspective.

In addition, I show that on this basis Quine also rejects Russell's extreme realist metaphysics. Quine argues that we must take seriously the view of reality that we develop immanent to our on-going conceptual scheme; but this means rejecting the metaphysical notion of reality as it is in itself. This extreme realist notion holds that there is a reality somehow above or beyond reality as posited by on-going science, which is somehow more "real" than scientific reality. However, Quine insists that we take seriously the conceptual scheme we are immersed in, and so rejects the extreme realist metaphysical notion of reality as it is in itself as unscientific. Finally, I show that Quine also rejects Russell's extreme realist account of meaning by showing that the mere meaningfulness of language does not commit us to the existence of any entities whatsoever.

As I said above, in this thesis I characterise Quine as holding a compromise position between the polarities of extreme realism and extreme relativism. Consequently, in chapter 2, I give an account of extreme relativism and set out Quine's rejection of this view. Here, Rudolf Carnap's philosophy is taken to represent the polarity or extreme relativism.

To begin, I characterise Carnap's extreme relativism in terms of his rejection of all metaphysical assertions as meaningless pseudo statements, and his subsequent tolerance of radically different world-views. The starting point of Carnap's extreme

relativism is his notion of a linguistic framework, and the subsequent distinction between statements made internal or external to a framework. Carnap holds that all theoretical, true or false judgments arise internal to some framework or other: the rules of the framework provide the rules that determine the true or false answer to judgments. However, an internal assertion does not imply belief in the entities asserted; rather, the truth or falsity of an assertion is relative to the framework or form of language that contains it. In contrast, statements external to a framework are not genuine theoretical assertions but are proposals about whether to adopt a framework, a form of language or not. These are determined on purely pragmatic grounds, such as whether the framework is useful, economical, simple, and so on; hence, a framework itself is never true or false. Consequently, adopting a framework signifies accepting a form of language, not the belief in the existence of the entities asserted in the framework. So, in contrast to Russell's extreme realist notion of acquaintance with the object of knowledge, Carnap holds that nothing we say or know implies an ontological commitment. Because Carnap holds that none of these frameworks is taken seriously as implying an ontological commitment to the entities asserted, the philosopher should adopt a tolerant or extreme relativistic attitude to alternátive frameworks, allowing as many to be developed as possible.

The key to Carnap's extreme relativism is his distinction between internal and external sentences. External sentences have a quite different epistemological status from all other sentences. These sentences are not answerable to evidence, and thus account for apriority and necessity. By holding that the role of philosophy is to analyse these external sentences, Carnap secures the status of philosophy as offering a methodology distinct

from science. That is, for Carnap, the philosopher does not get involved in on-going debates, but stands aloof from all inquiry and aims to clarify these frameworks from a neutral perspective. Thus, for Carnap, philosophy offers a transcendent perspective outside of all linguistic frameworks, from where it becomes possible to adopt a tolerant, or relativistic, attitude to competing frameworks without baving to take anyone of them seriously. I conclude this account of Carnap by explaining the key role of the analytic-synthetic distinction in facilitating the internal-external distinction and, as a consequence, in this model of extreme relativism.

In the second part of chapter 2, I argue that Quine rejects extreme relativism in general, and show how he rebuts Carnap's version of extreme relativism in particular. I argue here, that once again the starting point of Quine's rejection of Carnap is his insistence that all inquiry is necessarily immersed in some on-going conceptual scheme or other: there is no possibility of a transcendent perspective. This assertion that we must always work from within our on-going conceptual scheme cuts against Carnap's extreme relativism because it means that, even though our conceptual scheme is one among a number of other equally good conceptual schemes, we nevertheless must take our current conceptual scheme seriously, and judge all other conceptual schemes from this perspective. This means that in contrast to Carnap, Quine asserts that it is not possible to stand aloof from on-going inquiry and adopt a tolerant, relativistic, attitude to alternative conceptual schemes; rather, for Quine, the philosopher is in the same boat as everyone else, taking seriously the real debates in on-going inquiry, and getting her hand dirty adjudicating between theory choices, asserting which of them are true and which are false. So although Quine does not hold that there is a reality as it is in itself for our

conceptual scheme to be uniquely eight or wrong about, he rejects Carnap's extreme relativistic view that we should tolerate all conceptual schemes equally.

To be precise, I show here that Quine rebuts Carnap's extreme relativism by rejecting the analytic-synthetic distinction. Ultimately, Quine rejects this distinction because it has no role in any scientific account of how we use language on an on-going basis. In contrast, Quine holds that language forms a holistic web that rules out the possibility of a sharp distinction between analytic and synthetic sentences. The upshot of this, for Quine, is that without the analytic-synthetic distinction Carnap cannot separate language into purely pragmatic, external sentences and purely theoretical, internal sentences; rather, Quine argues that theoretic and pragmatic factors play a role in justifying all sentences. Thus, Quine rebuts Carnap's extreme relativism by rebutting the epistemological distinction between internal and external sentences that this view presupposes. I conclude this account of Quine's rejection of extreme relativism by explaining Quine's criterion of ontological commitment. I argue that this is a prime example of what it means for Quine to take our on-going conceptual scheme seriously.

It is clear, therefore, that from very early in his career Quine rejected both extreme realism and extreme relativism. For example, in his essay "Identity, Ostension, and Hypostasis" of 1950, Quine writes

The fundamental-seeming philosophical question, How much of our science is merely contributed by language and how much is a genuine reflection of reality? is perhaps a spurious question which itself arises wholly from a certain particular type of language. Certainly we are in a predicament if we try to answer the question; for to answer the question we must talk about the world as well as about language, and to talk about the world we must already impose upon the world some conceptual scheme peculiar to our own special language.

Yet we must not leap to the fatalistic conclusion that we are stuck with the conceptual scheme that we grew up in, we can change it

bit by bit, plank by plank, though meanwhile there is nothing to carry us along but the evolving conceptual scheme itself. The philosopher's task was well compared by Neurath to that of a mariner who must rebuild his ship on the open sea.

We can improve our conceptual scheme, our philosophy, but by bit while continuing to depend on it for support; but we cannot detach ourselves from it and compare it objectively with an unconceptualized reality. Hence it is meaningless, I suggest, to inquire into the absolute correctness of a conceptual scheme as a mirror of reality. Our standard for appraising basic changes of conceptual scheme must be, not a realistic standard of correspondence to reality, but a pragmatic standard. ¹

Here, Quine rejects both Russell's extreme realism, dismissing the "fundamental-seeming philosophical question" of the nature of reality as it is in itself as a bogus problem that arises only by not taking seriously our on-going conceptual scheme; but he also rejects Carnap's extreme relativism by rejecting that philosophy has its own distinctive methodology giving us a form of inquiry separate from on-going scientific inquiry. The key question, therefore, becomes "How does Quine forge a coherent compromise between these extremes?"

In chapter 3, I turn to this question of how Quine builds his compromise position by binding a number of strands from either polarity into a coherent, unified middle position. Here I argue that while it appears that because they express such radically different philosophical viewpoints, weaving strands from these polarities together would prove quite problematic, in actual fact Quine is unconcerned by the opposing tendencies in his philosophical position. The key for Quine is that from the perspective of the compromise position he embodies, these problems simply do not arise. Quine's fundamental point is that both extremes are based on a presupposed transcendent perspective, somehow outside or above our current, theory-bound view of reality;

¹ W. V. Quine, 'Identity, Ostension, and Hypostasis' reprinted in <u>From a Logical Point of View</u>. (Cambridge, MA: Harvard University Press 1953), p. 78-79

however, if we really take seriously our current on-going conceptual scheme, then this transcendent perspective and the extreme positions based on it are not possible. To understand Quine's philosophical position, one must acknowledge Quine's view that by working from within our on-going conceptual scheme it is possible to combine and reconcile realism and relativism. This is the basis of Quine's so called "robust realism".

This concludes the first part of my thesis. In part 1, I make every effort to present Quine's philosophical position in as strong a light as possible. In particular, I try to emphasise that the attractive quality about Quine's compromise position is its openness to developments in on-going inquiry in a non-dogmatic fashion. Both of the extreme positions are based on the transcendent perspective, but once disabused of this illegitimate vantage point one can only assert extreme realism or extreme relativism dogmatically: extreme realism is based on Russell's brute assumption that in knowledge we are acquainted with reality as it is in itself; while extreme relativism is based on Carnap's brute assumption of an aloof perspective from where to adjudicate between debates in on-going inquiry. By rejecting these dogmatic positions, Quine is open-minded towards developments in on-going inquiry, and is willing to take seriously the commitments of our best inquiry, whatever they turn out to be.

In part 2, I try to set up a problem for Quine's compromise position. In chapter 4, I try to show the connection between some of the distinctions explained in Part 1. In particular, I show that Quine's distinction between real and indeterminate theory choices is linked to his distinction between different versions of the under-determination thesis. I argue that, for Quine, a theory choice is a real decision if it is only under-determined in the normal, i.e., non-strong-global, sense; while, in contrast, any theory choice that is

strong globally under-determined is also indeterminate. As I have argued, Quine's compromise position is based on his assertion, against Russell, that theory choice at endof-inquiry is strong-globally under-determined, coupled with his assertion, against Carnap, that theory choices in on-going inquiry are real decisions. Now, given the connection between the real-indeterminate distinction and the distinction between different versions of the under-determination thesis, we can formulate the following picture of Quine's so-called "robust realist" account of on-going inquiry: for Quine, strong-global under-determination infects only end-of-inquiry and illegitimate, i.e., nonphysical science, modes of on-going inquiry, but on-going scientific inquiry is insulated from strong-global under-determination; for this reason all theory choices in on-going scientific inquiry are real decisions, even though theory choices at end-of-inquiry and in illegitimate on-going inquiry are indeterminate. In the second part of this chapter, I set out Quine explanation of this connection between physical science, the real-indeterminate distinction and various versions of the under-determination thesis in terms of the notions of full-coverage, facts-of-the-matter and the reciprocal containment of epistemology and ontology.

In chapter 5, I show that Quine's view of the relationship between the real-indeterminate distinction, under-determination, and physics reintroduces a version of Carnap's distinction between internal and external questions (albeit one that arises immanent to on-going physical science rather than from Carnap's aloof transcendent perspective). Quine nolds that physical science alone is taken seriously, and all of legitimate on-going inquiry is carried out immanent to this conceptual scheme. Hence, all legitimate theory choices arise internal to physical science, and are for this reason real

decisions. In contrast, external theory choices between competing conceptual schemes can occur only at end-of-inquiry, or between non-scientific modes of inquiry; in these cases, theory choice is strong-globally under-determined and hence indeterminate. This means that Quine's compromise position is predicated upon the assumption, in contrast to Camap, that there is only one conceptual scheme in legitimate on-going inquity, and hence external questions cannot arise in legitimate on-going inquiry. Consequently, I argue that should Quine be forced to admit alternative conceptual schemes into on-going inquiry, he would be faced with external, indeterminate theory choices between these rival conceptual schemes, and his position would begin to look identical to Carnap's. The key question in relation to Quine's project of building a compromise between extreme realism and extreme relativism thus becomes whether or not there are cases of strongglobal under-determination in on-going scientific inquiry. If there are none, then Quine is vindicated in assuming that all of on-going inquiry proceeds internal to a single conceptual scheme and all theory choices in on-going inquiry are real decisions, but if there are, then Quine must accept that there are alternative conceptual schemes in ongoing inquiry, giving rise to external, indeterminate theory choices in legitimate on-going scientific inquiry.

I argue here that because he holds strong-global under-determination at end-of-inquiry Quine is committed to the existence of "branching points". Assuming that rival conceptual schemes that, at end-of-inquiry will be both ideal conceptual schemes, have evolved from a common origin, a branching point is the last point in the line of evolution common to both. It follows that a branching point is a theory choice between two proto-idealised conceptual schemes, and is, by definition, an indeterminate decision. Hence, the

existence of a branching point would establish that strong-global under determination infects on-going inquiry.

The problem raised by a branching point is that because the choice between the branches is indeterminate, this reintroduces the internal-external distinction into on-going inquiry. I argue that this has a number of important consequences for Quine's proposed compromise position. First, it shows that Quine's view of on-going inquiry is in certain general respects similar to Carnap's. In particular, in order to accommodate a branching point Quine must both abandon his view of ontology and accept moderate holism; however, doing this brings his account of on-going inquiry much closer to Carnao than previously thought. Indeed, I argue that the primary difference between Carnap and Quine now is where they draw the line between real and indeterminate theory choices. Furthermore, because a branching point reintroduces the internal-external distinction, it is clear that the disagreement between Carnap and Quine is not a dispute about the epistemological distinction between purely pragmatic sentences and purely theoretical sentences, as Quine presents it as being. The logical core of this dispute cannot be located in the external-internal distinction however, since branching points mean that Quine, as well as Carnap, needs to maintain some form of this distinction. Finally, the existence of a branching point in on-going inquiry illustrates the deeper philosophical point that the disagreement between Quine and Carnap is really a dispute over the nature of philosophy, specifically, Carnap believes philosophy must be distinct from science as its role is to analyse the presuppositions underlying any branch of scientific inquiry; whereas Quine rejects that philosophy can have this role, and immersed all forms of inquiry into on-going science.

The problem for Quine is that while he rules out Carnap's method of distinguishing between real and indeterminate theory choices in on-going inquiry, he leaves us with no idea of how he is going to draw this same distinction from a perspective immanent to ongoing science.

A key question here is whether there are any genuine branching points in ougoing inquiry. And in chapter 6, I set out what I consider to be a genuine branching point in relation to the age-old dispute over whether the space-time continuum is discrete or continuous. The discrete version of the continuum holds that all continuous phenomenon and magnitudes can be reduced to collections of separate, individual entities, such as sets of points or numbers; whereas in contrast, the continuous version of the continuum holds that a continuous phenomenon or magnitude is irreducible to a discrete collection. The mathematical orthodoxy for the past number of centuries has been that the discrete, set theoretic version of the continuum was the definitive victor; indeed, this dispute is generally thought of as a paradigm example of a real dispute that has been definitively resolved in favour of the discrete. I argue here that recent developments in mathematics, in particular in category theory, provide a rigorous basis for the continuous version of the continuous, in which the continuous is not reducible to the discrete.

I begin by briefly setting out the historical context of this debate from ancient Greek mathematics up to modern analysis. Next, I give a brief presentation of the set theoretic account of the continuum, which reduces the continuous to the discrete. Following on from this I explain Category theory and Bell's smooth infinitesimal analysis, which attempts to put the intuitive conception of the continuum as inherently continuous on a rigorous mathematical basis. Finally, I argue that it is more reasonable

for Quine to accept that this is a possible branching point, than to insist that there is a real choice between the continuous and discrete. My argument is that it is inconsistent with Quine's proclaimed openness to on-going scientific inquiry to insist that there is a real choice here. I argue that Quine's only motivation for asserting that there is a real theory choice here is his dogmatic insisting on preserving his compromise position. However, this is at odds with his commitment to naturalism and its acceptance of developments in on-going inquiry, whatever they may be. Indeed, it is Carnap's aloof stance above these theories, accepting that there is no real debate between them, that is more open to progress in on-going inquiry and in keeping with the naturalistic stance Quine proclaims. I conclude that the only difference between Quine's position here and Carnap's is Quine's dogmatic insistence on a real choice between competitors simply in order to preserve a philosophical position.

In conclusion, the reasonableness of seeing the dispute between discrete and continuous versions of the space-time continuum presents a serious problem for Quine. In particular, it shows that the differences between his position and Carnap's extreme relativism are not as great as widely thought. Moreover, it shows that the locus of the dispute between them is not over epistemological questions, but concerns the deeper issue of the nature and role of philosophy. In relation to the central theme of whether Quine achieves a coherent compromise between extreme realism and extreme relativism, I conclude that until he provides us with a conception of how to distinguish between real and indeterminate theory choices in on-going inquiry he has not provided us with a coherent alternative to these extreme polarities. But moreover, because it seems that drawing this distinction demands a conception of philosophy similar to Carnap's, it

seems that when the anti-realist dimensions of Quine's compromise position are fully appreciated, it is difficult to see that there is any substantive dispute between him and Carnap.

CHAPTER 1

QUINE AND EXTREME REALISM

INTRODUCTION

In this chapter I want to give an account of Quine's rejection of "extreme realism". The distinctive feature of extreme realism is a metaphysical thesis about the nature of reality, namely – the belief that there is such a thing as reality as it is in itself, wholly autonomous from how we interact with it. My principal aim here is to show that Quine rejects this extreme realist view of metaphysics

In order to explain Quine's position here, I first give the account of extreme realism as presented by Bertrand Russell. I characterise Russell as holding an extreme realist view of metaphysics that asserts that reality as it is in itself exists completely free of all interaction with it; Russell holds that reality comes to us "pre-carved up", as it were, and that the task of inquiry is to locate the pre-existing joints in reality. Russell's extreme realist metaphysics is based on the assumption of knowledge that reaches above and behind what we experience immanent to our on-going conceptual scheme. This is Russell's epistemological doctrine of "acquaintance", which holds that in knowledge the mind comes into direct and immediate contact with reality as it is in itself; that is, in acquaintance the mind's relation to the object of knowledge is un-mediated by any theoretical constructs. It follows that, for Russell, starting from experience it is possible to acquire knowledge about that which transcends experience by means of inference, and we say something about reality beyond the empirical experience of a sequence of events that exhibit a certain regularity. This epistemological inference of acquaintance with

reality as it is in itself then provides the solid base on which scientific theories can be built. For Russell, we are acquainted with reality as it is in itself in the form of either individual sense datum or abstract objects such as universals or relations. I complete this discussion of Russell's extreme realism by explaining the account of linguistic meaning that Russell develops, which is in keeping with this extreme realist metaphysics and his epistemological doctrine of acquaintance.

In contrast, Quine holds that we are inevitably immersed within our own on-going conceptual scheme, and he argues against Russell that we are unable to step outside of our own skin, as it were, and know something beyond or outside of our experience. For this reason, Quine holds that the transcendental question of whether and in how far our conceptual scheme measures up to reality as it is in itself, is an empty demand. But more importantly, I show that Quine holds that the metaphysical notion of reality as it is in itself, completely independent of our conceptual scheme, cannot be take seriously. Quine's commitment to taking seriously the immanent perspective, immersed in our ongoing conceptual scheme, means taking seriously the ascriptions of reality made from this immanent perspective. Consequently, the idea that reality as it is in itself, independent of our conceptual scheme, is somehow more real than the ascriptions of reality made immanent to our conceptual scheme is repudiated. In contrast, the only notion of reality that we take seriously is the scientific account of reality as ascribed from within our on-going conceptual scheme. In addition to rejecting Russell's extreme realist metaphysics, and his epistemological doctrine of acquaintance, I show that Quine also rejects Russell's account of linguistic meaning, and instead develops a philosophy of

language in keeping with his insistence that we are inevitably bound to work from within some conceptual scheme or other.

SECTION 1

RUSSELL'S FXTREME REALISM

1.1 Introduction.

Russell's early philosophy is dominated by his break with Bradley's version of Absolute Idealism, and his subsequent attempts to develop a coherent alternative to this position.² It is in this context that Russell develops his version of extreme realism. Russell does not devise a conclusive refutation of Absolute Idealism,³ rather he develops a web of doctrines around a central core of extreme realist principles, which, he argues, provides a more coherent and attractive account of experience. The fundamental tenet of Russell's position is his extreme realist belief that reality *as it is in itself* exists wholly autonomous from our interaction with it; Russell believes that the objects that make up our experience actually do exist, pre-carved up, independently of us, and in inquiry we attempt to find out where the joints in reality actually are. Russell bases this extreme realist metaphysical position on the assumption that in knowledge the agent comes into direct and immediate contact with reality *as it is in itself*. This view is summed up as the epistemological doctrine of 'acquaintance'; this is the doctrine that in knowledge the mind breaks through the theoretical conceptual scheme that organises and systematises our experience of reality to gain a direct and un-mediated contact with a part of reality *as it is in itself*.

² I am concerned with roughly the period from 1900-1914

³ Peter Hilton, Russell, Idealism, and the Emergence of Analytic Philosophy, (Oxford: Clarendon 1990)

Russell's project of developing a coherent realist philosophy is characterised by the large number of radical shifts and revisions Russell undergoes in attempting to reconcile his antecedent philosophical commitment to realism with his acceptance of significant developments in mathematics, from Cantor's introduction of set theory and transfinite numbers, to Russell's own discovery of set theoretic paradoxes. In the course of his development Russell comes to reject a number of doctrines he earlier espoused, however, it is possible to identify a set of central doctrines that he consistently holds and that characterise his position as a version of extreme realism. In this section, I will concentrate on three of these in particular, namely – Russell's metaphysical position, his epistemological doctrine of acquaintance, and his philosophy of language.

1.2 Russeil's realism and rejection of Absolute Idealism.

The account of Idealism that Russell rejects is a form of 'monism': it holds that, in fact, despites appearances, the universe is an organic whole that cannot be coherently understood as composed of separate simpler parts; rather, the whole and the part are mutually dependent, and parts are no simpler than the wholes they belong to. For the Idealist only the Absolute was not self-contradictory and hence it alone is real; all parts of the Absolute, such as number's, space, time, matter, and so on, are self-contradictory, and hence not real. Russell describes this picture as follows;

Hegel thought of the universe as a closely knit unity. His universe was like a jelly in the fact that, if you touched any one part of it, the whole quivered; but it was unlike a jelly in the fact that it could not really be cut up into parts.⁴

⁴ Russell, 'Why I took to Philosophy' quoted by R. Monk, <u>Bertrand Russell: The Spirit of Solitude</u> (London: Jonathan Cape 1996) p. 114

In this context, analysis is falsification: the Absolute Idealists hold that the conceptual distinctions we make in characterising the world do not pick out actual differences in the world.

Russell argues that this type of Idealism is predicated upon the assumption that every proposition attributes a predicate to a subject and that every fact consists in a substance having a property. More precisely, it is predicated upon the doctrine of internal relations implied by the primacy of the subject-predicate analysis of propositions. The doctrine of internal relations holds that because reality is actually indivisible and the universe is in fact just one thing, the Absolute, apparent relations between things are an illusion. However, Russell argues that irreducibly relational proposition, i.e., propositions that are true but cannot be put into subject-predicate form, show that relations are external not internal, that is, it shows that objects are related to each other, but these objects are the same irrespective of the relations between them. Once he rejects the doctrine of internal relations. Russell rejects Idealism and monism and adopts realism and pluralism. Hence, Russell now holds that the world consists of separate, independent real objects and relations between these objects.

Moreover, in rejecting Idealism, Russell accepts that the part is simpler than the whole, and that wherever parts themselves are complex they can be analysed as far as is possible to reveal ultimately simple terms with no parts. Thus, in contrast to the Idealists for whom the proposition is a unity that defies analysis, Russell writes in <u>Principles of Mathematics</u>.

The only kind of unity to which I can attach any precise sense – apart from the unity of the absolutely simple – is that of a whole composed

⁵ Bertrand Russeil, My Philosophical Development, (London 1959), p. 61-63

of parts. But this form of unity cannot be what is called organic; for if the parts express the whole or other parts, they must be complex, and therefore themselves contain parts; if the parts have been analysed as far as possible, they must be simple terms, incapable of expressing anything except themselves.⁶

So while there are a plurality of possible ways to analyse a whole into complex parts, if analysis is pushed as far as possible only one way to analyse it into its simple parts; that is each whole admits of a unique ultimate analysis. Thus, Russell writes,

A given whole is capable, if it has more than two parts, of being analysed in a plurality of ways; and the resulting constituents, so long as analysis is not pushed as far as possible, will be different for different ways of analysing.⁷

For Russell, then, any whole admits of a unique uitimate analysis into simple parts. This means that, against Idealism, Russell holds that our knowledge of reality comes to us bit by bit, and it is possible to understand the nature of a single object independent of everything else in the universe; Russell no longer accepts that our ignorance of the whole of reality undermines our knowledge of a single thing. This is the case because the world is made up of individual, distinct objects, and the nature of each is independent of the others.

After rejecting Idealism, Russell developed what I shall call "extreme realism". Extreme realism holds that, in contrast to Idealism, all the things that make up our experience actually do exist – numbers exist in a Platonic heaven, points in space and instances in time are actually existing entities, matter is composed of the actual entities just as physics tell us. Moreover, he now holds that any true synthetic proposition is true in virtue of its relation to a fact; and facts, in general, are independent of experience.

^o Bertrand Russell,. <u>The Principles of Mathematics</u>. 2nd ed. Cambridge: Cambridge University Press. (1937) (First Published 1903). p. 466

Russell, Principles of Mathematics, p. 77

While he espoused Absolute Idealism Russell had held that there are degrees of truth and degrees of reality; something may be true from one perspective but false from another, likewise an object may be one thing from one point of view and something else from another point of view. In contrast to this, as an extreme realist Russell now holds that a proposition is either true or false absolutely, and a thing is what it is, irrespective of our point of view.

In this project of devising a coherent alternative to Absolute Idealism, Russell is initially not concerned with the nature of thought, mind or experience; his concern, rather, is about the truth of any particular field of study; he originally holds that the question of whether that truth can actually be known is a separate, non-philosophical question. While he is not initially concerned with the presuppositions for knowledge, his extreme realist metaphysics clearly assumes a very specific picture of the mind and its capacities. In the next section I will explain the account of knowledge that Russell's extreme realist metaphysics is predicated upon, namely – his epistemological doctrine of acquaintance.

1.3 Russell's epistemology – acquaintance.

While Russell to begin with has little to say about the nature of knowledge, his account of the objects of knowledge has some obvious and significant implications for the nature of knowledge. To be precise, his extreme realist metaphysical view implies that the mind is in direct contact with the objects of knowledge. Russell tends to describe this type of knowledge as "acquaintance".

Fundamentally, acquaintance is an immediate relation between the mind and the object of knowledge. By an "immediate relation" Russell means that knowledge by acquaintance is both presuppositionless and unproblematic: acquaintance means that we do know the object of knowledge in a direct and un-mediated way, nothing more can be said about how we know this object. For Russell, however, acquaintance does not imply that the object of knowledge is necessarily mental; rather, Russell insists on a distinction between the mental, subjective act of knowing and the non-mental, external object of knowledge. Indeed, more generally, this distinction applies in judgments other than knowledge, such as imagining, believing, perceiving, and so on. In these cases, the mind is in contact with some object that is not mental, and is completely unchanged by the minds contact with it. Thus in 1910 Russell writes,

In all cognitive acts, such as believing, doubting, disbelieving, apprehending, perceiving, imagining, the mind has objects other than itself to which it stands in some one of these various relations.⁸

For Russell, therefore, in acquaintance the mind comes into an un-mediated contact with some actual object external to the mind.

For Russell, however, we are not acquainted with any physical objects, such as my mouse, my keyboard, and my desk; in contrast, he holds that the particular objects of acquaintance are sense data, i.e., the appearances of physical objects. Thus, Russell writes,

Although I believe the table is 'really' of the same colour all over, the parts that reflect the light look much brighter than the other parts, and some parts look white because of reflected light. I know that, if I move, the parts that reflect the light will be different, so that the apparent distribution of colours on the table will change. It follows that if several

⁸ B. Russell. "On the Nature of Truth and Faisehood, written esp. for the vol. Philosophical Essays (London: Allen & Unwin, 1966; 1st edn. 1910) p. 150

people are locking at the table at the same moment, no two of them will see exactly the same distribution of colours, because no two see it from exactly the same point of view.¹⁰

The perception of a table, the way it sounds when tapped, and so on, shows that the real table, if indeed it exists, is not what we immediately experience by sight or touch; rather it is sense data that are immediately known to us in acquaintance – these are colours, sounds, smells, hardness, smoothness, and so on. Moreover, sensory illusion means that knowledge of physical objects cannot be certain, but is open to doubt – I may be dreaming right now, or under the influence of hallucinogenic drugs, delusional, and so on – but this type of dubitable knowledge cannot come from acquaintance. Hence, the real table is not immediately known to us but must be inferred from sense data that are immediately known to us. Russell holds that the sense data we know directly are caused by physical objects, and he argues that because this conjecture simplifies and systematises our account of experience, it is pragmatic for us to accept that the external world of ordinary physical objects actually does exist. 11

It is clear that the sense data I am acquainted with depends on both the external circumstances, and the sense organs used to perceive them; for example, if I put my fingers in my ears I alter the sense data available to me right now. In this sense, sense data are private, and so do not exist independently of us. Russell writes,

Berkeley was right in treating the sense-data which constitute our perception of the tree as more or less subjective, in the sense that they depend upon us as much as upon the tree, and would not exist if the tree were not being perceived. 12

¹⁰ Russell, <u>Problems of Philosophy</u> 2nd ed., (Oxford: Oxford University Press (1967) (originally published 1912)) p. 2

Russell, <u>Problems of Philosophy</u> 2nd ed., pp. 8-12 Russell, <u>Problems of Philosophy</u>, 2nd ed., p. 21

However, Russell argues that the fact that they are private does not imply that sense data are mental entities, as they were for Berkeley. In contrast, Russell holds that while the sense data are causally dependent on the sense organs, nerves, brain, and so on, of the percipient, the percipient's mind adds awareness of this physical stimulation from the external world.

While sense data provide the most obvious example of an object that we are acquainted with, it is clear that Russell sees no problem is being acquainted with abstract objects, such as universals. ¹³ For example, in the Preface to <u>Principles of Mathematics</u>, Russell illustrates how this form of knowledge can be used in relation to the indefinables of logic, he writes,

The discussion of indefinables – which forms the chief part of philosophical logic – is the endeavour to see clearly, and to make others see clearly, the entities concerned, in order that the mind may have that kind of acquaintance with them which it has with redness or the taste of a pineapple. 14

This passage shows that, for Russell, we have direct and immediate knowledge of abstract entities in addition to sense data. Moreover, for Russell, because we must distinguish the mental act of knowing from the object of knowledge, we must also distinguish the mental state of knowing an abstract entity from the abstract entity that is the object of knowledge. For this reason he assumes that abstract entities, such as propositions, classes, relations, and so on, are non-mental entities that are also part of reality as it is in itself, completely independent of us.

In addition to giving us direct access to reality as it is in itself, Russell argues that the mere acquaintance with objects provides us with knowledge of specific self-evident

¹³ Russeli, Principles of Mathematics, chapter X

¹⁴ Russell, Principles of Mathematics, p. xv

truths about that object. In general, Russell distinguishes 'knowledge of things' from 'knowledge of truths', and he holds that as knowledge of truth is propositional in nature only propositions can be true or false, whereas a thing is neither true nor false. ¹⁵ Thus, he writes,

The actual sense-data are neither true nor false. A particular patch of colour which I see, for example, simply exists: it is not the sort of thing that is true or false. It is true that there is such a patch, true that it has a certain shape and degree of brightness, true that it is surrounded by certain other colours. But the patch itself, like everything else in the world of sense, is of a radically different kind from the things that are true or false, and therefore cannot properly be said to be *true*. ¹⁶

Knowledge by acquaintance is essentially simpler than knowledge of truths, and is logically independent of knowledge of truths, hence, Russell argues that while acquaintance gives us certain knowledge, it does not necessarily give us knowledge of truths about the object. However, because in acquaintance the mind is in un-mediated contact with the object of knowledge, and can concern only things about which it is impossible to be mistaken, Russell thinks that the perceiver immediately knows certain self-evident truths about the object of acquaintance. ¹⁷ First, Russell holds that it is self-evidently true that what we are acquainted with exists. Thus, Russell writes,

We shall say that we have acquaintance with anything of which we are directly aware, without the intermediary of any process of inference or any knowledge of truths. Thus in the presence of my table I am acquainted with the sense-data that make up the appearance of my table—its colour, shape, hardness, smoothness, etc.; all these are things of which I am immediately conscious when I am seeing and touching my table. The particular shade of colour that I am seeing may have many things said about it—I may say that it is brown, that it is rather dark, and so on. But such statements, though they make me know truths *about* the colour, do not make me know the colour itself any better than I did before: so far as concerns knowledge of the colour itself, as opposed to

¹⁵ Russell, <u>Problems of Philosophy</u> 2nd ed p. 65

¹⁶Russell, <u>Problems of Philosophy</u> 2nd ed. p. 65 ¹⁷Russell, <u>Problems of Philosophy</u> 2nd ed. P. 25

knowledge of truths about it, I know the colour perfectly and completely when I see it, and no further knowledge of it itself is even theoretically possible. Thus, the sense-data which make up the appearance of my table are thing with which I have acquaintance, things immediately known to me just as they are. 18

For Russell, because acquaintance is an actual relation between the mind and the object of knowledge, it cannot occur without the existence of both the mind and the object of knowledge, therefore simply being acquainted with an object gives me the knowledge that it exists. 19 In addition it is a self-evident truth of perception that if acquainted with a sense datum that is red and round, I immediately know the truth that this sense datum is red and round. Thus, Russell writes

If, for instance, we see a round patch of red, we may judge 'that patch of red is round'. This again is a judgment of perception, but [here]... we have a single sense-datum which has both colour and shape: the colour is red and the shape is round. Our judgment analyses the datum into colour and shape, and then recombines them by stating that the red colour is round in shape... in this kind of judgment the sense-datum contains constituents which have some relation to each other, and the judgment asserts that these constituents have this relation.²⁰

It is clear that while Russell accepts that we are operating from within the conceptual scheme of physical objects, assumed to exist on the basis of our direct experience of sense data, he also holds that in knowledge we are acquainted with reality as it is in itself, and that we can immediately know some self-evident truths about reality as it is in itself Thus, for Russell, acquaintance breaks through the conceptual scheme we are immersed in to provide a direct and immediate contact with reality as it is in itself.

In the next section I want to show how Russell incorporates this extreme realist metaphysics into his account of linguistic meaning.

¹⁸ Russell, Problems of Philosophy 2nd ed. P. 25

¹⁹ Russell, <u>Problems of Philosophy</u> 2nd ed. P. 23 ²⁰ Russell, <u>Problems of Philosophy</u> 2nd ed p. 66

1.4 Russell's philosophy of language.

So far we have seen that Russell holds an extreme realist view of metaphysics, according to which reality exists "pre-carved up", completely independently of our interaction with it. In addition, I have argued that Russell bases this extreme realism on the epistemological doctrine of acquaintance, which argues that though we are immersed in a conceptual scheme, in knowledge the mind has a direct and immediate relation to reality as it is in itself. In this section I want to show that Russell develops a philosophy of language in keeping with this extreme realist view of metaphysics and the epistemological doctrine of acquaintance.

The central idea in Russell's philosophy of language is his view that the proposition expressed by any sentence is a non-linguistic, non-mental entity. Russell's insight here is that since a proposition can be an object of thought or knowledge, it must be independent of the mental act of judging or knowing. Propositions, then, are objective and independent entities, completely separate from the mind that succeeds or fails to know them. Thus, Russell writes,

Words all have meaning, in the simple sense that they are symbols which stand for something other than themselves. But a proposition, unless it happens to be linguistic, does not itself contain words: it contains the entities indicated by words. Thus meaning in the sense in which words have meaning is irrelevant to logic.²¹

For Russell, propositions not sentences are true or false, and hence logic concerns propositions, not sentences. However, Russell takes sentences to be a more or less transparent medium through which propositions can be perceived. That is, while

²¹ Russell, Principles of Mathematics, p. 51

sentences and their constituent words are not what we are talking about (untess the proposition is linguistic), there is fairly accurate relationship between a sentences and its constituent words on one hand, with the proposition and the constituent entities expressed by that sentence on the other.²² Moreover, usually, the object that a proposition is about is a constituent of that proposition. Thus, in a letter to Frege on 12th December 1904, Russeli readily asserts (to Frege's incredulity) that,

Concerning Sinn and Bedeutung, I see nothing but difficulties which I cannot overcome. I explained the reasons why I cannot accept your view as a whole in the appendix of my book, and I still agree with what I wrote there. I believe that in spite of all its snowfields Mont Blanc itself is a component part of what is actually asserted in the proposition 'Mont Blanc is more than 4000 metres high'. We do not assert the thought, for this is a private psychological matter: we assert the object of thought, and this is, to my mind, a certain complex (an objective proposition, one might say) in which Mont Blanc is itself a component part. If we do not admit this, then we get the conclusion that we know nothing at all about Mont Blanc.²³

Here Russell cheerfully admits that the proposition "Mont Blanc is more than 4000 metres high" is about the object Mont Blanc, and this object is a constituent of that proposition.

Russell is committed to this view because his notion of acquaintance implies that in order to understand a proposition one must be acquainted with the object that that proposition is about. As we have seen, this means coming into direct contact with that object; hence, understanding a proposition thus means coming into direct contact with the constituent object that that proposition is about. Thus, Russell writes,

Russell's letter to Frege 12 December 1904, in G. Frege, <u>Philosophical and Mathematical Correspondence</u>, trans., Hans Kaal (Oxford: Blackwell, 1980), p. 169

²² Russell is forced backtrack from this idea when considering general sentences about objects we cannot in principle be acquainted with. I address this point later in this section.

Every proposition which we can understand must be composed wholly of constituents with which we are acquainted.²⁴

This means that whatever preconditions there are on knowledge, these are not preconditions on propositions or other objects of thought themselves, as these exist independently of us; rather, what propositions there are is determined by what objects there are. This implies that the fact that one can think of X, or that X can be the subject of a proposition, presupposes that X is an entity that we are acquainted with. Russell sums up this extreme realist view of language by saying that all knowledge must be recognition of pre-existing entities and pre-existing relations between entities, on pain of being mere illusion. Russell writes,

Arithmetic must be discovered in just the sense in which Columbus discovered the West Indies, and we no more create the numbers than he created the Indians. The number two is not purely mental, but is an entity which may be thought of. Whatever can be thought of has being, and its being is a pre-condition, not a result, of its being thought.²⁵

However, Russell denies that everything that is, exists. He distinguishes between what exists and what has being in order to ensure the objectivity of things that cannot exist in space and time, such as the objects of mathematics. Russell argues that this distinction is necessary if we are to avoid falling into psychologism, i.e., the view that numbers, relations, and so on, are mental. Thus Russell writes,

Misled by neglect of being, people have supposed that what does not exist is nothing. Seeing that numbers, relations, and many other objects of thought, do not exist outside the mind, they have supposed that the thoughts in which we thing of these entities actually create their own objects. Everyone except a philosopher can see the difference between a post and my idea of a post, but few see the difference between the

25 Russell, Principles of Mathematics, section 427

²⁴ Russell, 'Knowledge by Acquaintance and Knowledge by Description', in <u>Mysticism and Logic</u>, (London: Longmans, Green and Co., 1919) p. 219

number 2 and my idea of the number 2. Yet the distinction is as necessary in one case as in the other. ²⁶

Here Russell assumes that something can be objective only if it is an object – or more precisely, a non-mental object. Clearly, these objects cannot be physical, as then they would be particular and could not exist in two minds at once. Hence, as they do not exist, but are not mental, Russell says they "have being". Russell says,

Numbers, the Homeric gods, relations, chimeras and four-dimensional spaces all have being, for if they were not entities of a kind, we could make no propositions about them. Thus being is a general attribute of everything, and to mention anything is to show that it is.²⁷

Consequently, every constituent of a proposition, everything that can be an object of thought or can be mentioned has being; in contrast, only those objects that *are* have existence.

Russell distinguishes between terms on the basis of the roles they can perform in a proposition. First, Russell points out that everything can play the role of a subject in a proposition; hence, everything is a term. Thus he writes,

Whatever may be an object of thought, or may occur in any true or false proposition, or can be counted as *one*, I call a *term*. This, then, is the widest word in the philosophical vocabulary. I shall use as synonymous with it the words unit, individual, and entity. The first two emphasize the fact that every term is *one*, while the third is derived from the fact that every term has being, *i.e.* is in some sense. A man, a moment, a number, a class, a relation, a chimaera, or anything else that can be mentioned, is sure to be a term; and to deny that such and such a thing is a term must always be false.²⁸

For Russell, whatever can perform the role of the subject in a proposition is an object. So, for example, because a concept of a horse can occur as a logical subject in a proposition,

²⁶ Russell, Principles of Mathematics, section 427

²⁷ Russell, Principles of Mathematics, section 427

²⁸ Russell, Principles of Mathematics section 47

such as "The concept horse is a concept", the concept horse must be an object.²⁹

However, Russell does distinguish between things and concepts on the basis of the roles they can perform in propositions. Russell explains this distinction as follows,

Among terms it is possible to distinguish two kinds, which I shall call respectively things and concepts. The former are the terms indicated by proper names, the latter those indicated by all other words. Here proper names are to be understood in a somewhat wider sense than usual.³⁰

The distinction here is that whereas a concept can perform either the subject or the predicate role in a proposition, a thing can play the subject role but not the predicate role. He illustrates this by contrasting Socrates with humanity:

Socrates is a thing, because Socrates can never occur otherwise than as a term in a proposition: Socrates is not capable of that curious twofold use which is involved in human and humanity.³¹

Socrates is a thing because it cannot perform both a subject and a predicate role in a proposition; in contrast, thought the words "human" and "humanity" are different, the concept humanity can perform both the subject and the predicate roles in a proposition.

As there are both particular and universal propositions, Russell holds that we must be acquainted with both particular and universal objects. For Russell, the only particulars we can be acquainted with are sense data; hence, the only singular propositions we can understand are about sense data. This means that because sense data are fleeting and private and are known through experience, singular propositions are also fleeting, private and are known a posteriori. In addition, since in being acquainted with a sense datum, we know it completely and indubitably, in knowing a singular proposition we immediately

²⁹ This is in contrast to Frege who holds that because any concept is incomplete or unsaturated a concept cannot be an object. See 'On Concept and Object', reprinted in <u>Translation from the Philosophical Writings of Gottlob Frege</u>, ed. P. Geach and M. Black (Oxford: Basil Blackwell, 1952), pp. 42-55

Russell, Principles of Mathematics, section 48
 Russell, Principles of Mathematics, section 48

and fully know what it is about. Therefore, Russell believes that in simply understanding a singular proposition we know something about the object it is about, and since this object is a part of reality *as it is in itself*, independent of the mental, in understanding a singular proposition we know some truths about reality *as it is in itself*.

The situation with regard to universal propositions is more complicated, however. Prior to 1900 Russell holds that there is no entity that we cannot in principle be acquainted with, and consequently holds that we can apprehend any proposition. However, after meeting Peano at the International Congress of Philosophy in Paris in 1900, which Russell describes in his autobiographical essay 'My Mental Development' as the most important event in the most important year of his intellectual life³², Russell accepts Cantor's theory of transfinite numbers, and is immediately faced with the problem of explaining how we can talk of transfinite numbers, which for Cantor are completed infinite sets, when clearly these are entities that we cannot be acquainted with. In response to this problem Russell devises his theory of denoting concepts. For example, Russell writes,

Indeed it may be said that the logical purpose that which is served by the theory of denoting is, to enable propositions of finite complexity to deal with infinite classes of terms: this object is effected by *all*, *any*, and *every*, and if it were not effected, every general proposition about an infinite class would have to be infinitely complex.³³

Russell holds that definite descriptions of the form 'all Fs', 'every F', 'any F', 'an F', 'some f', and 'the F', are denoting phrases. In contrast to a proper name, which contributes the entity it designates to the proposition, if a denoting concept is a constituent of a proposition, the proposition is not about that entity, rather it is about the

³² Bertrand Russell, "My Mental Development", in <u>The Philosophy of Bertrand Russell</u>, (eds.) L. E. Hahn & P. A. Schilpp, (La Salle: Open Court 1944) p, 12

³³ Russell, Principles of Mathematics., p. 145

entity denoted by the denoting concept. Thus, we can understand and think about entities that we cannot be acquainted with. Russell argues that denoting phrases are the grammatical subjects of general sentences. He says,

A concept *denotes* when, if it occurs in a proposition, the proposition is not *about* the concept, but about a term connected in a certain peculiar way with the concept. If I say "I met a man," the proposition is not about *a man*: this is a concept which does not walk the streets, but lives in the shadowy limbo of the logic-books. What I met was a thing, not a concept, an actual man with a tailor and a bank-account or a public-house and a drunken wife.³⁴

So, for Russell, we can understand general sentences about entities that we cannot in principle be acquainted with, such as transfinite numbers, because sentences containing a denoting phrase express propositions that contains denoting concept as a constituent, and this denoting concept designates the object that the sentence is about.

However, Russell later comes to revise this theory of denoting concepts in a significant way. In the paper 'On Denoting,' Russell introduces an important new approach to definite descriptions. In contrast to his earlier view, here he argues that a definite description does not express a denoting concept, and does not designate an object that the sentence is about.

Russell's theory in "On Denoting" is based on the idea that definite descriptions and proper names function differently. That is, a proper name contributes the object it designates to the factual content expressed by the sentence, but a definite description does not contribute the object it denotes to the factual content of the sentence it occurs in.

Russell overcomes the problem of how a sentence containing an empty denoting phrase can be both meaningful and have a truth-value, by analysing general sentences into

³⁴ Russell, Principles of Mathematics., p. 53

³⁵ Russell, 'On Denoting' reprinted in <u>Logic and Knowledge</u>. ed., Robert C. Marsh.

quantificational notation. The important step here, for Russell, comes in accepting that a quantificational translation of a sentence gives a full analysis of that sentence, a claim that he had earlier denied. He now accepts that the sentence

The F is G

is given a complete analysis as the sentence

$$(\exists x)(Fx & (\forall y)(Fy \rightarrow y = x) &Gx).$$

This quantificational sentence is both meaningful and has a truth-value irrespective of whether 'the F' is an empty denoting phrase or not. In contrast to his earlier account, then, if there is not even one F then this sentence is false.

However, once he accepts quantificational translations of general sentences. Russell must show what entities we must be acquainted with in order to understand these sentences, and what these sentences are about; that is, he must set out the constituents of the factual and conceptual content of these sentences. Russell's solution is to accept that propositional functions are real entities. Propositional functions are similar to denoting concepts in that they are non-linguistic entities that occur as a constituent of the conceptual content expressed by a sentence. However, in contrast to the theory of denoting concepts, Russell holds that when a propositional function is the subject of the conceptual content expressed by a sentence, the sentence is about that propositional function itself, not any entity designated by the propositional function. This means that for Russell, general sentences are about propositional functions, and we must be acquainted with these propositional functions if we are to understand the general sentence. Russell also makes this point by saying that general sentences are about universals. And he argues that many sentences that appear to be about particulars are in

fact about universals. By saying this, Russell claims that the entity that a general sentence is about is a constituent entity of the propositional content expressed by that sentence.

Moreover, we must be acquainted with that entity if we are to understand this sentence.

Thus, Russell writes,

One way of discovering what a proposition deals with is to ask ourselves what words we must understand – in other words, what objects we must be acquainted with – in order to see what the proposition means. As soon as we see what the proposition means, even if we do not yet know whether it is true or false, it is evident that we must have acquaintance with whatever is really dealt with by the proposition. By applying this test, it appears that many propositions which might seem to be concerned with particulars are really concerned only with universals. ³⁶

In contrast to the theory of denoting concepts, here Russell holds that the entity that a general sentence is about is also the entity that we must be acquainted with in order to understand a general sentence. The general sentence 'any collection formed of two twos is a collection of four' is about the universals 'two,' 'four,' and 'collection', and these are the entities that we must be acquainted with in order to understand the sentence; we do not need to be acquainted with all the couples in the world, as if this were necessary we would never understand the proposition. For Russell, then, general sentences are about universals and atomic sentences are about particulars. In either case, the entity that the sentence is about exists, and is what we must be acquainted with in order to understand the sentence.

³⁶ Russell, Problems of Philosophy, p. 60

1.5 Conclusion.

In this section I have set out Russell's extreme realist view of metaphysics. Russell's central idea here is the belief that reality as it is in itself exists completely independent of our interaction with it. Russell's metaphysical position here is supported by the epistemological notion of acquaintance: it is because he believes that acquaintance provides a means to break through our conceptual scheme to reality as it is in itself, that Russell can infer the extreme realist view that our subjective experiences of sense-data is an immediate connection with reality as it is in itself. This means that the fact that we are immersed in our own conceptual scheme does not prevent us from breaking through to reality as it is in itself. In addition, I argued that Russell developed an account of linguistic meaning in keeping with this extreme realist metaphysics and epistemological notion of acquaintance.

In the next section I show that Quine rebuts Russell's epistemological doctrine of acquaintance, and consequently rejects his extreme realist view of metaphysics.

SECTION 2

STRONG-GLOBAL UNDER DETERMINATION

2.! Introduction.

In this section I show that Quine repudiates Russell's extreme realism. I argue that the origin of Quine's rejection of Russell's extreme realist metaphysics lies in Quine's acceptance of the epistemological point that all inquiry is immanent to some conceptual scheme or other. Russell's extreme realism is predicated on his view that acquaintance

provides the means to break through the conceptual scheme we are immersed in to reality as it is in itself. Quine rejects the possibility of this transcendent perspective, and insists, in contrast, that there is no possibility of breaking out of our conceptual scheme to reality as it is in itself. The point of dispute between Quine and Russell is epistemological in the sense that Quine's naturalism rules out Russell's assumption that in knowing a particular sense datum, or a universal, the mind is acquainted with reality as it is in itself.

Quine argues this point by developing and defending the doctrine that theory is under-determined by the totality of available evidence. I show that Quine's under-determination thesis cuts primarily against Russell's epistemological doctrine of acquaintance; but because Russell's metaphysical doctrine of extreme realism is predicated upon his epistemological notion of acquaintance, by rejecting acquaintance Quine correspondingly rejects the basis of Russell extreme realist metaphysics.

2.2 The view from within.

A commitment to the belief that all inquiry necessarily proceeding immanent to some conceptual scheme or other is the dominant leitmotif throughout Quine's entire philosophy. For example, Quine writes in 'On What There Is' (1948),

Judged within some particular conceptual scheme – and how else is judgment possible? – an ontological statement goes without saying, standing in need of no separate justification at all.³⁷

In Word and Object (1960),

The philosopher's task differs from the others', then, in detail; but in no such drastic way as those suppose who imagine for the philosopher a

³⁷ Quine, 'On what There Is', From a <u>Logical Point of View</u>, 2nd rev ed. (Cambridge, MA: Harvard University Press (1953) p. 10

vantage point outside the conceptual scheme that he takes in charge. There is no such cosmic exile. He cannot study and revise the fundamental conceptual scheme of science and common sense without having some conceptual scheme, whether the same or another no less in need of philosophical scrutiny, in which to work. He can scrutinise and improve the system from within.³⁸

And, in 'Things and Their Place in Theories' (1980),

It is a confusion to suppose that we can stand aloof and recognise all the alternative ontologies as true in their several ways, all the envisaged worlds as real. It is a confusion of truth with evidential support. Truth is immanent, and there is no higher. We must speak from within a theory, albeit any of various.³⁹

In these passages Quine denies the possibility of "cosmic exile": the possibility of standing outside of all conceptual schemes, and inquiring about reality or the preconditions for human knowledge or language without taking seriously our own views on reality, knowledge or language. In contrast, Quine has continually stressed that judgment is possible only from within some conceptual scheme or other. That is, we must speak from within some conceptual scheme, albeit any of numerous conceptual schemes, and must judge from this immersed perspective. However, Neurath's famous figure of rebuilding a boat at sea, Quine says,

Yet we must not leap to the fatalistic conclusion that we are stuck with the conceptual scheme that we grew up in. we can change it bit by bit, plank by plank, though meanwhile there is nothing to carry us along but the evolving conceptual scheme itself. The philosopher's task was well compared by Neurath to that of a mariner who must rebuild his ship on the open sea. 40

³⁸ Quine Word and Object, (Cambridge, MA: MIT Press 1960) p 275-6

⁴⁰ Quine, 'Identity, Ostension, and Hypostasis', in From a Logical Point of View., p. 78-79

²⁹ Quine, 'Things and Their Place in Theories', reprinted in <u>Theories and Things</u> (Cambridge, MA: Harvard University Press 1981), p. 21-22

Quine's point is that the philosopher is in the same boat with all others; she does not have a vantage point outside of the conceptual scheme that she is examining, but must assess her conceptual scheme from within.

Furthermore, because there can be no "detached" or "external" position from which to philosophise, Quine argues that we must start from the conceptual scheme we currently inhabit, namely – the conceptual scheme of physical science. Thus, he writes,

No inquiry being possible without some conceptual scheme, we may as well retain and use the best one we know – right down to the latest detail of quantum mechanics, if we know it and it matters. ⁴¹

However we choose to revise our conceptual scheme on an on-going basis, we must always start in the middle of some conceptual scheme, and for us, we begin with middle-sized objects, middle-distance away from us, mid-way through the cultural evolution of the race. This is our scientific heritage, which has been evolving since the beginning of the race conditioned by the survival forces of needing to predict and coping with the environment. Quine writes,

The conceptual scheme in which we grew up is an eclectic heritage, and the forces which conditioned its evolution from the days of Java man onward are a matter of conjecture.⁴²

The conceptual scheme we begin from is characterised by this inherited scientific lore and the continuing barrage of sensory stimulation. On-going inquiry, then, is that attempt to bend this scientific heritage to fit the continuing sensory promptings. Quine describes this starting point our "scientific heritage" ⁴³, or "the evolving lore of the ages":

Let us therefore accept physical reality, whether in the manner of unspoiled men in the street or with one or another degree of scientific sophistication. In so doing we constitute ourselves recipients and carriers

⁴¹ Quine, Word and Object, p. 4-5

⁴² Quine, 'Identity, Ostension, and Hypostasis', From a Logical Point of View., p. 77

of the evolving lore of the ages. Then, pursuing in detail our thus accepted theory of physical reality, we draw conclusions concerning, in particular, our own physical selves, and even concerning ourselves as lorebearers. One of these conclusions is that this very lore which we are engaged in has been induced in us by irritation of our physical surfaces and not otherwise. Here we have a little item of lore about lore. It does not, if rightly considered, tend to controvert the lore it is about. On the contrary, our initially uncritical hypothesis of a physical world gains pragmatic support from whatever it contributes towards a coherent account of lorebearing or other natural phenomena.⁴⁴

We accept the physical reality that has come to us as an evolving lore of the ages, we scrutinise it in detail, and pursue our own place as physical objects in this physical world. As a culture we pass on this lore of physical reality to further generations as their scientific heritage.

Here Quine is simply describing the position he embodies, and is not trying to give some independent argument to justify this position. Indeed, because there is no possibility of "cosmic exile" the conceptual scheme we are immersed in does not stand in need of any separate justification; that is, one must presuppose some conceptual scheme within which to work, so the philosopher can scrutinise her own conceptual scheme only from within. And, because Quine is not attempting to justify physical science from a more secure perspective, but aims to expound the view of reality from a perspective immersed in physical science, it follows that, unlike the Cartesian project of justifying science from a neutral perspective, we can employ our own science in this project of describing knowledge, reality, and truth. Quine says

Unlike Descartes, we own and use our beliefs of the moment, even in the midst of philosophising, until by what is vaguely called scientific method we change them here and there for the better.⁴⁵

45 Quine, Word and Object, p. 24-25

⁴⁴ Quine, 'The Language and Scope of Science', The <u>Ways of Paradox and other essays</u> rev ed. (Cambridge, MA: Harvard University Press 1976) p. 230

Hence the starting point for Quine's philosophy is acceptance that we are immersed in the conceptual scheme of physical science; there is no more basic or more fundamental position from which to begin, and from which to validate this conceptual scheme. Thus, Quine writes,

My stance is naturalistic. By sensory evidence I mean stimulation of sensory receptors. I accept our prevailing physical theory and therewith the physiology of my receptors, and then proceed to speculate on how this sensory input supports the very physical theory that I am accepting. I do not claim thereby to be proving the physical theory, so there is no vicious circle. 46

From his perspective immanent to this scientific heritage Quine accepts the prevailing physical theory, and consequently he accepts both that the sensory evidence for our theory of the external world is the stimulation of sensory receptors, and that our account of the external world supports the physical theory he is accepting as basic. The circularity here is intrinsic to Quine's position; because he is not offering an independent justification for his acceptance of physical theory, he can employ science to give an account of reality, knowledge, language, and so on. More importantly, however, Quine argues that a scientific self-reflection on our current science confirms that current science is under-determined by the totality of available evidence.

2.3 Under-determination.

Turning to the epistemological question of our scientific account of the external world, any immanent, scientific account of the relation between theory and evidence will conclude that theory is under-determined by the totality of evidence that supports it.

⁴⁶ Quine, 'Empirical Content', Theories and Things., p. 24

To say that a theory is under-determined by its evidence means that the evidence that supports this theory does not support it uniquely; rather, this evidence equally supports alternative, logically incompatible theories. This means that while the scientist formulates general laws on the basis of experience; the inference from evidence to theory is deductively invalid. In science, then, the relation between theory and evidence is asymmetric': a theory implies the observations but the observations do not imply the theory. In this passage, taking "observation categoricals" as the supporting evidence and "theory formulation" as scientific theory, Quine makes the case for under-determination as follows:

The observation categoricals implied by a theory formulation constitute, we may say, its empirical content; for it is only the observation categoricals that link theory to observation. If two theory formulations imply all the same observation categoricals, they are empirically equivalent.

A theory formulation merely implies its observation categoricals, and is not implied by them, unless it is trivial. Two theory formulations may thus imply all the same observation conditionals without implying each other. They can be empirically equivalent without being logically equivalent.

In fact, they can be empirically equivalent and yet logically inconsistent incompatible... Thus imagine an exhaustive encyclopaedic formulation of our total scientific theory of the world. Imagine another just like it except that the words 'molecule' and 'electron' are switched. The formulations are empirically equivalent: all the implicative connections between the observation categoricals and the sentences containing the words 'molecule' or electron' in the one theory formulation are matched by the same implicative connections in the other theory with the two words rewritten. The observation categoricals remain identical, for they lack those words. Yet the two theory formulations are logically incompatible, for the one attributes properties to molecules that the other formulation denies of molecules and attributes to electrons. 47

If we imagine science as a whole to form a field of force whose boundary conditions are empirical experiences, a conflict at the periphery will lead to a readjustment in the

⁴⁷ Quine, 'Empirical Content', Theories and Things. p. 28-29

interior of the field, and revaluating one statement in the interior will lead to the revaluation of others. Then to say that the total field is under-determined by the evidence at its boundaries implies that there is extensive latitude of choice as to which statements to revise in the interior in order to accommodate the recalcitrant experience. ⁴⁸ Indeed, so long as the edge of the field remains square with experience, the interior is open to arrangement in any number of ways, even in incompatible ways. ⁴⁹

It is safe to say that this general idea of theory being under-determined by data trades on its clear intuitive appeal: scientific laws, as universal generalizations, necessarily outstrip the evidence on which they are based, and so it is uncontroversial that *current* scientific laws are empirically under-determined. However, Quine holds a much more extreme version of the under-determination thesis than this uncontroversial view of current science. In particular, Quine needs to show that science is under-determined "in principle"; that is, he needs to show that there are rival conceptual schemes that no evidence can adjudicate. Thus, Quine writes,

Consider all the observation sentences of the language: all the occasion sentences that are suited for the use in reporting observable events in the external world. Apply dates and positions to them in all combinations, without regard to whether observers were at the place and time. Some of these placed-time sentences will be true and others false, by virtue simply of the observable though unobserved past and future events in the world. Now my point about physical theory is that physical theory is underdetermined even by all these truths. Theory can still vary though all possible observations be fixed. Physical theories can be at odds with each other and yet compatible with all possible data even in the broadest sense. In a word, they can be logically incompatible and empirically equivalent. This is a point on which I expect wide agreement, if only

⁴⁹ Quine, 'Two Dogmas of Empiricism', p. 45

⁴⁸ Quine, 'Two Dogmas of Empiricism', p 42-43

Ouine On Reasons for the Indeterminacy of Translation', *Journal of Philosophy* 67(1970) pp. 178-83 The phrase "under-determined in principle" comes from Gibson, <u>Enlightened Empiricism</u> (Tampa, FL: University of South Florida Press, 1988) p. 117

because the observational criteria of theoretical terms are commonly so flexible and fragmentary. 52

Here Quine argues that even were we to collate the totality of *all possible* evidence, any conceptual scheme that could account for this totality of evidence would be empirically under-determined. That is, even were one to accumulate all possible observations reports that are true of the world – all reports true in the past, present or future – there would still be alternative scientific theories, logically incompatible with each other, that account for this totality of data equally well.

I shall call this much more extreme version of the under-determination thesis "strong-global" under-determination. Strong global under-determination holds that it is not possible, even unto eternity, to formulate a systematisation of our empirical evidence that is uniquely supported by that evidence. Thus, Quine writes,

We have no reason to suppose that man's surface irritations even unto eternity admit of any one systematisation that is scientifically better or simpler than all possible others. It seems likelier, if only on account of symmetries and dualities, that countless alternative theories would be tied for first place. Scientific method is the way to truth, but it affords even in principle no unique definition of truth. 53

It is important to remember that for Quine strong-global under-determination is a scientific account of the relation between theory and evidence. Hence, he does not see himself to be advancing independent arguments for strong-global under-determination; rather, he argues that science tells us that should we ever achieve the stage where no further experience could falsify our total theory of the world, the evidence would support numerous equally good but logically incompatible total theories.

53 Quine, Word and Object, p. 23

⁵² Quine, 'On the Reasons for the Indeterminacy of Translation', p. 179

In contrast to the relatively uncontroversial thesis about current science, strong-global under-determination is contentious and most philosophers who write in support of under-determination do not have the strong-global thesis in mind. It is perhaps a little disingenuous of Quine to state that he expects "wide agreement" among philosophers and scientists on this thesis; certainly there is wide agreement on current under-determination, but not on strong-global under-determination. Indeed, a number of philosophers reject this characterisation of science completely, and Quine recognizes that a number of qualifications are necessary to make the strong-global thesis coherent, if not more convincing to those who reject it.

First, as the strong-global thesis is not about current evidence but about all possible evidence, it follows that this is a thesis about complete conceptual schemes. Thus, Quine writes,

If all observable events can be accounted for in one comprehensive scientific theory – one system of the world, to echo Duhem's echo of Newton – then we may expect that they can be accounted for equally in another, conflicting system of the world. Such is the doctrine that natural science is empirically under-determined. ⁵⁴

Second, in general, two complete conceptual schemes are logically incompatible if the rival conceptual schemes posit entities that possess incompatible properties, however, Quine specifies two important requirements that conceptual schemes must fulfil if they are to be genuinely logically incompatible. First, if two apparently incompatible theories can be rendered compatible through a "reconstrual of the predicates" of one, then they are actually expressions of the same theory. ⁵⁵ Thus, Quine characterises two logically incompatible theories as,

W. V. Quine, "On Empirically Equivalent Systems of the World", Erkenntnis 9(1975): 313-328; p. 313
 Quine, "On Empirically Equivalent Systems of the World", p. 313.

two theories ... such that ... we see no way of systematically converting one into the other by reinterpretation sentence by sentence. ⁵⁶

For example, if T₁ employs the theoretical terms 'molecule' and 'electron' to name what T₂ calls 'electron' and 'molecule', then by a reconstrual of the predicates 'molecule' and 'electron' maps them to the open sentences 'x is an electron' and 'x is a molecule' respectively.⁵⁷ Thus, for Quine, two theories are irreducible to one another if and only if one cannot be converted into the other through a reinterpretation of the predicates of one. And theories are different in the relevant sense if and only if they are irreducible to one another. In addition, Quine's second requirement is that rival theories be 'tight'; that is, one rival theory must not be a gratuitous extension of one another.⁵⁸ By 'a gratuitous extension of a theory' Quine means an ancillary term or hypothesis that is added to the theory but has no effect on the overall theory: the theory is just as good without it. It is clear that any two theories can be incompatible if we add gratuitous extensions; therefore, only logical incompatibility among tight theories is philosophically interesting.⁵⁹

Even with these qualifications strong-global under-determination remains a contentious thesis. But for Quine there can be no independent argument either for or against it. There is no possibility of either justifying or disproving it without stepping into "cosmic exile"; rather, Quine is offering a description of theory from the perspective immanent to physical science. Thus, Quine writes,

Might another culture, another species, take a radically different line of scientific development, guided by norms that differ sharply from ours but that are justified by their scientific findings as ours are by ours? And

⁵⁶ Quine, Pursuit of Truth, p. 97

⁵⁷ Quine, "On Empirically Equivalent Systems of the World", p. 313

⁵⁸ Quine, "On Empirically Equivalent Systems of the World", p. 323

might these people predict as successfully and thrive as well as we? Yes, I think that we must admit the possibility in principle; that we must admit it even from the point of view of our own science, which is the only point of view I can offer. I should be surprised to see this possibility realized, but I cannot picture a disproof.⁶⁰

Quine accepts that another culture or species may have taken a radically different line of scientific development to achieve their overall conceptual scheme of the world; and he argues that we must accept this claim because there is no way to disprove it without adopting the transcendent perspective of cosmic exile. Properly understood, then, for Quine from the perspective immersed in the physical sciences, we must admit that our theory is under-determined in the strong-global sense.

2.4 Strong-global under-determination and acquaintance.

Having explained Quine's notion of strong-global under-determination, I want next to argue that strong-global under-determination rebuts Russell's epistemological doctrine of acquaintance.

The key point here is that accepting that we are always working immanent to our on-going conceptual scheme entails a subtle but fundamental shift in how one views the epistemological notion of evidence for theory. As was pointed out above, Russell holds that we are acquainted with sense data and hence we know sense data immediately, but as we are not acquainted with physical objects their existence is inferred from sense data; hence, the existence of ordinary physical objects is a theoretical construct devised by us to systematise and simplify experience, and we accept their existence on a pragmatic

⁶⁰ W.V. Quine "Responses", in Theories and Things, p. 181

basis. ⁶¹ It is clear that Quine holds a view of the relation between theory and evidence that is quite similar to this. To begin, like Russell, Quine holds that science is a conceptual bridge of our own making that links sensory stimulation to sensory stimulation; it is a conceptual apparatus that helps us foresee and control the triggering of our sensory receptors in the light of previous triggering of sensory receptors. This triggering of our sensory receptors is all we have to go on in forming our account of reality: there is no extrasensory perception. For Quine, then, ordinary physical objects are theoretical, like Russell, Quine views our talk of ordinary physical things as a way to allow us to organise, control and predict the triggering of sensory receptors. Thus, Quine writes

To call a posit a posit is not to patronize it. A posit can be unavoidable except at the cost of other no less artificial expedients. Everything to which we concede existence is a posit from the standpoint of a description of the theory-building process, and simultaneously real from the standpoint of the theory that is being built. Nor let us look down on the standpoint of the theory as make-believe; for we can never do better than occupy the standpoint of some theory or other, the best we can muster at the time. ⁶²

So, both Quine and Russell agree that the stimulation of sensory receptors cannot account for immediate experience, and both hold that we must introduce physical things to bind together our conception of reality. While the physical objects we posit give us our primary continuing access to past sensations, considered relative to our sensory receptors physical objects are posits that we introduce in order to help us in developing systematic connections between our sensory stimulations.

The difference between Quine and Russell is in terms of their contrasting understanding of sense data and scientific evidence. For Quine, observation is the basis

⁶¹ Russell, <u>Problems of Philosophy</u> p. 62

⁶²Quine, Word and Object., p. 22

for scientific theory. However, Quine clarifies the notion of observation not in terms of sense data, but by shifting to the triggering of sensory receptors. Quine writes,

It is common usage to say that evidence for science is observation, and that what we predict are observations. But the notion of observation is awkward to analyse. Clarification has been sought by a shift to observable objects and events. But a gulf yawns between them and our immediate input from the external world, which is rather the triggering of our sensory receptors. I have cut through all this by settling for the triggering or stimulation itself and hence speaking, oddiy perhaps, of the prediction of stimulation. By the stimulation undergone by a subject on a given occasion I just mean the temporally ordered set of all those of his exteroceptors that are triggered on that occasion.

Observation then drops out as a technical notion. So does evidence, if that was observation. We can deal with the question of evidence for science without help of 'evidence' as a technical term. We can make do instead with the notion of observation sentences. ⁶³

In contrast to Russell, Quine does not make use of sense data, nor does he develop a theory of evidence; instead Quine deals with the question of the evidence for science solely in terms of observation sentence, i.e., the sentences most directly connected with sensory stimulation. These are not sentences about observation or sense data, but are sentence that a speaker will consistently assent to in the presence of certain sensory stimulation, and dissent from in the absence of this stimulation. ⁶⁴

On its face, it looks very much as if Quine has the same picture of evidence and theory as Russell, but has simply replaced Russell's sense data with observation sentences. However, this apparent similarity hides a key difference between Russell's and Quine's view of the existence of physical objects, namely – for Russell, sense-data is a brute given, i.e., a part of reality as it is in itself that we have direct acquaintance with, and from which we deduce our account of reality, but for Quine this is the wrong picture;

⁶³ Quine, The Pursuit of Truth (2nd edition), p. 2

⁶⁴ Quine, 'Empirical Content', in Theories and Things., p. 25

in contrast. Quine holds that the evidence for science is itself immanent to science. Thus, Quine writes,

So the notion of pure sense datum is a pretty tenuous abstraction, a good deal more conjectural than the notion of an external object, a table or a sheep. It is significant that when we try to talk of the subjective we borrow our terminology from the objective: I feel as if I were falling, I have a sinking sensation, I feel on top of the world, I see pink elephants (better: I feel as if I were really seeing pink elephants), etc. Even the terms which we have come to regard as strictly and immediately sensory, like 'red', are obviously objective in reference in the first instance: we learn the word 'red' by being confronted with an external object which our parents call red, just as we learn the word 'sheep' by being confronted with an external object which our parent calls a sheep. When, at a certain stage of epistemological sophistication, we transfer the word 'red' to an alleged datum of immediate subjective experience, we are doing just what we do when we have a sinking sensation: I feel as if I were really, externally falling, and I feel as if I were really confronted by an external red object.65

Quine argues that we are not immediately aware of our neural intake, and we do not deduce anything from it. Rather, he holds that we have learned to assert certain sentences in reaction to specific ranges of neural intake, and these sentences constitute the basic experimental evidence for science. The notions of sensory receptors, neural intake, and conceptual scheme, are all a scientific concepts, devised immanent to our conceptual scheme that make sense only on the assumption of a prior amount of sophisticated scientific theory. The distinction between conceptual scheme and evidence is itself a scientific description of how science comes about, but is not a justification for science; that is, science tells us there is a world wholly independent of our conceptual scheme, that this world causes the stimulation of our sensory receptors, and that the stimulation of sensory receptors is the basis for all knowledge. But even if this is true, this account of

65 Quine, 'On Mental Entities', Ways of Paradox, p. 225

⁶⁶ Quine, "On the Very Ideal of a Third Dogma" in Theories and Things., p. 39

how we acquire knowledge does not imply that the triggering of one's sensory receptors is the first thing that one is aware of. Thus, Quine writes,

Nobody could suppose that I supposed that people are on the whole thinking or talking about the triggering of their nerve endings; few people, statistically speaking, know about their nerve endings... I assume no awareness of the firing or any interim contemplation of sense data. I treat of stimulus and response. The response is assertion of the occasion sentence or assent to it.⁶⁷

So, while Quine holds that observation sentences are the basic evidence for science, in contrast to Russell, he argues that the notion of observation sentence, like the notion of ordinary physical objects, is not an *immediate* given, but is itself a theoretical notion that arises immanent to sophisticated physical science.

It is clear that this strictly immanent view of observation sentences, when coupled with the strong-global under-determination thesis, undermines Russell's epistemological doctrine of acquaintance. The significant point here is that because observation sentences are themselves theoretical constructs that come after not before physics, physiology, psychology, and so on, this means that different conceptual schemes will posit different observation sentences as the evidence for science. Consequently, as strong-global under-determination holds that there are equally legitimate but logically incompatible conceptual schemes, it follows that each of these will posit sets of observation sentences that are different, perhaps incompatible, from each other, but which are equally legitimate. Consequently, if Russell's belief that in acquaintance with sense data, or universals, the mind breaking through the conceptual scheme to the ultimate constituents of reality as it is in itself, were true, then because there is no possibility, even unto eternity, of coming up with a uniquely justified conceptual scheme, each conceptual

⁶⁷ Quine, 'On the Very Idea of a Third Dogma', p. 40

data, and thus incompatible versions of reality *as it is in itself*. Hence, there is no reason to believe that any one of these conceptual schemes comes into direct contact with reality *as it is in itself*.

Ultimately, taking seriously the idea that we are necessarily working from within some conceptual scheme or other undermines Russell's epistemological notion of acquaintance. While Russell accepts that we are immersed in some conceptual scheme or other, his assumption that the percipient gains direct and immediate contact with reality as it is in itself is seen to be illegitimate on two counts. First, the notion of a sense-datum, or an observation sentence, is a notion that arises immanent to our on-going conceptual scheme, and presupposes a significant chunk of sophisticated scientific theory; hence, it sense data is not an immediate given, and is not the first thing we are aware of. Second, the strong-global under-determination thesis shows that, even unto eternity, there will not be one uniquely justified conceptual scheme. And as each of these conceptual schemes posits their own set of observation sentences as evidence for theory, there is no basis for assuming that any one of these amounts to acquaintance with reality as it is in itself.

2.5 Strong-global under-determination and extreme realism.

As has been explained, the strong-global under-determination thesis is, strictly speaking, an epistemological thesis, and as such it undermines Russell's epistemological notion of acquaintance. In this section, however, I want to show that strong-global under-determination also has significant metaphysical implications, ruling out Russell's extreme

realist metaphysics; that is, his assumption that reality as it is in itself is pre-carved up independent of us.

For Quine, it is a misunderstanding to suppose we can stand aloof from our conceptual scheme to assess how it measures up to reality *as it is in itself*. And without this transcendent point of view any account of reality will be under-determined in the strong-global sense. For example, Quine writes,

Transcendental argument, or what purports to be first philosophy, tends generally to take on rather this status of immanent epistemology insofar as I succeed in making sense of it. What evaporates is the transcendental question of the reality of the external world – the question whether or in how far our science measures up to the *Ding an sich*. ⁶⁸

In this passage Quine says that strong-global under-determination rules out the transcendental question of the extent to which our conceptual scheme is an accurate mirror of reality as it is in itself. However, Quine's claim here can be interpreted in either of two ways. First, if we interpret strong-global under-determination as a purely epistemological thesis, then the above claim amounts to asserting that our attempts to devise a unique account of reality as it is in itself will inevitably fail. On the other hand, however, we can interpret strong-global under-determination as implying, in addition to this epistemological claim, a further metaphysical thesis, namely – as rejecting the notion of reality as it is in itself, independent of all conceptual schemes. While the former interpretation rules out Russell's extreme realism as unattainable, the latter argues the stronger point that extreme realism doesn't make any sense whatsoever. I think there are good reasons for rejecting the former and adopting the latter interpretation.

⁶⁸ Quine, 'Things and Their Place in Theories' <u>Theories and Things.</u>, p. 22

The important consideration to take stock of in this context is that should we interpret strong-global under-determination as a purely epistemological thesis, i.e., as asserting that we can never devise a uniquely justified account of reality, then it implies a form of radical scepticism. That is, the epistemological interpretation is compatible with accepting that reality as it is in itself exists, and had we the perspective of "cosmic exile" we could say the extent to which our conceptual scheme measures up to reality as it is in itself; but, because there is no "cosmic exile", it is impossible know whether or not our overall conceptual scheme is a good fit for reality as it is in itself. Hence, on this interpretation strong-global under-determination presents a type of Kantian picture of the relation between reality and theory; it implies that reality as it is in itself exists forever beyond the reach of our theory, and even were we to devise a perfectly accurate account of reality as it is in itself we would not know that we had. Consequently, when interpreted as a purely epistemological thesis about our knowledge of reality as it is in itself, strong-global under-determination would imply a radical, transcendent scepticism.

But, in contrast to this, I think it is obvious that Quine does not accept that this type of radical, transcendental scepticism is a coherent notion. Because Quine holds that all inquiry proceeds immanent to some set of beliefs, or conceptual scheme, he is committed to the view that all ascriptions of reality come from within one's own conceptual scheme, and are of a piece with scientific inquiry. However, it is clear that the idea of reality *as it is in itself*, absolutely independent of scientific inquiry, is not a scientific notion; rather, this is the notion of a more real type of existence out beyond the ascriptions of reality we make, and take seriously, from within our conceptual scheme.

Thus, Quine writes

⁵⁹ Quine, 'On what There is', From a Logical Point of View.,p 16-17

Our talk of external things, our very notion of things, is just a conceptual apparatus that helps us to foresee and control the triggering of our sensory receptors in the light of previous triggering of our sensory receptors. The triggering, first and last, is all we have to go on.

In saying this I am talking of eternal things, namely, people and their nerve endings. Thus what I am saying applies in particular to what I am saying, and is not meant as sceptical. There is nothing we can be more confident of than external things – some of them, anyway – other people, sticks, stones. But there remains the fact – the fact of science itself – that science is a conceptual bridge of our own making, linking sensory stimulation to sensory stimulation; there is no extrasensory perception. ⁷⁰

Here Quine asserts that ascriptions of reality from within our conceptual scheme, i.e., reality immanent to science, are as real as it gets; there is no extra-scientific reality that we can take more seriously than the reality we ascribe from within science.

For Quine, having an immanent view on reality does not amount to a form of scepticism; in contrast, Quine holds that nothing is more certain than the independent existence of things such as other people, sticks, stones, and so on. For Quine, scepticism is coherent only if it arses immanent to our on-going conceptual scheme: he accepts that our account of reality can and does go wrong, that science is vulnerable to illusion, and that our success in predicting observations may waver, however, he insists that this type of scepticism is a scientific thesis arising immanent to our on-going inquiry. Indeed, for Quine, even radical scepticism – doubting the existence of the external world – is not incoherent so long as it arises as part of the on-going scientific project. Thus, Quine writes,

Radical scepticism... is not of itself incoherent. Science is vulnerable to illusion on its own showing, what with seemingly bent sticks in water and the like, and the sceptic may be seen merely as overreacting when he repudiates science across the board. Experience might still take a turn

⁷⁰ Quine, 'Things and Their Place in Theories' <u>Theories and Things.</u>, p. 1-2

that would justify his doubts about external objects... but our doubts would still be immanent, and of a piece with the scientific endeavour.⁷¹

What Quine does not accept, however, is the scepticism that questions the transcendental connection between our conceptual scheme and reality *as it is in itself*. This notion that our theory does or does not measure up to reality *as it is in itself*, completely independent of science, is not of a piece with scientific endeavour. In fact, it amounts to a refusal to take scientific endeavour seriously, and makes our theory subject to a fundamentally unscientific form of scepticism. Thus, Quine writes,

Our scientific theory can indeed go wrong, and precisely in the familiar way: through failure of predicted observation. But what if, happily and unbeknownst, we have achieved a theory that is conformable to every possible observation, past and future? In what sense could the world then be said to deviate from what the theory claims? Clearly in none, even if we can somehow make sense of the phrase 'every possible observation'. Our overall scientific theory demands of the world only that it be so structured as to assure the sequences of stimulation that our theory gives us to expect. More concrete demands are empty.⁷²

Thus, for Quine, the type of radical scepticism based on a demand for a more secure perspective from which to justify science, is unscientific and incoherent.

It follows, I argue, that Quine's strong-global under-determination thesis should be taken to imply a rejection of the metaphysical notion of reality *as it is in itself*, wholly autonomous of all scientific inquiry. I conclude that rather than exemplifying radical, transcendental scepticism, as the purely epistemological interpretation suggests, strong-global under-determination shows that radical transcendental scepticism is incoherent; it shows that the notion of reality *as it is in itself*, independent of scientific inquiry, is not taken seriously as a part of science but is a fundamentally unscientific notion. Hence, adopting strong-global under-determination undermines both Russell's epistemological

⁷¹ Quine, 'Things and Their Place in Theories', p. 22

notion of acquaintance and his metaphysical assumption in the existence of reality as it is in itself.

2.6 Conclusion.

In this section I have argued that Quine rejects Russell's extreme realism. The fundamental point of difference between them is that Quine rejects Russell's assumption that in acquaintance the mind comes into direct and immediate contact with reality as it is in itself. In contrast, Quine insists that we are always, inevitably, immersed in some conceptual scheme or other, and as a consequence, we cannot escape a theoreticallytainted, immanent perspective. Quine argues further that from this immanent perspective, scientific theory is under-determined in a strong-global sense; that is, there is no possibility, even unto eternity, of devising a uniquely justified systematisation of empirical data. I argued that the thesis of strong-global under-determination cuts against both Russell's epistemological doctrine of acquaintance, and his extreme realist view of metaphysics. The conclusion, for Quine, is that Russell's extreme realist metaphysical notion of reality as it is in itself is based on confusion and is a source of much confusion, rather, it is by thinking within this unitary conceptual scheme itself, thinking about the processes of the physical world, that we come to appreciate that there is no sense of reality that is more real than reality as ascribed from within our on-going conceptual scheme.

SECTION 3

THE MYTH OF THE MUSEUM

3.1 Introduction.

In the final section of this chapter, I want to show that in keeping with his rejection of Russell's metaphysical notion of reality *as it is in itself*, pre-carved up independent of us, and his epistemological notion of acquaintance, Quine also rejects Russell's extreme realist philosophy of language.

Quine's fundamental objection to Russell's philosophy of language is that it conceives of the meaning of an expression as a non-linguistic, mental state, beyond the speaker's disposition to overt behaviour. He views Russell's approach to language as exemplifying the "myth of the museum" explanation of meaning. The myth of the museum metaphor runs as follows: the alleged non-linguistic meanings are exhibits on display in the speaker's mental museum, and the words expressing those meanings are labels on each exhibit; it follows that two words are synonymous when they are both labels for the same exhibit/meaning, and translating a language means switching the labels on the exhibits/meanings. The myth of the museum thus implies that understanding language involves knowing both the verbal noises or written symbols – through observing and imitating the physical and phonetic behaviour of speakers – and understanding, or being acquainted with, the mental entity that the physical word "is the label of".

For Quine, this is an inherently unscientific account of language, and he holds that this lack of rigour manifests itself in the unwanted ontological commitments that arise from the myth of the museum. On Russell's account of language, the mere meaningfulness of an expression implies the existence of certain entities. To be precise, there are two separate ways that it does this: first through the problem of asserting non-being—the myth of the museum ontologically commits to the entity named in any sentence that denies the existence of that thing; second, through the idea that the meaning of a general expression is a universal and the meaning of a sentence is a proposition.

Quine rejects both of these. Quine adopts a twin strategy to rebut Russell's account of language; first, he argues that positing an entity as the referent of a proper name, or appealing to hypostatised entities, such as propositions, universals, as the meaning of an expression, offers only the illusion of an explanation; and second, Quine develops a much more economical explanation of meaning purely in terms of the speaker's observable behaviour

3.2 The elimination of all proper names.

In general the "myth of the museum" approach generates the old Platonic riddle of asserting non-being: non-being must in some sense exist, otherwise what is it that is not? The idea is that for the sentence asserting the non-being of an entity to be meaningful, we must presuppose the existence of this entity named. For example, Pegasus must in some sense exist, because otherwise it would be nonsense to assert "Pegasus is not". This idea has led to a slew of suggestions for the type of thing Pegasus can be – an idea, a possible

object, and so on. However, even the most cogent of these notions comes undone upon considering the sentence that asserts the non-being of an impossible entity such as "the round square cupola on Berkeley College". ⁷³

Russell. of course, initiates the approach to solving this problem through his theory of descriptions in "On Denoting"; here he shows how we can meaningfully use apparent names without presupposing the existence of the entity apparently named. Russell's theory applies directly to complex descriptive names, such as "the present King of France", "the author of Waverley", or "the round square cupola on Berkeley College". His approach is to analyse any complex name systematically as a fragment of the entire sentence in which it occurs, i.e., as an incomplete symbol. According to this theory the sentence "There is the author of Waverley" is explained as "Someone (or, something) wrote Waverley and nothing else wrote Waverley"; similarly, the sentence "The author of Waverley is not", becomes the false but meaningful alternation, "Either each thing failed to write Waverley or two or more things wrote Waverley". In this alternation no expression purports to name the author of Waverley, hence the meaningfulness of this statement does not presuppose the existence of the entity whose being is in question. By analysing this complex name in context as an incomplete symbol, the sentence as a whole is still meaningful, and is true or false, but there is no unified expression as an analysis of the descriptive phrase. Russell's theory shows that where descriptions are concerned, there is no longer any problem in asserting or rejecting existence.

However, because Russell aims to preserve his assumption that analysis of language reveals the actual structure of reality, the aim of his theory is to distinguish

⁷³ Quine, 'On What There Is', p. 4-5

genuine from spurious proper names, i.e., definite descriptions, and to show that genuine proper names refer to objects, and are learned by acquaintance. Thus, Quine writes,

Russell did not take the further step of treating all names as descriptions and thus eliminating them too. He preferred to preserve an epistemological distinction between names that were short for descriptions and names that were irreducibly proper, learned by acquaintance.⁷⁴

However, because Quine rejects Russell's notion of acquaintance on which his view of proper names is based, so he also rejects the alleged epistemological distinction between names that are short for descriptions and names that are irreducibly proper. Consequently, from his perspective Russell's method of paraphrasing away definite descriptions can be applies to all names; all names can be paraphrased as definite descriptions and eliminated from all contexts.

Now what of 'Pegasus'? This being a word rather than a descriptive phrase, Russell's argument does not immediately apply to it. However, it can easily be made to apply. We have only to rephrase 'Pegasus' as a description, in any way that seems adequately to single out our idea; say, 'the winged horse that was captured by Bellerophon'. Substituting such a phrase for 'Pegasus', we can then proceed to analyse the statement 'Pegasus is', or 'Pegasus is not', precisely on the analogy of Russell's analysis of 'The author of *Waverley* is' and 'The author of *Waverley* is not'. 75

The general concept behind Russell's method was the replacement of specific definite descriptions by quantifiers, predicates and truth functions. Quine's suggestion now is to treat every proper name as an undivided general term.

The key point, for Quine, is that Russell's method of singular descriptions can be tailored to fit words other than definite descriptions. For most proper names no undivided general term will stand out as obvious, but we can generate the general terms by

⁷⁴ W.V. Quine, Methods of Logic, (New York: Holt 1950) p.234

paraphrasing the name as a verb: for example, the name 'Pegasus' becomes 'the thing that Pegasizes' or 'the thing that is-Pegasus'. And, given any sentence that contains a singular term, this sentence can be regimented into quantificational notation and each constituent singular term paraphrased into a definite description; after this, all definite descriptions can be eliminated through Russell's method of singular descriptions. Thus, in Philosophy of Logic ⁷⁶ Quine argues that names are expendable; he writes,

Chief among the omitted frills is the name. This again is a mere convenience and strictly redundant, for the following reason. Think of 'a' as a name, and think of 'Fa' as any sentence containing it. But clearly 'Fa' is equivalent to $(\exists x)(a = x \cdot Fx)$.' we see from this consideration that 'a' needs never occur except in the context 'a='. But we can as well render 'a=' always as a simple predicate 'A', thus abandoning the name 'a'. Fa' gives way thus to ' $(\exists x)(Ax \cdot Fx)$ ', where the predicate 'A' is true solely of the object 'a'.

For Quine, each singular term can be replaced by a predicate such that, if there is an object that the name stands for, this predicate applies to that object. Quine says,

We need no longer labour under the delusion that the meaningfulness of a statement containing a singular term presupposes an entity named by the term. A singular term need not name to be significant.⁷⁸

For Quine, therefore, Russell's solution to the problem of the intelligibility of affirming non-being ultimately points the way to the eliminability of all singular terms.⁷⁹

For Quine, the supposition that we could not meaningfully affirm the non-being of an entity unless the entity named exists, is now seen to be completely groundless since the name of the object in question can be expanded into a singular description and analysed

⁷⁸ Quine, "on What There Is", From a Logical Point of View p. 8-9

⁷⁶ W.V. Quine, <u>Philosophy of Logic</u>, 2nd ed. (Cambridge, MA: Harvard University Press1986)

⁷⁷ Quine, Philosophy of Logic, p.25

Quine, Methods of Logic, p. 232 Here, Quine sets out formally his application of Russell's theory of descriptions to all names. He says, if we take the general form for the singular term 'there is such a thing as F' as (x)(Fx), in Russell's method this is paraphrased as $(\exists x)(x)(Fx \leftrightarrow x = y)$ which is devoid of the singular term (x)(Fx). However, (x)(Fx) can be eliminated from other contexts also. To take two examples: (a) if 'G' represents any predicate, then 'G(x)(Fx)' which attributes 'G' to 'the thing that is F', can be parsed as $(\exists x)[Gy \land (x)(Fx \leftrightarrow x = y)]$: and (b), if (x)(Fx) does not exist, then ' $(x)(Fx \leftrightarrow x = y)$ ' is false.

away à la Russell's theory of denoting. But, more generally, Quine concludes that we do not commit ourselves ontologically by the mere use of a name. Because all names can be eliminated from language without affecting our ability to refer to objects, Quine concludes that names are not part of the referring apparatus of language. Thus, in contrast to Russell's myth of the museum account of language, it is now clear that, for any sentence, mere meaningfulness does not presuppose the existence of the object named.

3.3 The elimination of "meanings".

There is, of course, a second way in which the myth of the museum imputes entological commitment on us by our mere use of language, namely – through the idea that the meanings of the terms we use have being in a realm of subsistence, rather than exist in space and time. That is, according to the myth of the museum we are ontologically committed to propositions as the meanings of sentences and universals as meanings of general words. For Quine, however, the risk in hypostatising obscure entities such as "meanings" is that one then reads into them an explanatory value that is not there. Thus, Quine writes

The explanatory value of special and irreducible intermediary entities called meanings is surely illusory.⁸¹

Because it creates the illusion of having explained something, the myth of the museum is worse than useless in linguistics:

An object referred to, named by a singular term or denoted by a general term, can be anything under the sun. Meanings, however, purport to be entities of a special sort: the meaning of an expression is the idea

⁸⁰ I discuss Quine's criterion of ontological commitment in the next chapter.

⁸¹ Quine, 'On what There Is', From a Logical Point of View. p. 12

expressed. Now there is considerable agreement among modern linguists that the idea of an idea, the idea of the mental counterpart of a linguistic form, is worse than worthless for linguistic science. I think the behaviorists are right in holding that talk of ideas is bad business even for psychology. The evil of the idea idea is that its use, like the appeal in Molière to a *virtus dormitiva*, engenders an illusion of having explained something. 82

Quine proposes a twofold response to the myth of the museum account of meaning: first he rejects the notion that abstract entities do any work in explaining how language is meaningful; and, second, he develops an alternative, behaviourist model of language that does not rely on positing any such abstract entities.

Quine's first step is to show that Russell's hypostatised propositions are "useless lumber". that add nothing to our understanding of language. One way to illustrate this point, Quine thinks, is in connection with the propositional calculus. Quine holds that the calculus of propositions can therefore be divided into; (a) a set of logical principles of deductions governing the manipulation of sentences, which functions antecedent to and are seen as concerning (b) Russell's alleged set of abstract non-linguistic propositions. Quine notes that there is widespread agreement concerning the operation of the calculus taken as a series of techniques for manipulating sentences; but while there is little essential disagreement concerning the logical properties of propositions, the question of the intrinsic character of propositions has been a constant source of illusionary problems. However, as we never talk about propositions in contexts other than discussions of logic, but engage in the manipulation of sentences themselves and not of

⁸⁵ Quine, 'Ontological Remarks on the Propositional Calculus', p. 265

⁸² Quine, 'The Problem of Meaning in Linguistics', From a Logical Point of View., p. 47-48

⁸³ W.V. Quine 'Ontological Remarks on the Propositional Calculus', Ways of Paradox, p. 269

⁸⁴ W.V. Quine, 'Ontological Remarks on the Propositional Calculus', p. 265 - 271

the postulated propositions, Quine suggests that there is no reason to take these types of questions seriously. Thus Quine writes,

Outside discussions of logic we never bestow consideration upon propositions, in the sense of non-sentences whereof sentences are symbols, but engage only in the manipulation of the sentences themselves. We do not, e.g., have occasion to observe that 'Boston is east of Chicago' and Chicago is west of Boston' are (or are not) two names for the same proposition; indeed, whereas we may have occasion to reflect that 'Boston' is the name of a city, we do not have occasion to regard 'Boston is east of Chicago' as a name of anything whatever. Thus it is that in the theory of deductions, as a formal systematisation of certain aspects of the ordinary use of language and exercise of reason, there is no call to consider what manner of entity a proposition may be or to formulate the conditions under which propositions are identical. Propositions are hypostatised entities, inferred denotations of given signs. ⁸⁶

The bottom line, for Quine, is that we can sweep away all talk of propositions and retain the theory of deductions as a manipulation of sentences; that is, propositions are ultimately redundant in the explanation of language.

Indeed, Russell's own strategy for explaining language shows that propositions are superfluous. Had Russell posited propositions in the belief that they contribute to the best explanation of our language, then the fact that they explained language would be the right type of reason to support belief in their existence. But, as Quine points out, this is not the type of argument that Russell proposes; rather, Russell appeals to propositions after all the explaining has been done. That is, Russell himself explains the propositional calculus by treating it as a set of sentences, positing non-linguistic entities adds nothing to the explanation. Thus, Quine writes,

From this point of view all speculation as to the nature of propositions drops out. The theory of deductions becomes a paradigm depicting the use of the connectives 'or', 'if-then', etc., with a view to the truthfulness of the sentences which they generate. There are no interred

⁸⁶ Quine, 'Ontological Remarks on the Propositional Calculus', p. 266

entities, no flight of abstraction beyond the realm of everyday uses of words. 87

First and foremost, the logical calculus is about sentences; it is only once we have postulated abstract entities do the logical principles for manipulating sentences become rules for manipulating propositions. Thus, the logical calculus is to be interpreted as theory of deductions. i.e., as a formal grammar for manipulating sentences, and drop all talk of hypostatised propositions.

In a similar fashion, Quine argues that the strictures against propositions apply with equal force against attributes, relations, or universals. Again, Quine's strategy is to show first that the myth of the museum offer only the illusion of an explanation, and then to show that we can make do without the posited non-linguistic entities. Quine holds that the variety of ways in which meanings are invoked boil down to two, namely - having meanings, which is significance, and sameness of meaning, which is synonymy. The key once again is that the fact that expressions are significant or are synonymous comes first; the so-cailed meanings are then concocted in order to explain this irreducible fact. However, Quine makes it quite plain that one can talk of meaning without talking of meanings; rather, the meaning of any sentence can be explained without appealing to this mysterious third dimension.⁸⁸ Thus, we can speak directly of expressions as significant or insignificant, as synonymous or heteronymous with one another; the explanatory value of positing intermediary entities is illusionary. So, similar to his argument that names can be eliminated from language without diminishing our ability to refer to the external world, here he argues that abstract semantic entities can be eliminated without diminishing the meaningfulness of language. Thus, Quine writes,

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 ⁸⁷ Quine 'Ontological Remarks on the Propositional Calculus', p. 269
 ⁸⁸ Quine, 'Use and Its Place in Meaning', Theories and Things., p. 45

I feel no reluctance towards refusing to admit meanings, for I do not thereby deny that words and statements are meaningful... I remain free to maintain that the fact that a give linguistic utterance is meaningful (or *significant*, as I prefer to say so as not to invite hypostasis of meanings as entities) is an ultimate and irreducible matter of fact; or, I may undertake to analyse it in terms directly of what people do in the presence of the linguistic utterance in question and other utterances similar to it. 89

Quine takes the meaning of an expression to be an ultimate and irreducible fact, but argues that we are no better off in point of real explanatory power for all the occult entities that are posited as the meanings of these terms. For Quine, these occult entities are the inherited baggage of Aristotle's metaphysics; he describes them to be the ghosts of departed essences, saying

Meaning is what essence becomes when it is divorced from the object of reference and wedded to the word. 90

In contrast, for Quine, words are human artefacts, meaningless apart from how we associate them with experiences to bestow them with meaning; that is, meaning is primarily a property of behaviour, namely – the use of the term. Consequently, Quine argues that we can make do with the use, the behaviour, and jettison the meaning. ⁹¹

3.4 Conclusion.

To conclude, it is clear that Quine's ultimate point against Russell's myth of the museum account of linguistic meaning is that it is simply not a scientific account of how language actually works. Russell's assumption that meaningful expressions presuppose the existence of entities either as the referents of genuine names, or as the meanings of

⁸⁹ Quine, "on What There Is", From a Logical Point of View p. 11

⁹⁰ Quine. 'Two Dogmas of Empiricism', From a Logical Point of View, p. 22

⁹¹ Quine's behaviourism will be discussed in more detail in a later chapter.

significant expressions, offers no real explanation for how we use language on an ongoing basis. In contrast, these hypostasised objects enter the theory only after Russell's real attempt at explaining language has been given. For Quine, in contrast, it is clear that any account of language must be a scientific account; that is, one that acknowledges our immanent perspective immersed in our on-going conceptual scheme.

CONCLUSION

In this chapter I have first set out Russell's extreme transcendent realism. I argued that this view is essentially a metaphysical thesis, which claims that reality *as it is in itself* is wholly autonomous from our thinking or theorising about it. However, as I have stressed, Russell's arguments for this thesis are based primarily in his epistemological doctrine of acquaintance, which holds that in knowledge the mind comes into direct contact with the object of knowledge. Russell believes that acquaintance enables us to break through our on-going conceptual scheme and to understand something of reality *as it is in itself*, above and beyond our on-going experience of patterns of environmental stimulation. In particular, he believes that there are self-evident truths that can be immediately derived from the sense data we are acquainted with, and that we can know that abstract entities such as relations, universals, and propositions, subsist in the realm of being. ⁹² In addition, I explained Russell's myth of the museum account of linguistic meaning, which was developed in keeping with his extreme realist metaphysics and his epistemological doctrine of acquaintance.

⁹² B. Russell, The Problems of Philosophy, (2nd ed.) pp, 25, 65, 66

Following on from this, I argued that Quine rejects Russell's extreme realistmetaphysics, his epistemological doctrine of acquaintance, and his myth of the museum account of linguistic meaning. I argued that the key point in Quine's rejection of Russell's extreme realism is Quine's insistence on the inevitability of always working from within some conceptual scheme or other. I argued that this insight cashes out most importantly as the doctrine of strong-global under-determination. This is Quine's argument that because all modes of inquiry proceed immanent to our on-going conceptual scheme, any account of the relation between theory and the evidence that supports it will be given from a perspective immanent to on-going theory. And Ouine holds that, from this perspective, we must acknowledge that theory is under-determined in the strongglobal sense; that is, there is no possibility, even unto eternity, of devising a theory that accounts for all possible evidence that is uniquely supported by that evidence. I argued that this thesis of strong-global under-determination at end-of-inquiry is the basis for both Quine's rejection of Russell's epistemological doctrine of acquaintance and his extreme realist metaphysics. On this basis, Quine argues both that Russell's inference from experience to reality as it is in itself is unjustified and unscientific, and that Russell's metaphysical notion of reality as is in itself is an inherently un-scientific notion, which, if adopted, would transform all of scientific inquiry into a form of radical, transcendental scepticism. To conclude, I showed that Quine's insistence on working from with our ongoing conceptual scheme also rules out Russell's myth of the museum account of meaning. In contrast, Quine argues that the postulation of non-linguistic entities as the referents of names, or as the meanings of significant expressions, offers merely the illusion of an explanation for language, and furthermore, he argues that postulating nonlinguistic entities in addition to physical objects, when we can make do with physical objects alone, gives us an inherently unscientific account of language.

The upshot of this critique is that Quine clearly rejects extreme realism, and this, I argue, is the basis for the first dimension of Quine's compromise position. In the next chapter I show that Quine also rejects extreme relativism, specifically, that as developed by Carnap.

CHAPTER 2

QUINE AND EXTREME RELATIVISM

INTRODUCTION

In the previous chapter we saw that Quine rejects Russell's extreme realism. I argued there that Quine rejects Russell's metaphysical assumption of reality as it is in itself, his epistemological doctrine of acquaintance, and his philosophy of language, on the grounds that they are all predicated upon the assumption of a transcendent connection that breaks through the conceptual scheme we are immersed in, to allow direct contact with reality as it is in itself. In contrast, Quine insists that we are inevitably immersed in some conceptual scheme or other, and must take this immanent perspective seriously.

In this chapter, I want to show that Quine also rejects extreme relativism. Here! give the account of extreme relativism as présented by Carnap. The central claim in Carnap's extreme relativism is his rejection of all metaphysical assertions as meaningless pseudo-statements. Carnap holds that metaphysical questions about what exists are "practical" questions about which proposed "linguistic framework" to adopt, and are not "theoretical" questions leading to assertions that are true or false. Theoretical questions, made internal to a framework, are determined by the rules of that framework and do not imply any commitment to ontology independent of the framework. Moreover, as the practical questions of whether there are numbers or things are asked external to all frameworks, they are decided on purely pragmatic grounds about whether it is to our advantage to adopt a particular framework. Consequently, Carnap holds that we are not ontologically committed by anything we say as nothing we say asserts a belief in the

existence of the objects talked about; rather, for Carnap, to accept a certain type of entity means nothing more than accepting a certain way of speaking.

Herein lies Carnap's extreme relativism. Because there are never any ontological consequences arising from what we say, there is nothing to preclude us from developing as many different forms of language as possible. Carnap believes we should adopt a tolerant attitude to alternative linguistic frameworks; each of these is true from its own perspective and brooks no higher criticism. For this reason, the role of philosophy is not to arbitrate between alternative frameworks, but is to provide a neutral position from which the philosopher can stand aloof from on-going inquiry and clarify the rules constituting each framework. In addition, Carnap develops an account of language that is in keeping with this rejection of metaphysics and attitude of extreme realism. This view of language is central to Carnap's overall project because it provides for the distinction between analytic and synthetic sentences, which in turn is crucial to his general distinction between proposals made external to, and assertions made internal to a framework.

Following on from this account of Carnap's position, I show that Quine rejects Carnap's extreme relativism. To begin, I argue that, as with his rejection of Russell's extreme realism, Quine's rejection of Carnap's extreme relativism is based in his insistence on the inevitability that all inquiry proceeds from a perspective immersed in our on-going conceptual scheme. In this case, working from within cuts against Carnap's assumption that philosophy provides a transcendent position from which to conduct neutral inquiry. This point targets the logical core of Carnap's extreme relativism: in rejecting the transcendent perspective aloof from on-going inquiry, Quine confounds the

idea that we can be tolerant of competing linguistic frameworks, or conceptual schemes, without having to take any of them seriously. Rather, for Quine, because all inquiry is immanent to our on-going conceptual scheme, we have no option but to acknowledge and take seriously the conceptual scheme we currently embody.

I show here that, for Quine, the key to carrying out this attack on Carnap's extreme relativism lies in rejecting the analytic-synthetic distinction. For Quine, this distinction is arbitrary, vague, and has no bearing on how we actually use language; in contrast, Quine proposes a holistic account of language that does not facilitate the analytic-synthetic distinction. Following on from this, I show that rejecting the analytic-synthetic distinction is important because it establishes that Carnap cannot draw a sharp distinction between purely pragmatic decisions and genuine theoretical judgments. And, as a consequence, Carnap cannot maintain the distinction between statements made internal and those made external to a linguistic framework. Ultimately, this rules out Carnap's extreme relativism. I conclude this chapter by showing that, in contrast to Carnap's account of language, Quine develops an account of language where, rather than pretending to escape the consequences of our assertions by claiming to merely adopting a form of language, we take seriously the ontological commitments of sentences we assert as true. ⁹³

⁹³ My purpose in this chapter is to present Quine's reading of Carnap. Consequently, I will not consider the validity of that reading or how accurately it reflects Carnap's actual views. I return to this question later in the thesis.

SECTION 1

CARNAP'S EXTREME RELATIVISM

1.1 Introduction.

In this section I give an account of Carnap's extreme relativism. To begin, I show that with Quine, Carnap rejects Russell's belief in reality as it is in itself, wholly autonomous from our conceptual scheme; however, in contrast to Quine, Carnap goes on to deny that metaphysical assertions have any meaning whatsoever. Carnap's rejection of metaphysics turns on the concept of a linguistic framework, and his subsequent distinction between questions asked internal or external to a framework. Carnap argues that all meaningful assertions are made internal to a framework; these alone are real, true or false, theoretical judgments. In contrast, statements made external to a framework are proposals not assertions; that is, these are suggestions about adopting a form of language, which are decided on a pragmatic basis and cannot be true or false. Carnap argues that internal assertions do not imply any commitment to the existence of the entities spoken about; while external proposals are not true or false so do not imply any ontological commitments either. Consequently, Carnap adopts an extreme relativistic attitude to alternative frameworks, insisting that we tolerate all frameworks and do not make the mistake of demanding any one of them to be true or false. Following on from this, I show that Carnap's account of language is in keeping with his rejection of metaphysics and notion of linguist frameworks. I show that this account of meaning provides for the analytic-synthetic distinction, which I argue is the basis for Carnap's distinction between imernal assertions and external proposals; and hence, is the basis for his extreme relativism.

1.2 Carnap's rejection of metaphysics.

In contrast to Russell's extreme realism, Carnap's general position is characterised by his rejection of metaphysics. Carnap is a strict empiricist, who accepts logical analysis as the only legitimate form of philosophy. He writes,

In our 'Vienna Circle', as well as in kindred groups... the conviction has grown, and is steadily increasing, that metaphysics can make no claim to possessing a scientific character. That part of the work of philosophers which may be held to be scientific in its nature – excluding the empirical questions which can be referred to empirical science – consists of logical analysis. 94

Empiricists are in general apprehensive of any kind of abstract entity, such as properties, classes, numbers, relations, and so on, and usually feel more sympathy to nominalism than realism. This distrust means that, as far as possible, empiricists try to avoid reference to abstract entities and to restrict themselves to nominalistic language. The residual problem with this approach, however, is that in many contexts there is no option but to refer to abstract entities; and in these cases the empiricist is likely to dismiss that part of science that refers to abstract entities as un-interpreted language. Thus, Carnap writes,

A physicist who is suspicious of abstract entities may perhaps try to declare a certain part of the language of physics as uninterpreted and uninterpretable, that part which refers to real numbers as space-time coordinates or as values of physical magnitudes, to functions, limits, etc. More probably he will just speak about all these things like anybody else but with an uneasy conscience, like a man who in his everyday life does with qualms many things which are not in accord with the high moral principles he professes on Sundays. 95

 ⁹⁴ R. Carnap, <u>Logical Syntax of Language</u>, trans. Amethe Smeaton (London: Routledge 2000) xiii
 ⁹⁵ R. Carnap, 'Empiricism, Semantics, and Ontology,' reprinted in <u>Meaning and Necessity</u>, p. 205

Ultimately, the question facing the empiricist is whether the meaning and truth of these sentences commits the scientist to a metaphysical ontology of the Platonic kind, thus violating the basic principles of empiricism.

For Carnap, the solution to this problem lies in recognising that existence claims must meet the standard of meaningfulness set for all sentences; and, for Carnap, this means that existence claims must be subject to a set of rules for testing, accepting, or rejecting them. These rules for forming sentences about particular entities constitute what Carnap terms a "linguistic framework". In order to talk about a type of entity one must have in hand a framework that states how to speak about this entity; and in order to introduce a new type of entity one must introduce a new framework. The acceptance of any kind of entity is represented in language by the introduction of a framework of new ways of speaking to be used according to a new set of rules. There are two essential steps in the introduction of the framework:

First, the introduction of a general term, a predicate of higher level, for the new kind of entities, permitting us to say of any particular entity that it belongs to this kind (e.g., 'Red is a *property*', 'Five is a *number*'). Second, the introduction of variables of the new type. The new entities are values of these variables, the constants (and the closed compound expressions, if any) are substitutable for the variables. With the help of the variables, general sentences concerning the new entities can be formulated. ⁹⁶

The question of whether properties, classes, numbers, propositions, ordinary physical things, and so on, exist, can only be understood by clarifying two kinds of questions concerning reality or existence.

To begin, once these new linguistic forms are introduced into the language it is possible to formulate and answer questions *internal* to the framework. Carpap holds that

⁹⁶ Carnap "Empiricism, Semantics and Omology", p. 214 (footnote omitted)

depending on the framework, internal questions can be either empirical or logical, making a true answer either factually true or analytic, i.e. true purely in virtue of the rules of the language. Thus, Carnap writes,

If someone wishes to speak in his language about a new kind of entities, he has to introduce a new ways of speaking, subject to new rules; we shall call this procedure the construction of a linguistic *framework* for the new entities in question. And now we must distinguish two kinds of questions of existence: first, questions of the existence of certain entities of the new kind *within the framework*; we call them *internal questions*; and second, questions concerning the existence or reality of the system of entities as a whole, called external questions.⁹⁷

Once we have decided to accept a particular framework, we can pose and resolve questions internal to that framework. For example, once we have decided to accept the 'thing language', which is Carnap's term for the language that deals with the simplest kind of everyday entities, we can raise and answer internal questions, such as 'Is there a key board on my desk?', 'Did Dinosaurs really walk the Earth?', 'Are Leprechauns real or imaginary?', and so on. These questions can be answered by empirical investigation. The results of observations are adjudicated according to the rules for confirming or disconfirming evidence for possible answers set out in the thing language. Internal questions are theoretical, i.e., true or false, because the framework specifies what counts as a genuine answer to the question. ⁹⁸

The various branches of science are constituted by questions asked internal to various different frameworks, and these types of questions exhaust all meaningful questions that can be asked of any given type of entity. However, the concept of reality

⁹⁷ Carnap, 'Empiricism, Semantics and Ontology', p. 206

⁹⁸ In contrast to the thing language, the framework of natural numbers is logical rather than factual in nature, and here answers to questions are found not by empirical investigation based on observation but by logical analysis of the rules for the expressions in this framework. For this reason, statements in the system of natural numbers are analytic, i.e., logically true.

occurring in these questions and answers internal to the thing language is a scientific, empirical and non-metaphysical concept: internal to a framework, something is real if it can be incorporated into the system of things at a particular space-time position, so that it coheres with all other things recognised as real, according to the rules of the framework. Thus, Carnap writes,

It is clear that the acceptance of a linguistic framework must not be regarded as implying a metaphysical doctrine concerning the reality of the entities in question. 99

For Carnap, this internal notion of existence is clearly distinguished from the traditional metaphysical notion of the existence or reality of the total system of entities: to assert the existence of certain entities internal to a particular framework means no more than accepting of that framework, and does imply an ontological commitment to these entities.

In addition to internal questions, this model also identifies external questions; that is, the question of the reality of things in themselves independent of the framework used to speak about them. This type of question purports to inquire into the basic categories of reality as it is in itself, independent of all frameworks. Traditionally, philosophers had regarded questions of this kind as ontological questions answered before a linguistic framework talking about these entities could be legitimately introduced. They assumed that introducing a new framework is legitimate only if there is a prior ontological insight affirming the existence of the entities in question, and justifying the introduction of the framework. However, for Carnap, philosophers have been led to view ontological questions in this erroneous way because ontological questions are invariably framed incorrectly. Carnap writes,

⁹⁹ Carrap, 'Empiricism, Semantics and Ontology' p. 214

To be real in the scientific sense means to be an element of the system; hence this concept cannot be meaningfully applied to the system itself. Those who raise the question of the reality of the thing world itself have perhaps in mind not a theoretical question as their formulation seems to suggest, but rather a practical question, a matter of practical decision concerning the structure of our language. We have to make the choice whether or not to accept and use the forms of expressions in the framework in question. 106

While the question of the existence of things prior to the adoption of any particular framework looks like a genuine theoretical question, Carnap argues that it cannot be formulated internal to a scientific language, and has no cognitive content; hence, any answer to this question will also lack cognitive content. Without supplying a clear cognitive interpretation of this question it must be regarded as what Carnap calls a 'pseudo-question', i.e., a non-theoretical question disguised as a theoretical question. In contrast, what this question actually presents us with is the practical problem of whether to incorporate the linguistic framework of things. However, this is a matter of deciding whether to continue to use the thing language, or to restrict ourselves to the phenomenal language of 'sense data', or construct some other alternative. Thus, Carnap writes,

If someone decides to accept the thing language, there is no objection against saying that he has accepted the world of things. But this must not be interpreted as if it meant his acceptance of a belief in the reality of the thing world; there is no such belief or assertion or assumption, because it is not a theoretical question. To accept the thing world means nothing more than to accept a certain form of language, in other words, to accept rule for forming statements and for testing, accepting or rejecting them. The acceptance of the thing language leads, on the basis of observations made, also to the acceptance, belief, and assertion of certain statements. But the thesis of the reality of the thing world cannot be among these statements, because it cannot be formulated in the thing language or, it seems, in any other theoretical language. 101

¹⁰⁰ Carnap, 'Empiricism, Semantics and Ontology' p. 207

Carnap, 'Empiricism, Semantics and Ontology' p. 207-208

In accepting the thing language, one accepts the world of things, i.e., one accepts a certain form of language or rules for forming statements, testing, confirming and disconfirming them, but it must not be interpreted as referring to a belief in the reality of these entities, in the traditional metaphysical or ontological sense. Thus, Carnap writes,

An alleged statement of the reality of the system of entities is a pseudo-statement without cognitive content. To be sure, we have to face at this point an important question; but it is a practical, not a theoretical question; it is the question of whether or not to accept the new linguistic forms. The acceptance cannot be judged as being either true or false because it is not an assertion. It can only be judged as being more or less expedient, fruitful, conducive to the aim for which the language is intended. Judgments of this kind supply the motivation for the decision of accepting or rejecting the kind of entities. ¹⁰²

The decision to accept the thing language, though influenced by theoretical knowledge, is not of a cognitive nature; rather, the key issue concerns the purpose for which the language will be used, and the decisive factors here will consist of purely pragmatic concerns such as the efficiency, fruitfulness, and simplicity of use of the thing language. Consequently, the fact that the thing language is highly efficient for most purposes in everyday life, is not confirming evidence for the reality of the thing world, but is a reason that makes it advisable to accept the thing language.

For Carnap, neither internal assertions nor external proposals commit one to the metaphysical reality of the entities in question. Hence, Carnap rejects as absurd the idea that even a strict empiricist who rejects Platonistic metaphysics but who accepts the language of physics with its real number variables would be committed to a Platonistic ontology. For Carnap, in contrast, both the thesis of the reality or the external world and the thesis of its irreality are rejected as pseudo-statements. Thus, Carnap concludes that the implications of the acceptance of a language referring to abstract entities are not

¹⁰² Carnap, 'Empiricism, Semantics and Ontology' p. 214

problematic for the empiricist; using such a language does not imply embracing a Platonic ontology but is perfectly compatible with empiricism and strictly scientific thinking.

1.3 Carnap's extreme relativism.

So far, we have seen that like Quine, Carnap rejects Russell's extreme realist metaphysics. Continuing on from this, in this section I show that, again like Quine, Carnap rejects Russell's epistemological notion of acquaintance as a meaningless pseudotheory. However, I show that having rejected acquaintance Carnap goes on to develop an extreme version of relativism, based on his attitude of tolerance to alternative frameworks.

We saw in the previous section that in rejecting metaphysics as meaningless pseudo-statements, Carnap holds that all statements that assert something factual are internal, and, if true, belong to empirical science. This raises the question of what remains for philosophy. For Carnap, what remains for philosophy is not factual statements, or theory, but is only method, namely – the method of logical analysis. This method of logical analysis has both positive and negative applications: the negative application leads to, among other things, the rejection of Russell's epistemological doctrine of acquaintance; the positive application of this method generates Carnap's principle of tolerance and his extreme relativism.

First, for Carnap, the logical analysis of language pronounces the meaninglessness of any statements that claim to reach above or beyond experience. We saw in the

previous section that this conclusion applies in the first place to speculative metaphysics, and accordingly it applies to Russell's claim that reality *as it is in itself* exists independent of all linguistic frameworks. However, this judgment similarly applies to the equally metaphysical claim that starting from experience we can acquire knowledge about what transcends experience, by means of inference from what is experienced; in particular, it applies to Russell's epistemological doctrine of acquaintance that in knowledge the mind is in direct and immediate contact with reality *as it is in itself*. For Carnap, Russell's claim that the sense-data we are immediately acquainted with are of a piece with reality *as it is in itself* is either an internal assertion or an external proposal, but in neither case does it imply the metaphysical importance Russell assumes.

Consequently, Carnap holds that Russell's notion of acquaintance with reality *as it is in itself* is a meaningless pseudo-statement.

In addition to the negative application of this method, Carnap takes it to have positive applications in serving to clarify meaningful concepts and propositions, and to set out the logical foundations for linguistic frameworks. For Carnap, then, philosophy provides a methodology distinct from empirical science. For Carnap, philosophy is "first philosophy" – it is a mode of investigation that offers a neutral perspective on all ongoing inquiry, and a means to stand aloof from all linguistic frameworks in order to investigate them from an unbiased position. The philosopher's task, for Carnap, is to stand aloof from on-going inquiry, and to show where apparently real disputes are in actuality a dispute over which framework to choose. Therefore, while all genuine scientific questions are internal questions, resolved by the rules constituting that

framework, philosophical analysis, as an inquiry into the nature of a framework itself, is a non-scientific mode of inquiry.

For Carnap, obscurities frequently arise in philosophy because philosophers often find themselves talking at cross-purposes. This, Carnap believes, is in large part due to the use of the material rather than the formal mode of speech. In particular, the material mode of speech gives rise to obscurities by employing absolute concepts instead of syntactical concepts that are relative to language. Carnap holds that with regard to every philosophical sentence, if the language or kind of language to which it is to be referred is not given, the sentence is incomplete and ambiguous. In contrast, if the formal syntactical mode of speech is used, it becomes quite clear that linguistic expressions are being discussed. Thus, Carnap writes,

The use of the material mode of speech leads... to a disregard of the relativity to language of philosophical sentences; it is responsible for an erroneous conception of philosophical sentences as absolute. 103

In particular, the use of the material mode of speech obscures the fact that philosophical statements are proposals not assertions. However, when stated in their correct formal mode, it is clear any dispute about the truth or falsehood of a philosophical thesis is mistaken. For Carnap, traditional philosophical disputes are invariably a mere empty battle of words that arise because the disputants do not realise that they are operating in different frameworks; in contrast, the correct approach is to examine the pragmatic utility of the proposals, by focusing on consequences.

This dynamic is seen most clearly the debate within the Vienna Circle itself between Neurath and Schlick over the nature of protocol-sentences. Neurath argues that science is a unitary system within which there are no fundamentally diverse object-

¹⁰³ R. Carnap, Logical Syntax of Language, p. 299

domains. Consequently, he demands a universal language of science - which includes the domains of science, the protocol-sentences and the sentences about sentences. He argues that every language of any sub-section of science can be translated into this universal language. Here the laws of nature are treated as equally privileged proper sentences of science, even though they have unrestricted universality. Hence, for Neurath, both universal and particular sentences are admitted as protocol sentences. In contrast to this, Schlick holds that every sentence, if it is to be significant, must be completely verifiable; this means that every sentence must be a molecular sentence composed of elementary sentences. According to this view, the laws of nature are not among the sentences of science. This is because either these laws must be stripped of their universality, and be interpreted as merely sentences reporting particular experiences, or they are left with their unrestricted universality, in which case they are merely directions for constructing sentences but not proper sentences of science. 104

For both Neurath and Schlick this is a real dispute, i.e., one that has a true and false answer. Consequently, according to Carnap, there is the potential here for endless fruitless discussion between these two as to which of them is right, and what the protocol sentences actually are. 105 For Carnap, in contrast, this is an idle dispute about pseudotheses that originated in the use of the material mode of speech. He argues that by translating the principle theses involved in the controversy into the formal mode of speech, thus rendering the discussion more precise by stating whether it is meant as an assertion or a proposal, and to which language it refers, this apparent philosophical

104 R. Carnap, Legical Syntax of Language, p. 321

¹⁰⁵ Of course, according to Russell's epistemological doctrine of acquaintance implies that since in knowledge the mind comes into direct and immediate contact with reality as it is in itself, it follows that either Neurath's or Schlick's account of protocol-sentences (or both), is wrong.

dispute evaporates: if the disputants pass over into the formal mode of speech and agree as to which of the interpretations is intended then the fruitless arguments come to an end. Stated in the formal mode of speech the dispute clearly concerns how the descriptive atomic sentences, or primitive symbols, in a specific language are to be constructed. It then becomes obvious that these sentences are not incompatible with one another, and it is possible to reconcile the two theses, even if they are interpreted as assertions about the whole of science.

Neurath and Schlick take themselves to be making incompatible assertions, but when translated into the formal mode of speech it becomes clear that they are merely making different proposals, and hence are talking at cross-purposes. Consequently, this is not a real, theoretical dispute with a true and false answer, but is a pragmatic matter of choosing a language. And, for this reason, Carnap counsels a tolerant attitude here; he does not say that either way of constructing the physical language is inadmissible, but in general insists on the free and unhindered construction of as wide a variety of linguistic frameworks as possible. He sums up this attitude as his 'principle of tolerance', which states that,

It is not our business to set up prohibitions, but to arrive at conventions... In logic there are no morals. Everyone is at liberty to build up his own logic, i.e. his own form of language, as he wishes. All that is required of him is that he wishes to discuss it, he must state his methods clearly, and give synthetical rules instead of philosophical arguments. ¹⁰⁷

The principle of tolerance encourages us to develop a variety of frameworks, and argues that we should adopt any theory if it is pragmatic to do so. Thus, in relation to adopting the 'thing' language, Carnap says

¹⁰⁶ R. Carnap, Logical Syntax of Language, pp. 305-306

¹⁰⁷ Rudolf Carnap, The Logical Syntax of Language, p.51-52

To decree dogmatic prohibitions of certain linguistic forms instead of testing them by their success or failure in practical use, is worse than futile; it is positively harmful because it may obstruct scientific progress. The history of science shows examples of such prohibitions based on prejudices deriving from religious, mythological, metaphysical, or other irrational sources, which slowed up the developments for shorter or longer periods of time. Let us learn from the lesson of history. Let us grant to those who work in any special field of investigation the freedom to use any form of expression which seems useful to them; the work in the field will sooner or later lead to the elimination of those forms which have no useful function. Let us be cautious in making assertions and critical in examining them, but tolerant in permitting linguistic forms. 108

When presented in this way, it is plausible to characterize Carnap as an extreme relativist in contrast to Russell's extreme realism. For Carnap, the truth and falsehood of any sentence is dependent on our decision to adopt certain framework rules, thereby making mathematics true relative to the acceptance of the framework of numbers, or physics true relative to the framework of empirical science, and so on.

1.4 Carnap's account of meaning.

To conclude this brief discussion of Carnap, in this section I want to show that Carnap develops an account of meaning in keeping with his extreme relativism, and, in particular, to explain the relationship between his distinction between analytic and synthetic sentences and his distinction between internal and external questions.

As we have seen, Carnap views Russell's notion of acquaintance as a metaphysical pseudo-statement, and, consequently, he also rejects Russell's view that we can meaningfully use this language only because there really is a system of entities of the kind in question that we are acquainted with. In contrast to the myth of the museum

¹⁰⁸ Carnap, 'Empiricism, Semantics and Ontology' p. 221

approach to language, Carnap develops an account of meaning in keeping with this rejection of metaphysics and his tolerance of alternative linguistic frameworks. ¹⁰⁹

For Carnap, our understanding of language proceeds through conventionally determining the rules of language. In the forward to <u>The Logical Syntax of Language</u>¹¹⁰ Carnap describes this change from the myth of the museum as follows:

Up to now, in constructing a language, the procedure has usually been, first to assign a meaning to the fundamental mathematico-logical symbols, and then to consider what sentences and inferences are seen to be logically correct in accordance with meaning. ... (I approach) from the opposite direction: let any postulate and rules of inference be chosen arbitrarily; then this choice, whatever it may be, will determine what meaning is to be assigned to the fundamental logical symbols. ¹¹¹

As with Quine, Carnap's rejection of Russell's notion of acquaintance with extralinguistic entities does not constitute a rejection of meaning *per se*, but is a rejection of a

For Carnap, the question of the existence of abstract entities such as universals, relations, or propositions, is not a theoretical internal question; rather it is an external question about whether to adopt a particular form of language or not. If someone accepts the framework for abstract entities, then she must acknowledge the sentence "The sentence 'Chicago is large' designates a proposition" as a true statement. Thus, Carnap writes,

For those who want to develop or use semantical methods, the decisive question is not the alleged ontological question of the existence of abstract entities but rather the question whether the use of abstract linguistic forms or, in technical terms, the use of variables beyond those for things (or phenomenal data), is expedient and fruitful for the purposes for which semantical analyses are made, viz. the analysis, interpretation, clarification, or construction of languages of communication, especially languages of science. This question...is not a question simply of yes or no, but a matter of degree. ('Empiricism, Semantics and Ontology', pp. 220-221)

The question of the admissibility of abstract entities as designata for meaningful expressions reduces to the external question of the acceptability of the linguistic framework for those entities. And, as an external question this is a pragmatic question about the fruitfulness or expediency of incorporating these linguistic forms into our language, but because it is not in need of theoretical justification it does not imply a belief or assertion. So while Russell regarded the acceptance of the system of abstract entities as an assertion that these entities existed, Carnap clearly rejects this type of view as a metaphysical pseudo-statement. But, for the same reason, Carnap rejects the nominalist's suspicion that the acceptance of abstract entities populates the world with fictitious entities, as again overlooking the fundamental difference between the acceptance of a system of entities and an internal assertion.

¹¹⁰ Rudolf Carnap, <u>The Logical Syntax Of Language</u>, trans, A. Smeaton (London: Routledge & Kegan Pau!, 1937).

¹¹¹ R. Carnap The Logical Syntax Of Language., p.xv.

bad picture of meaning. 112 According to Carnap's new account, the key to meaning lies in the rules of language, i.e., what a language can say is completely determined by the formation and transformation, syntactical and semantical rules of that language. The system of rules for the expressions of the framework suffices to introduce the framework, making it theoretically unnecessary to add further explanations of the elements of the framework, as these follow from the rules. These rules do not purport to any connection with extra-linguistic entities, but are simply representative of the conditions of meaning for any expression within that language. Consequently, the semantic rules of language relate to the meaning of expressions as given by the rules of the linguistic framework they belong to. Thus, Carnap writes,

Since the meaning of a word is determined by its criterion of application (in other words: by the relations of deducibility entered into by its elementary sentence-form, by its truth-conditions, by the method of its verification), the stipulation of the criterion takes away one's freedom to decide what one wishes to "mean" by the word. If the word is to receive an exact meaning, nothing less than the criterion of application must be given; but one cannot, on the other hand, give more than the criterion of application, for the latter is a sufficient determination of meaning. The meaning is implicitly contained in the criterion; all that remains to be done is to make the meaning explicit. 113

For Carnap, the meaning of an expression is implicitly contained in the criterion of application for that expression, i.e., it is contained in the rules that constitute the linguistic framework to which that expression belongs.

Internal to a framework, the meaning of a statement lies in the method of its verification; hence, a statement asserts only so much as is verifiable with respect to it.

¹¹² J. Alberto Coffa, <u>The Semantic Tradition From Kant to Carnap: To The Vienna Station</u>, (Cambridge: Cambridge University Press, 1991) p. 263.f. Coffa describes the accounts of meaning developed by Carnap and the middle Wittgenstein as a new 'Copernican turn'.

¹¹⁵ R. Carnap, 'The Elimination of Metaphysics Through the Logical Analysis of Language' reprinted in A. J. Ayer (ed.) <u>Logical Positivism</u>, (London: The Free Press 1959); pp 60-82 p. 63

This divides meaningful sentences into the following kinds. First, analytic sentences are true purely in virtue of their form: these are not factual sentences but are used for the transformation of factual sentences. Second, self-contradictory sentences are false purely in virtue of their form. For all other meaningful sentences, the decision about their truth or falsity is based on the protocol sentences; hence these are empirical, factual sentences, which make up the domain of empirical science. A factual sentence can thus only be used to assert an empirical proposition, we cannot meaningfully talk about something that lies beyond all possible experience.

We can illustrate this by locking at the linguistic frameworks of the 'thing language' and the 'number language'. In the former, as for all factual frameworks, a sentence has meaning only if its relations of deducibility to the protocol sentences are fixed, and a word has meaning only if sentences in which it occurs can be reduced to protocol sentences. In contrast, sentences in the number language are neither empirical nor factual; rather, they are analytic, and hence say nothing about reality. For Carnap, the truths of logic and mathematics follow immediately from the rules of language, and for this reason are necessary. The validity of mathematical statements thus depends solely on the conventionally chosen definitions of the symbols it contains; these conventions can be abandoned and replaced with different rules, but to do this would simply introduce a new language, it would not falsify the original language. For Carnap, then, any system of logic or mathematics is only one among many possible systems, each of which is composed of analytic statements, defined by the conventional rules governing the language they belong to.

This account of meaning is significant because it facilitates the distinction between analytic and synthetic sentences. This distinction is central to Carnap's general project of extreme relativism in a number of ways. *First*, analyticity is central to the coherence of Carnap's notion of a linguistic framework. Carnap holds that the formation and transformation rules constituting a linguistic framework constitute the meaning and justification of its constituent terms, consequently, the framework cannot justify its own rules of formation and transformation, i.e. the rules constituting the framework, such as the criterion of application, cannot be internal, theoretical sentences; rather, the rules of a framework are themselves external to all frameworks, and are not empirical, factual sentences. And, as these rules of a framework are not self-contradictory sentences nor meaningless metaphysical pseudo-sentences, for Carnap, these rules must be analytic sentences.

Second, the notion of analyticity supports Carnap's distinction between purely pragmatic decisions and theoretical, true or false judgments. The definitions of concepts within the framework are formulated in terms of these analytic sentences; however, these analytic sentences are chosen not as a matter of knowledge but of decision. Thus, analytic sentences mark off a set of sentences that are not justified on a theoretical basis, but are conventionally chosen and knowledge of extra-linguistic facts is not involved. This is why the acceptance of a framework dose not imply the assumption, belief, or assertion in the reality of the entities introduced by the framework. The acceptance of these analytic sentences is a pragmatic decision determined according to our purposes, and isolated from genuine judgment.

Finally, and perhaps most importantly, the notion of analyticity also provides the basis for Carnap's view of philosophy. Without the concept of analyticity, the project of seeing philosophy as a neutral mode of inquiry collapses. Because analyticity isolates a special preserve of pragmatic decisions from theoretical judgments, there is a separate role for philosophy distinct from scientific inquiry. Carnap thus envisages the philosopher as playing the role of neutral investigator, clarifying the analytic frameworks in order to distinguish pragmatic questions of framework choice from real theoretical questions internal to an accepted framework. It follows that a linguistic framework consists of a set of analytic sentences, and philosophy as a scientific discipline involves identifying precisely those claims that disputants are taking as analytic.

1.5 Conclusion.

In conclusion, in this section I have shown that Carnap develops an extreme version of relativism. The basis of Carnap's extreme relativism is his rejection of metaphysics as a meaningless pseudo-theory. His rejection of metaphysics turns around the notion of a linguistic framework and the subsequent distinction between internal and external questions. In addition, this model means that philosophy offers a distinctive methodology separate from natural science; for Carnap, the philosopher stands aloof from on-going inquiry, enjoying her neutral perspective, and engages in the logical analysis of linguistic frameworks. This allows Carnap to indulge in an attitude of tolerance for all frameworks, taking the extreme relativistic view that each is true from its own perspective, and brooks no higher criticism. However, we have seen that the coherence of this position, in

particular the distinction between internal theoretical assertions and external pragmatic proposals, turns on the coherence of the distinction between analytic and synthetic sentences. And, in the next section, I show that this is precisely the point that Quine targets in his attack on Carnap's extreme relativism.

SECTION 2

QUINE'S CRITICISM OF CARNAP

2.1 Introduction.

In this section I want to set out the key difference between Quine and Carnap. Here I emphasise that the principal difference between their views comes down to Quine's insistence that we always work from within one conceptual scheme or other. That is, in contrast to Carnap, Quine holds that there is no transcendent position from which to conduct neutral inquiry. This point goes to the heart of Carnap's philosophical system, and adhering to it leads Quine to endorse a radically different philosophical system. In particular, because he holds that all inquiry is conducted immanent to some conceptual scheme, Quine repudiates Carnap's view of philosophy as a separate discipline with its own methodology, and his tolerant attitude to competing linguistic frameworks.

In this section I set out Quine's rejection of the analytic-synthetic distinction. For Quine, this distinction is arbitrary and unrelated to our actual use of language; in contrast, Quine proposes a holistic account of language that is incompatible with the analytic-synthetic distinction. Following on from this, I show that, for Quine, because Carnap cannot substantiate the analytic-synthetic distinction he likewise cannot establish that

there is a sharp distinction between purely pragmatic decisions and genuine theoretical judgments unless he can come up with. And, as a consequence, Carnap cannot maintain the distinction between statements made internal and those made external to a linguistic framework.

2.2 Quine and extreme relativism.

In this section, I want to outline the general basis for Quine's rejection of Carnap's extreme relativism. And, as with his rejection of Russell's extreme realism, the key factor here is Quine's insistence that all inquiry proceeds from a perspective immersed in our on-going conceptual scheme; that is, for Quine, the human predicament is to be forever unable to "step outside our own skin" in order to reflect on our scientific enterprise from a neutral perspective.

For Quine, there is an interesting correlation between Carnap's extreme relativism and Russell's extreme realism. In the previous chapter we saw that Russell's extreme realist metaphysics is predicated upon the assumption of a direct connection with the object of knowledge; this connection between the mind and the object of knowledge transcends our conceptual scheme to give a non-theoretical, un-mediated relation with reality as it is in itself. Hence, for Russell we are not bound to a perspective immanent to our on-going conceptual scheme; rather, the analysis of our knowledge and meaningful language gives us a transcendent view of the ultimate constituents and structure of reality as it is in itself. Similarly, for Quine, Carnap's extreme relativism is similarly predicated upon the possibility of stepping outside of any particular conceptual scheme or linguistic

framework, and adopting a transcendent, framework-neutral perspective towards choices in on-going inquiry. Of course, like Quine, Carnap rejects Russell's epistemological assumption that in knowledge the mind breaks through to gain immediate acquaintance with reality as it is in itself, and so he also rejects Russell's extreme realist metaphysics. Consequently, in contrast to Russell, Carnap does not hold that the analysis of knowledge or meaningful language gives a transcendental perspective on the ultimate constituents or structure of reality as it is in itself; but, for Carnap, the analysis of language, or more precisely the logical analysis of linguistic frameworks, enables the philosopher to stand aloof from on-going inquiry, and survey alternative linguistic frameworks from a completely neutral perspective. Thus, Carnap holds that philosophy is an autonomous discipline, complete with its own distinct methodology, independent of any other mode of inquiry. In this sense, for Carnap, philosophy is continuous with the traditional conception of philosophy as "first philosophy", i.e., as a discipline separate from science. This view of philosophy as providing a transcendent perspective on inquiry that allows Carnap to adopt his relativistic, tolerant attitude towards all linguistic frameworks; without this capacity to stand aloof from all frameworks, we would not be able to survey linguistic frameworks without being committed to any one in particular.

Quine's general point against Carnap's relativism involves rejecting his view of philosophy as having a methodology distinct from the general scientific enterprise, that allows the philosopher to stand aloof from on-going scientific disputes and adopt a tolerant/relativistic attitude to competing frameworks, in contrast, Quine holds that the philosopher and the scientist share the same immanent perspective, and are both immersed in the same conceptual scheme. Thus Quine's insistence on the inevitability of

being immersed in some conceptual scheme or other, thereby denying the possibility of a transcendent perspective on our scientific enterprise, cuts against both Russell's extreme realism and Carnap's extreme relativism.

In the next section, I want to spell out more precisely the details of how Quine rebuts Carnap's assumption of a transcendent perspective. In particular, I show that in order to establish this point against Carnap, Quine must rebut Carnap's distinction between statements made internal and external to a linguistic framework. It is clear that this point comes down to rejecting Carnap's rule based account of language as unscientific and artificial, and, ultimately, to rejecting Carnap's assumed distinction between analytic and synthetic sentences.

The basis of Quine's attack on Carnap, therefore, boils down to rejecting the analytic-synthetic distinction. Quine's problems with Carnap's use of analyticity surfaced very early in Quine's career, and his rejection of the analytic-synthetic distinction has become a central feature of Quine's own philosophical system. Throughout approximately the first twenty years of his career Quine developed a series of arguments against this distinction. These can be briefly summarised as follows. 114 Quine points out that analyticity has usually been clarified in terms of a circle of intensional concepts, such as, synonymy, definition, necessity, and so; however, Quine argues that none of these is adequate to the task of clarifying analyticity, as each of these notions is as much in need of clarification as analyticity. Alternatively, Carnap's attempt to clarify analyticity in terms of the semantic rules for artificial languages is also unsuccessful as these rules are

¹¹⁴ I merely mention these arguments but concentrate on Quine's doctrine of holism as it the most relevant criticism of the internal-external distinction.

arbitrary, in the sense that they are not based on empirical grounds. ¹¹⁵ Quine goes on to argue that an arbitrary definition of analyticity is insufficient to establish Carnap's distinction between purely pragmatic sentences and genuine theoretical sentences. ¹¹⁶

Ultimately, these criticisms exemplify the underlying point that Carnap's account of language is both unscientific and artificial; for Quine, Carnap's account of language makes the use and meaning of words artificially precise, and holds on a much more exalted view of the notions of definition, meaning postulates, and convention, that is actually the case in natural languages. ¹¹⁷ In the next section, I show that Quine rebuts this view by proposing an alternative account of language, developed from within our engoing unitary conceptual scheme itself, in which there is no role for the analytic-synthetic distinction.

2.3 Quine's alternative account of meaning: Holism.

In this section, I explain how Quine rebuts the analytic-synthetic distinction by proposing a more scientifically accurate account meaning that is incompatible with this distinction. Essentially, Quine's point is that Carnap's account of language gives far too much weight to artificial distinctions that are not in keeping with an actual, scientific account of language. Moreover, for Quine, it is precisely the artificiality of Carnap's account of language that sustains both the analytic-synthetic distinction and the internal-external distinction. However, Quine argues that if we take seriously the way we actually use

Quine 'Two Dogmas of Empiricism' reprinted in From a Logical Point of View, pp 20-47

¹¹⁶ Quine, 'Truth by Convention', and 'Carnap and Logical Truth', reprinted in Ways of Pacadox, Chapters

See Quine, 'Necessary Truth', 'Truth by Convention', and 'Carnap and Logical Truth', in <u>Ways of Paradox</u>.

language now, it is clear that in fact language forms a unitary web, in which an absolute cleavage between analytic and synthetic sentences cannot be drawn.

Quine argument turns on the doctrine of 'holism', which he introduces in the last two sections of 'Two Dogmas of Empiricism'. Quine's other lines of attack concentrated on the issue of the intelligibility of the analytic-synthetic distinction and argued that without a behaviourist criterion this distinction is arbitrary and illegitimate, but here, instead of criticizing analyticity directly, Quine argues that the analytic-synthetic distinction is superfluous to a rigorously scientific account of empirical confirmation. The key is that the holistic view of language is one that remains faithful to the insight of working from within.

Quine begins by pointing out that the analytic-synthetic distinction is intimately connected with the verification account of meaning. The verification account of meaning holds that the meaning of a statement is the method of empirically confirming or refuting it. Quine argues that the verification account of meaning is taken as a basis for clarifying the dogma of analyticity because it states that expressions are synonymous if and only if they are alike in point of empirical confirmation or retutation. Armed with this account of synonymy one could then define analyticity in terms of it and logical truth. Thus Quine concludes that

If the verification theory can be accepted as an adequate account of statement synonymy, the notion of analyticity is saved after all. How more precisely, Quine is concerned with the naïve view of this relation between an expression and its mode of confirmation, called "radical reductionism".

¹¹⁸ Quine 'Two Dogmas of Empiricism' pp. 37-47

Radical Reductionism implies that each individual sentence has its own fund of empirical content. 120 This means that every meaningful sentence can be traced back to a sentence consisting of only logical constants and terms for immediate experience. This idea supports the notion of a sentence comprising wholly of linguistic components, making no claim about reality. Such a sentence would be analytic; moreover, it would be epistemologically different from other sentences as no experience could refute it. Clearly, this view of reductionism ties in well with Carnap's overall project. However, it became apparent to Carnap, who as Quine points out was the only reductionist who attempted to carry through on this assumption by taking serious steps towards carrying out the reduction of science to terms of immediate experience, that this approach is fundamentally flawed. 121 Quine points out that, impressive as Carnap's efforts certainly are, he was quickly confronted by intractable obstacles: the reconstructions he did effect amount to only a small fragment of the overall project; but more problematically, he discovered that there are fundamental scientific terms that cannot be found in immediate experience. 122

In contrast to reductionism, therefore, both Carnap and Quine adopt Pierre Duhem's doctrine of meaning and evidential holism. 123 This is the view that statements about the external world are tested against sense experience not individually, but as a corporate body. 124 Thus, Quine writes,

The totality of our so-called knowledge or beliefs, from the most casual matters of geography and history to the profoundest laws of atomic physics or even of pure mathematics and logic, is a man-made fabric

¹²⁰ Quine 'Two Dogmas of Empiricism', p. 38

¹²¹ Quine "Two Dogmas of Empiricism" p. 39

¹²² Quine "Two Dogmas of Empiricism" p. 40

¹²³ Carnap, Logical Syntax of Language, p. 318

¹²⁴ Pierre Duhem, La Theorie Physique: Son objet et sa Structure (Paris, 1906) p.303-328

which impinges on experience only along the edges. Or, to change the figure, total science is like a field of force whose boundary conditions are experience. A conflict with experience at the periphery occasions readjustments in the interior of the field. Truth values have to be redistributes over some of our statements. Reevaluation of some statements entails reevaluation of others, because of their logical interconnections – the logical laws being in turn simply certain further statements of the system, certain further elements of the field. Having reevaluated one statement we must reevaluate some others, which may be statements logically connected with the first or may be the statements of logical connection themselves. 125

Holism is the doctrine that statements about the external world are confirmed or refuted as a corporate body, not individually. This doctrine asserts that there is in the strict sense no refutation or falsification of any individual hypothesis, because even if one of these prove incompatible with some experience, there is always the possibility of maintaining the hypothesis and reorganising the rest of theory to accommodate both the hypothesis and the observation. Similarly, there is no strict confirmation of any individual hypothesis; at best, the hypothesis is increasingly confirmed with the increasing number of instances where the consequences of the hypothesis fit in with experience. More generally, therefore, it is not possible to test an individual hypothesis in isolation; rather, in deducing any hypothesis the other hypotheses making up the theory must also be used. Therefore, it is the system of science as a whole that faces the tribunal of experience, and individual hypotheses cannot be put to empirical test.

Holism has two important implications for reductionism in particular, and the verification account of meaning in general. *First*, it implies that the reductionist account of verification is an artificial account of science and language. For Quine, the picture that terms in science contain hidden or implicit definitions carrying them back to ultimate

¹²⁵ Quine "Two Dogmas of Empiricism" p.42

terms relating to immediate experience simply does not stand up to scientific scrutiny. ¹²⁶
In contrast, Quine demands an account of knowledge that more faithfully reflects the actual holistic nature of science. It follows that, for Quine, the content of our knowledge forms a system-based rather than a statement-by-statement distribution. The central idea is that on the one hand we have language as an infinite totality of expressions while, on the other, we have sensory experiences. These two are keyed-in together at various places. Quine describes it as follows,

The linguistic material is an interlocked system which is tied here and there to experience; it is not a society of separably established terms and statements, each with its separate empirical definition. There is no separate meaning, in terms of direct experience, for the statement that there is a table here, or that there is a planet in outer space. 127

For Quine, our knowledge is arranged as a unitary fabric or web, in which all hypotheses are related to each other through the inferential links of logic, where these inferential links are themselves merely strands in the web among infinitely many more. The fabric touches empirical data only at its periphery, but all hypotheses are related to empirical data through their connection to the periphery hypotheses. Consequently, no individual hypothesis can be linked with a particular confirming or falsifying experience. Rather, for Quine, it follows that

the contribution which linguistic meaning makes to knowledge and the contribution which sensory evidence makes to knowledge are two inextricably intertwined to admit of a sentence-by-sentence separation. 128

Blocks of theory generate predictions; therefore, blocks of theory rather than individual statements have empirical content.

127 W.V. Quine, 'On Mental Entities' reprinted in Ways of Paradox, p.221-222

¹²⁸ Quine 'Mr. Strawson and Logical Theory', p.138

¹²⁶ W.V. Quine, 'Mr. Strawson on Logical Theory', reprinted in Ways of Paradox, p.140

Second holism implies that all hypotheses of science are revisable in principle. Because sentences about the physical world face the tribunal of sense experience as a corporate body not as individuals, all scientific laws may be revised as soon as it seems expedient to do so. That is, because no individual sentence has its own separate fund of empirical evidence, which can confirm or refute it, any sentence can be rejected or held true irrespective of the evidence, so long as compensatory adjustments are made elsewhere in the system. Thus, Quine writes,

Any statement can be held true come what may, if we make drastic enough adjustments elsewhere in the system. Even a statement very close to the periphery can be held true in the face of recalcitrant experience by pleading hallucination or by amending certain statements of the kind called logical laws. Conversely, by the same token, no statement is immune to revision. Revision even of the logical law of excluded middle has been proposed as a means of simplifying quantum mechanics; and what difference is there in principle between such a shift and the shift whereby Kepler superseded Ptolemy, or Einstein Newton or Darwin Aristotle?¹²⁹

For Quine, then, because our theory forms an interconnected unitary system, any sentence belonging to it can be repudiated. The only difference between laws in this respect is that some of them are easier to repudiate than others; revising an observation sentence is relatively unproblematic, but repudiating sentences at the centre of the web, such as a law of logic or mathematics, will greatly disturb the entire web. So, while all sentences can be revised in principle, logic and mathematics are seldom revised because to do so would mean radically altering the rest of the web.

As I mentioned above, once Carnap abandoned the project of translating sentences about the physical world into sentences about immediate experience, he also

¹²⁹ Quine "Two Dogmas of Empiricism" p.43

adopted holism. ¹³⁰ Indeed, it is clear that Quine first gets his anti-reductionist, holistic view of language from Carnap; thus Quine writes,

Carnap seems to have appreciated this point afterward; for in his later writings he abandoned all notion of the translatability of statements about the physical world into statements about immediate experience. Reductionism in its radical form has long since ceased to figure in Carnap's philosophy. 131

However, while both Carnap and Quine accept holism, there is a fundamental difference in their view of the significance of holism. In particular, Carnap, but not Quine, believes that holism is compatible with the analytic-synthetic distinction. For example, although Carnap accepts that all statements are revisable in principle, he holds that there is a fundamental epistemological distinction between revising an analytic and revising a synthetic sentence. Thus, Carnap writes,

First of all, I should make a distinction between two kinds of readjustment in the case of a conflict with experience, namely, between a change in the language, and a mere change in or addition of, a truth-value ascribed to an indeterminate statement... A change of the first kind constitutes a radical alteration, sometimes a revolution, and it occurs only at certain historically decisive point in the development of science. On the other hand, changes of the second kind occur every minute. 132

Thus, although Carnap endorses holism he continues to holds the internal-external distinction. For Carnap, while both internal and external sentences can be revised, the two type of revision are fundamentally different in kind: internal to a framework a revision is decided in terms of theoretical justification, whereas an external sentence is revised on the basis of a practical decision. That is, Carnap continues to hold that revising synthetic sentences is a revision of belief in the facts, whereas revising analytic sentences,

Carnap, Logical Syntax of Language, p. 318
 Quine, 'Two Degmas of Empiricism' p. 40

Rudolf Carnap, 'Replies and Expositions, Quine on Logical Truth', in <u>The Philosophy of Rudolf Carnap</u>, H. Hahn & P. A. Schilpp (eds.) p. 92!

including internal analytic sentences such as mathematical assertions, means a change of theory. 133

In contrast to this view, Quine argues that holism undermines the analytic-synthetic distinction. For Quine, holism shows that the relation of evidence to theory is not simply the case of this observation supporting this sentence, but involves broad and vague factors such as simplicity, fruitfulness, conservatism, and so on, such that these factors will play a role in revising or asserting *any* sentence. The key here is that while it is clear that the truth of a sentence depends both on language and extra-linguistic fact, holism shows that it is a mistake to assume from this the possibility of analysing the truth of a sentence into distinct linguistic and factual components (and hence into analytic sentences where the linguistic component is all that matters). In contrast, holism implies that the contribution that sensory evidence makes to knowledge and the contribution that linguistic knowledge makes to knowledge are too inextricably intertwined to allow for the sentence-by-sentence separation presupposed by this distinction. ¹³⁴ Thus, Quine writes,

My present suggestion is that it is nonsense, and the root of much nonsense, to speak of a linguistic component and a factual component in the truth of any individual statement. Taken collectively, science has its double dependence upon language and experience; but this duality is not significantly traceable into the statements of science taken one by one. ¹³⁵

Holism means that sentences are tied to the testimony of the senses in a systematic way that defies any sentence-by-sentence distribution of empirical confirmation; hence it is not possible to isolate the linguistic and the empirical components of knowledge.

135 Quine, 'Two Dogmas of Empiricism', p. 42

¹³³ R. Carnap, Meaning and Necessity, p. 12, 28

Quine 'Mr. Strawson on Logical Theory', reprinted in Ways of Paradox, p.139

In addition, Quine holds that radical revisability implied by holism is incompatible with the analytic-synthetic distinction. Quine argues that holism implies that there is no distinction in how we revise our beliefs; rather, holism show that it is impossible to distinguish sharply between changes in meaning and changes in belief, as assumed by Carnap. Quine's point here is that our actual usage of terms is not precise enough to facilitate this type of sharp distinction. Thus, Quine writes,

Even the identity historically introduced into mechanics by defining 'momentum' as 'mass times velocity' takes its place in then network of connections on a par with the rest; if a physicist subsequently so revises mechanics that momentum fails to be proportional to velocity, the change will probably be seen as a change of theory and not peculiarly of meaning. 136

Quine argues that, for example, the word 'momentum' is defined simply as short for 'mass times velocity', however, even though he has departed from the definition of 'momentum', a physicist who revises the law that momentum is proportional to velocity is not now speaking gibberish; rather, revising the definition of momentum is no different from revising any other proposition of physics. In assuming the opposite, Carnap relies on a more exalted view of the act of definition that is actually the case. For, while it is the case we learn theoretical terms either through context, i.e., by learning a web of terms in which this term occurs, or through definition, i.e., by learning where to substitute this term for other terms, how we actually learn a term is a historical accident but is not an enduring difference in status between laws of theory. Consequently, for Quine, it is not the case that a certain class of sentences are revised on a pragmatic basis and another class revised on a theoretical basis; rather, Quine holds that all revisions conform to a single method. Quine terms this approach 'methodological monism'. By this, Quine

¹³⁶ Quine, Word and Object, p. 57

means that all statements within the web of belief are epistemologically on a par. ¹³⁷ So, while Quine acknowledges that there is a distinction between a revision at the centre of the system and a revision at the periphery, he argues that this is a difference in degree not a difference in principle. He concludes that the analytic-synthetic distinction is simply incompatible with the holistic account of knowledge.

In conclusion, Quine holds that the account of empirical confirmation and linguistic meaning that supports the analytic-synthetic distinction is inherently unscientific. Quine argues that holism provides an account of language in which the analytic-synthetic distinction plays no role, and which, because it emphasizes the interconnectedness of our all our beliefs, is more consistent with what happens in scientific inquiry. Consequently, once he accepts holism, and its anti-reductionistic implications, Quine argues that Carnap should also repudiate the assumption of a cleavage between the analytic and the synthetic, and accept that this distinction is superfluous to a rigorous, scientific account of knowledge and language.

2.4 Quine's rejection of the internal-external distinction.

So far we have seen that Quine rejects Carnap's distinction between analytic and synthetic sentences by proposing an account of language in which this distinction has no role to play. In this section I want to explain why Quine believes that in rejecting the analytic-synthetic distinction he thereby rebuts the internal-external distinction.

Carnap's distinction between internal and external statements depends on a linguistic framework. Internal to a framework we can assert that there are black swans,

¹³⁷ W.V. Quine, 'Five Milestones of Empiricism', reprinted in <u>Theories and Things</u>, pp.67-73

mountains over 4000 meters high, prime numbers above 700, and so on; on the other hand, we can propose the framework of numbers, the framework of things, and so en. For Carnap, the difference here is that in the former case we are including certain entities as values of the variables of a language we accept, whereas in the latter we are (if what we are saying is meaningful) talking about whether to accept a linguistic framework or not. This means that because the latter are external to any framework they cannot be theoretical, while the former depend on the adoption of a framework and cannot be pragmatic. Hence, Carnap's model assumes a fundamental segregation within language, in order that the type of questions asked internal to a framework and those external or prior to a framework are utterly sealed off from one another; such that, external statements are purely pragmatic while internal statements are purely theoretical.

However, once the analytic-synthetic distinction has been rejected it is no longer possible to separate language into its purely pragmatic sentences and its purely theoretical sentences, and consequently, according to Quine, it is no longer possible to distinguish between internal and external sentences. Thus Quine writes,

No more than the distinction between *analytic* and *synthetic* is needed in support of Carnap's doctrine that the statements commonly thought of an ontological, viz., statements such as 'There are physical objects', 'There are classes', 'There are numbers', are analytic or contradictory given the language. No more than the distinction between analytic and synthetic is needed in support off his doctrine that the statements commonly thought of as ontological are proper matters of contention only in the form of linguistic proposals. The contrast which he wants between those ontological statements and empirical existence statements such as 'There are black swans', is clinched by the distinction of analytic and synthetic. True, there is in these terms no contrast between statements of existence such as 'There are prime numbers above a hundred'; but I don't see why he should care about this. ¹³⁸

¹³⁸ Quine, 'Carnap's Views on Ontology', <u>Ways of Paradox</u>, p. 210

For Quine, Carnap needs the analytic-synthetic distinction to support the internal-external distinction; consequently, rejecting the former means rejecting the latter. Quine writes,

I have set down my misgivings regarding the distinction between analytic and synthetic...Let me merely stress the consequence: if there is no proper distinction between analytic and synthetic, then no basis at all remains for the contrast which Carnap urges between ontological statements and empirical statements of existence. Ontological questions then end up on a par with questions of natural science. 139

Having abandoned the analytic-synthetic distinction and adopted holism, Quine argues that rather than identify purely pragmatic sentences and purely theoretic sentences, one must accept that all parts of inquiry are a combination of pragmatic and theoretical considerations to some degree.

Quine's view that all sentences are a mixture of both pragmatic and theoretical factors has two important implications. *First*, it means that the external decisions that Carnap believed to be purely pragmatic are in fact theoretical. And *second*, pragmatic concerns are brought into the heart of theoretical judgements. For example, in 'Two Dogmas of Empiricism', Quine writes that

Carnap, Lewis, and others take a pragmatic stand on the question of choosing between language forms, scientific frameworks; but their pragmatism leaves off at the imagined boundary between the analytic and the synthetic. In repudiating such a boundary I espouse a more thorough pragmatism. ¹⁴⁰

As Quine says here, he is proposes a more robust pragmatism than that of Carnap because, whereas Carnap holds that pragmatic factors are decisive in determining the external questions determining a linguistic framework only, Quine makes pragmatic considerations central to scientific inquiry itself. Thus, Quine writes,

Quine, 'On Carnap's View of Ontology', , p. 211

Our standard for appraising basic changes of conceptual scheme must be, not a realistic standard of correspondence to reality, but a pragmatic standard. Concepts are language, and the purpose of concepts and of language is efficacy in communication and prediction. Such is the ultimate duty of language, science and philosophy, and it is in relation to that duty that a conceptual scheme has finally to be appraised.¹⁴¹

For Quine, *all* decisions are made on the basis of pragmatic considerations, such as simplicity, economy, conservatism, fecundity, and so on. ¹⁴² For Quine, simplicity and so on, is precisely the type of thing that scientists engaged in on-going inquiry take as theoretical evidence pointing in favour of one hypothesis over another. In 'On Mental Entities' he writes,

How do we decide on such retentions and revisions? To be more specific: how do we decide, apropos of the real world, what things there are? Ultimately, I think, by consideration of simplicity plus a pragmatic guess as to how the overall system will continue to work in connection with experience. 143

It is clear that Quine agrees with Carnap that ontological questions, questions of mathematical and logical principles, etc., are a matter of choosing a pragmatic conceptual scheme or framework, but in contrast to Carnap, Quine insists that this is the case for every scientific hypothesis. That is, the fact that all theory choices involve a pragmatic component does not make such choices any less theoretical or substantive; as there no longer is any sharp distinction between pragmatic and theoretical sentences all choices are both pragmatic and genuine, theoretical judgments. This means that, for Quine, there are no areas of inquiry from which genuine judgment is excluded, and all judgments in the web are true or false judgments; Quine holds that rejecting the analytic-synthetic distinction means that pragmatic judgments are genuinely true or false.

Quine, "Identity, Ostension and Hypostasis" in From a Logical Point of View, pp. 65-80; p. 79

W.V. Quine 'Posits and Reality', reprinted in <u>Ways of Paradox</u>, p. 247
 W.V. Quine, 'On Mental Entities' reprinted in <u>Ways of Paradox</u>, p.223

For Quine, therefore, in denying the analytic-synthetic distinction one also denies the theoretical-pragmatic distinction. But more importantly, in rejecting the theoretical-pragmatic distinction one also rejects the internal-external distinction. That is, just as pragmatic concerns are not distinct from theoretical concerns so also are external framework questions not distinct from internal questions. Because holism makes all decisions a combination of pragmatic and theoretical concerns, it follows that it is not possible to isolate the purely external, i.e., pragmatic, sentences from the purely internal, i.e., theoretical, sentences.

2.5 Conclusion.

In this section I have identified the basis of the dispute between Carnap and Quine as Quine's insistence on taking seriously the commitments of the conceptual scheme we are immersed in. This means that, for Quine, we are unable to stand aloof from on-going scientific enterprise and survey alternative linguistic frameworks from an entirely neutral perspective. I showed that Quine makes this case against Carnap by rejecting the analytic-synthetic distinction, which in turn targets the deeper epistemological distinction between purely theoretical internal assertions and purely pragmatic external proposals.

For Quine, Carnap's distinctions between analytic-synthetic and internal-external are tied together as follows: Carnap requires analytic sentences to play the part of formation and transformation rules constituting a linguistic framework; by distinguishing between analytic and synthetic sentences, Carnap substantiates the distinction between genuine, theoretical true-false sentence made internal to a linguistic framework (which

may be either analytic or synthetic depending on the framework), and meta-linguistic sentences that comprise the framework itself, which are chosen according to pragmatic concerns and are neither true nor false (these are invariably analytic). Consequently, by rejecting the analytic-synthetic distinction Quine thereby rejects the distinction between questions made internal and external to a framework.

In the next section I show how this rejection of the analytic-synthetic distinction, and the corresponding rejection of the internal-external distinction, leads Quine to rebut Carnap's version of extreme relativism.

SECTION 3

QUINE'S REJECTION OF EXTREME RELATIVISM

3.1 Introduction.

To conclude this discussion, I want to show how Quine's rejection of the internal-external distinction leads to a rejection of Carnap's extreme relativism. Carnap holds that the choice between alternative frameworks is a pragmatic decision between different proposals, and that the role of philosophy is to stand aloof from on-going inquiry. In contrast, having ruled out the possibility of the distinction between internal-external sentences, Quine argues that all forms of inquiry are bound to proceed from within our on-going conceptual scheme. This means that, in contrast to Carnap, for Quine, philosophy does not occupy a neutral point of view aloof from all on-going inquiry, all theory choices in on-going inquiry are real, theoretical judgments that are true or false.

Therefore, in rejecting the aloof, neutral perspective, Quine rejects Carnap's extreme relativism.

In this section, I show first that rejecting the internal-external distinction means rejection Carnap's view of philosophy as having its own methodology distinct from natural science; and second, I show that working from with our on-going conceptual scheme means acknowledging the theory choices we make as real true or false judgments, that commit us ontologically. Ultimately, Quine's view is that we ought to acknowledge the conceptual scheme we are currently embedded in rather than pretend that we can stand aloof from all conceptual schemes.

3.2 Quine's rejection of aloof philosophy.

We have already seen that the notion of a linguistic framework plays a central role in Carnap's philosophy. In this section I want to show that rejecting the internal-external distinction in turn means rejecting Carnap's distinction between philosophy and science, and his distinction between metaphysics and science. In contrast to these distinctions, the philosophical picture that Quine proposes is of all forms of inquiry proceeding from with in our unified on-going conceptual scheme; that is, both philosophy and metaphysics are assimilated to natural science, and reinterpreted from this perspective.

As was pointed our above, the internal-external distinction is the basis for Carnap's extreme relativism. First, this distinction is the basis for Carnap's distinction between philosophy and scientific inquiry. Philosophy is taken to be the analysis of the set of analytic sentence that constitute the framework, and hence philosophy offers a

neutral perspective, independent of all frameworks, and which employs its own methodology distinct from empirical science. Second, the internal-external distinction forms the basis for Carnap's distinction between metaphysics and science. All scientific sentences are internal, and hence are genuine theoretical assertions; in contrast, all metaphysical sentences are made external to a framework, and are proposals rather than genuine theoretical assertions. It follows that, in this context, rejecting the internal-external distinction means rejecting both the distinction between philosophy and science, and the distinction between metaphysics and science. I will explain each of these points in turn.

Quine's rejection of the internal-external distinction rules out Camap's view of philosophy, and implies, in contrast, that we are always working from within some conceptual scheme or other. Carnap held that the task of philosophy was to logically analyse the rules of alternative linguistic frameworks; he holds that this provided philosophy with a neutral (or transcendent) perspective outside of any particular framework, from where to analyse the rules of all of on-going inquiry. It follows that, for Carnap, philosophy is a separate discipline complete with its own distinct methodology, wholly independent of empirical science, or any other mode of inquiry. However, by showing that there is no internal-external distinction Quine thereby shows that there can be no qualitative difference between the sentences of philosophy and those belonging to the empirical sciences. For Quine, philosophy is conducted immanent to our conceptual scheme, and the only way philosophy can aspire to genuine cognitive knowledge is as a part of empirical science. Thus Quine writes,

Philosophy, or what appeals to me under that head, is continuous with science. It is a wing of science where aspects of method are examined

more deeply or in a wider perspective than elsewhere. It is a wing also where the objectives of a science receives more than average scrutiny, and the significance of the results receives special appreciation... The relation between philosophy and science is not best seen even in terms of give and take. Philosophy, or what appeals to me under that head, is an aspect of science. 144

Once the internal-external distinction is rejected, there is no possibility of standing aloof from all conceptual schemes; rather, our view is always immersed in some conceptual scheme or other. And, since we must give up the hope of assessing science from some perspective that is more secure, it follows that the philosopher and the scientist are in the same boat. As we saw in the previous chapter, Quine explains this notion by appealing to the analogy of 'Neurath's boat'.

In addition, for Quine, it follows that as we are immersed in our on-going conceptual scheme we must take seriously the judgments we make as real, true or false assertions. The clearest indication of how Quine's insistence on taking our theory choices seriously differs from Carnap's extreme relativism is in relation to ontology. For Carnap, the internal-external distinction allows him to distinguish sharply between natural science and metaphysics; he holds that because all meaningful assertions of existence were made internal to a framework, they did not imply the assertion or assumption in the reality of the entities posited. However, for Quine, rejecting the internal-external distinction leads to a blurring of this supposed distinction between science and ontology. ¹⁴⁶ To be precise, it means taking seriously the ontological commitments of the assertions made in our ongoing conceptual scheme. I explain this point in more detail in the next section.

Quine, 'Philosophical Progress in Language Theory', in Metaphilosophy Vol. 1 (1970) p. 2.

¹⁴⁵ Quine Word and Object p. 3

¹⁴⁶ Quine, 'On Carnap's Views of Ontology', p.210

3.2 The criterion of ontological commitment.

For Quine, because our perspective is always from the middle of our on-going conceptual scheme, we must acknowledge all theory choices as real, true or false judgments, which must be taken seriously. To be precise, taking our conceptual scheme seriously means, among other things, acknowledging the existence of the entities that our conceptual scheme presupposes as existing. This leads to a re-inflation of the notion of ontology; in contrast to Carnap, who deflates ontological statements as either pragmatic proposals that are neither true not false, or as internal assertions that are not ontologically committing, Quine holds that we must take seriously the ontological commitments of all statements that we assert.

In this connection, Quine devises a criterion to determine those objects whose existence is presupposed by our best theories, and which we in turn must accept as existing in asserting these theories as true. This criterion of ontological commitment has both negative and positive applications. The discussion in the previous chapter has illustrated the negative application of this criterion: we saw that Quine rejects Russell's assertion that the meaningfulness of a sentence presupposes the existence of the object named, or of the non-linguistic meaning of that sentence, and in that context it serves to eliminate false ontological commitments. In its positive application, this criterion serves to clarify genuine commitments, and shows that our ontological commitments are real decisions in on-going inquiry, not pragmatic choices between alternative proposals.

The first task here is to clarify Quine's criterion of ontological commitment, and having eliminated all names from language, and having denied that we are ontologically

committed by the mere meaningfulness of language, the question arises whether anything we say commits us ontologically. Quine's seminal paper 'On What There Is' sets out his diagnosis of how to address this question. The key for Quine here is to devise a means to pose ontological questions in a 'non-self-defeating' manner. That is, Quine proposes a method for determining genuine ontological commitments without predetermining the issue in favour of either the extreme realist or the extreme relativist. Thus, Quine writes that whereas

There are those who feel that our ability to understand general terms, and to see one concrete object as resembling another, would be inexplicable unless there were universals as objects of apprehension. And there are those who fail to detect, in such appeal to a realm of entities over and above the concrete objects in space and time, any explanatory value,

His own view is that,

Without settling that issue, it should still be possible to point to certain forms of discourse as explicitly presupposing entities of one or another given kind, say universals, and purporting to treat of them; and it should be possible to point to other forms of discourse as not explicitly presupposing those entities. Some criterion to this purpose, some standard of ontological commitment, is needed if we are ever to say meaningfully that a given theory depends on or dispenses with assumptions of such and such objects. 147

Quine's aim is to set out a neutral framework for uncovering our hidden ontological assumptions; that is, a criterion to make explicit those objects that we do hold as existing.

For Quine, the key to establishing this neutral framework is to identify when a person is and is not unambiguously committed to the existence of a specific object. To do this, Quine distinguishes two separate questions:¹⁴⁸

Charles Chihara, Ontology and the Vicious Circle Principle, (Ithaca: Cornell University Press 1973) p. 87

¹⁴⁷ W.V. Quine, 'Logic And The Reification of Universals', reprinted in From A Logical Point Of View, pp.102-129, p.102

- (1) What are the ontological commitments of theory T?
- (2) Is theory T true?

The first question concerns how to identify those objects that a theory actually does presuppose. For Quine, a theory presupposes the existence of an object if that object must exist in order for the theory to be true. However, it is clear that because names can be eliminated without affecting what a theory says, for Quine, a theory does not presuppose the existence of the objects named by its singular terms; names are altogether immaterial to ontological issues. Rather, Quine argues that the question of ontological commitment ultimately concerns the status of singular existential statements. Thus, Quine writes,

Singular existential statements "there is such a thing as so-and-so", together with their trivial variants such as "So-and-so designates", begin to assume the air of a logically isolated class of statements – logically independent of the rest of discourse, verifiable or falsifiable at caprice, we must find some relationship of logical dependence between the singular existence statement and the rest of discourse. 149

Quine holds that singular existential statements are linked to the rest of discourse through the inference of existential generalisation. That is to say, asserting a singular existential statement containing a denoting term affects the truth or falsity of the general statement obtained from it through the inference of existential generalisation. Whereas, in contrast, if the singular existential statement does not contains any denoting terms, then it can be affirmed without affecting the truth or falsity of the general existential statement. Thus, Quine writes

A word W designates if and only if existential generalisation with respect to W is a valid form of inference. ¹⁵⁰

So, for example, imagine theory T asserts the statement:

150 Quine 'Designation and Existence', p. 706

¹⁴⁹ Quine, 'Designation and Existence' Journal of Philosophy 36 (1939) 701-709, p. 705

(a) "Pebbles have roundness".

This theory is ontologically committed to the entity 'roundness' if and only if the existential generalisation

(b) $(\exists x)$ (pebbles have x)

is a valid form of inference. If this inference is valid, then we can conclude that this theory endorses the entity roundness, and interprets (a) as asserting that pebbles have this entity. In contrast, if this inference is invalid, then this theory is not committed to the existence of the entity roundness. Rather, it construes the term 'roundness' as having meaning only in the context of a complete sentence; that is, 'roundness' is a syncategorematic expression rather that a denoting term. Consequently, inserting a variable 'x' for it in (b) would be ungrammatical, just as inserting 'x' for 'ble' in

(c) $(\exists x)$ (pebx have roundness)

is ungrammatical.¹⁵¹ Thus, if this theory does not allow us to infer (b) from (a) then it is not ontologically committed to the entity 'roundness'.

For Quine, the inference of existential generalization supplies us with a formal basis for distinguishing denoting terms from syncategorematic expression. The expression 'There is such an entity as', or ' $(\exists x)$ ', may be prefixed to a denoting term only, making denoting terms the constant expressions that replace variables and are replaced by variables; all other meaningful expression will occur syncategorematically. Consequently, Quine holds that the criterion of ontological commitment is found in the bound variables of quantification. Quine writes,

We can very easily involve ourselves in ontological commitments by saying, for example, that there is something (bound variable) which

¹⁵¹ Quine "A Logistical Approach to the Ontological Problem" in <u>Ways of Paradox</u>, pp 197-202 p.198

red houses and sunsets have in common; or that there is something which is a prime number larger than a million. But this is essentially, the only way we can involve ourselves in ontological commitments: by our use of bound variables. 152

The quantifiers $(\exists x)$ and (x) mean respectively 'there is an entity x such that ...' and 'each entity x is such that ...', where the variable 'x' is 'bound' by the appropriate quantifier. Thus, the ontological commitments of any theory are determined by realm of entities it requires as the values of its bound variables in order for it to be true. Or, as Quine puts it,

Elliptically stated: We may be said to countenance such and such an entity if and only if we regard the range of variables as including such an entity. To *be* is to be the value of a variable. 154

There are many symbols or letters that mathematicians and logicians would typically consider as being variables that do not imply ontological commitment because they are not bound by any quantifier. 155

Turning to question (2), while the first question focuses on uncovering the ontological presuppositions that a *theory* makes, question (2) concerns whether *we* are committed to these objects. For Quine, only in asserting a theory as true are we committed to the objects that it presupposes. That is to say, we can meaningfully discuss a theory without being committed to the objects it assumes as existing, but once we assert a theory as true, we are committed to the existence of the objects that theory presupposes as existing if its assertions are to be true. Thus, Quine writes

¹⁵² Quine, "On What There Is", p. 12

For Quine, his insistence that the criterion of ontological commitment primarily and fundamentally applies to quantification discourse is an insistence that there is no distinction between saying 'there are' in 'there are athletes', 'there are numbers', and so on, and saying 'there are' in $(\exists x)$. Quine holds that someone who rejects this criterion must say either that quantification discourse is not being used in its normal way, or that ordinary language is being used in some new way. However, either case is irrelevant to the present issue.

¹⁵⁴ W.V. Quine, 'A Logistic Approach to the Ontological Problem', p.199.

Harold N. Lee, 'Discourse and Event: The Logician and Reality', in <u>The Philosophy of Quinc</u>, H. Hahn. & P. A. Schilpp (eds.) p.298

We commit ourselves to an ontology containing numbers when we say there are prime numbers larger than a million; we commit ourselves to an ontology containing centaurs when we say there are centaurs; and we commit ourselves to an ontology containing Pegasus when we say Pegasus is. But we do not commit ourselves to an ontology containing Pegasus or the author of *Waverly* or the round square cupola on Berkeley College when we say that Pegasus or the author of *Waverley* or the cupola in question is *not*. ¹⁵⁶

For Quine, we must distinguish the ontological assumptions that are implied by a theory from the ontological commitments that a person may hold. ¹⁵⁷ A theory is ontologically committed to the set of objects it presupposes in order for its theorems to be true, however, one may discuss this theory without being committed to its ontological presuppositions; rather, for Quine, someone is ontologically committed only by their assertions. By distinguishing these two issues, Quine creates a neutral space where ontological questions can be asked and answered without presupposing any ontological commitments. This is what Quine means by a neutral framework – one is committed only by the theories that one is willing to assert as true, but in the simply discussing a theory, one is not committed to any ontology.

Quine holds that we are committed ontologically as a result of taking seriously the decisions we make immanent to our on-going conceptual scheme; he holds that one is not committed to the ontological presuppositions of a theory unless one asserts that theory as true, consequently, it is inconsistent of someone to claim to repudiate certain entities all the while continuing to assert theories that presuppose their existence. Thus, Quine writes,

I am not suggesting a dependence of being upon language. What is under consideration is not the ontological state of affairs, but the ontological commitments of a discourse. What there is does not in

150 Quine, "On What There Is" p. 8

^{157 &#}x27;Logic and the Reification of Universals', From a Logical Point of View, p. 103

general depend on one's use of language, but what one says there is does. 158

For Quine, ontological questions are scientific questions: the sentences we assert and take seriously are determined immanent to our current conceptual scheme of science. So, while what a theory says there is depends on what it takes as the values of its bound variables, we are ontologically committed to these entities only by asserting that theory as true. Thus, Quine writes,

Our acceptance of an ontology is, I think, similar in principle to our acceptance of a scientific theory, say a system of physics; we adopt, at least insofar as we are reasonable, the simplest conceptual scheme into which the disordered fragments of raw experience can be fitted and arranged. Our ontology is determined once we have fixed upon the overall conceptual scheme which is to accommodate science in the broadest sense... To whatever extent the adoption of any system of scientific theory may be said to be a matter of language, the same – but no more – may be said of the adoption of an ontology. ¹⁵⁹

For Quine, we must take seriously the sentences we assert as true, and acknowledge that from our immanent perspective these are real theory choices.

One clear example of this insistence on taking our on-going theory choices seriously surfaces early on in Quine's work. Quine points out that while, at present, we regiment ordinary language into the canonical idiom of quantification to uncover its ontological commitments; it is equally possible to translate ordinary language into an idiom that dispenses with quantification altogether, such as Schönfinkel's combinatorial logic. Because the combinatory idiom dispenses with variables and quantification altogether, were we to regiment language into this idiom we would not have any ontological commitments, and both reference and ontology would become redundant.

Thus Quine writes,

159 Quine 'On What There Is', p. 16-17

¹⁵⁸ Quine, 'Logic and the Reification of Universals', p. 103

An ingenious method invented by Schönfinkel, and developed by Curry and others, gets rid of variables altogether by recourse to a system of constants, called combinators, which express certain logical functions. The above criterion of ontological commitment is of course inapplicable to discourse constructed by means of combinators. Once we know the systematic method of translating back and forth between statements which use combinators and statements which use variables, however, there is no difficulty in devising an equivalent criterion of ontological commitment for combinatory discourse. ¹⁶⁰

For Quine, then, it is open to us to translate sentences we assert as true into combinatorial logic and thus abandon ontology altogether. The reason why we do not do this, but regiment ordinary language into quantificational notation, is that reference and ontology are central to our understanding of reality; but should it turn out to be more pragmatic or more economical to abandon ontology altogether, then so be it.¹⁶¹

3.4 Conclusion.

In this section I have argued that Quine's insistence on working from within our on-going conceptual scheme rules out Carnap's extreme relativism. I argued that Quine's rejection of extreme relativism is exemplified in first his rejection of the distinction between philosophy and science, and second, in his insistence on taking seriously the ontological commitments of theories and sentences we assert as true. Taken together these two points illustrate the central difference between Carnap's extreme relativism and Quine's immanent perspective, namely – for Quine, all theory choices made in on-going inquiry are real, true or false judgments, that must be taken seriously.

¹⁶¹ Quine 'Facts of the Matter', p. 184

¹⁶⁰ Quine, 'Reification of Universals', p. 104

CONCLUSION

In conclusion, in this chapter I have argued that Quine rejects Carnap's extreme relativism. Carnap's extreme relativism encourages the free and unhindered construction of alternative linguistic frameworks, where we adopt an attitude of tolerance towards these alternatives. Because truth claims are relative to the containing framework, no framework is true or false; rather, choosing between them is a purely pragmatic decision. Furthermore, there can be no genuine disputes between different frameworks; real, true or false judgments arise only internal to a framework, so disputes between frameworks are simply a matter of pragmatic decision. Apparent framework disputes are based on linguistic confusion, and are resolved by translating the disputed claims into formal language, thereby showing that alternative frameworks are not making incompatible assertions, but are instead proposing alternative forms of language. And, as there is no basis to determine that one framework is true and the other false, it is only rational to tolerate alternative frameworks.

In contrast to this extreme relativism, while Quine accepts the possibility of alternative conceptual schemes, he does not adopt Carnap's tolerant attitude towards them. For Quine, Carnap's principle of tolerance is predicated upon the illegitimate transcendent perspective, i.e., on Carnap's belief that it is possible to stand back from all frameworks and consider them from a detached, framework-neutral point of view.

Indeed, for Carnap, this is exactly what philosophy achieves by examining the analytic statements that make up the constituent rules of each linguistic framework. As has been shown, however, Quine holds that this aloof perspective is illusionary and illegitimate; in contrast, for Quine, all inquiry proceeds from a perspective embedded in some conceptual

scheme or other, thus ruling out Carnap's tolerant attitude towards alternative conceptual schemes.

I argued that the basis of Quine's argument against Carnap is his rejection of the distinction between analytic and synthetic distinctions. As the formation and transformation rules constituting a linguistic framework must be analytic, the analytic-synthetic distinction is fundamental to Carnap's distinction between statements made internal to a framework and those mad external to it. Consequently, by showing that the analytic-synthetic distinction has no role to play in a scientific account of language, Quine undermines Carnap's extreme relativism.

My discussion in this and the previous chapter should have fleshed out for the reader my claim that Quine develops a philosophical position that is a compromise between the polarities of extreme realism and extreme relativism. It should now be clear that Quine is neither an extreme realist nor an extreme relativist, but is at once both more of a relativist than Russell and more of a realist than Carnap. The key to Quine's compromise between these extremes is his rejection of an assumed transcendent standpoint, outside of all conceptual schemes. In the previous chapter, we saw that Quine's strong-global under-determination thesis rebuts Russell's extreme transcendent realism because it means we cannot detach ourselves from all conceptual schemes we cannot gain any access to reality *as it is in itself*. Similarly against Carnap, Quine rejects that analysing the rules of a linguistic framework can provide a transcendent standpoint aloof from all conceptual schemes, from which to compare them to one another; rather, because we are always immersed in some conceptual scheme or other, we must adjudicate between theory choices in on-going inquiry from this perspective, and take

these choices as real decisions that are either true or false. By holding these two doctrines, strong-global under-determination at end-of-inquiry and that all theory choices in on-going inquiry are real choices, Quine holds that there is a middle position between the dogmatism of extreme transcendent realism and aloofness of extreme transcendent relativism.

CHAPTER 3

QUINE'S COMPROMISE POSITION

INTRODUCTION

So far I have argued that Quine is neither an extreme realist nor an extreme relativist. In this context the central theme has been Quine's rejection of the possibility of a transcendent perspective, somehow outside of on-going inquiry. His insistence on the inevitability of working from within our on-going conceptual scheme is the basis for Quine's thesis of strong-global under-determination at the end-of-inquiry, which in turn rules out Russell's extreme realism; similarly, because we are working from within we must accept that we cannot distinguish language into purely pragmatic and purely theoretical sentences, and so cannot stand aloof from all on-going inquiry, as Carnap held, and view competing theories from a transcendent, absolutely neutral perspective.

In this chapter I want to solidify the claim that Quine forges a compromise position between these polarities of extreme realism and extreme relativism. That is, I show here that Quine develops a philosophical position that is at once less-realist that Russell and less-relativist than Carnap. In order for Quine to achieve this, however, Quine adopts both inherently relativistic doctrines and inherently realistic doctrines. The challenge, for Quine, of course, is to balance these competing doctrines despite the fact that they very obviously pull in opposing directions. In this chapter I want to show the sense in which Quine does reconcile these competing doctrines.

To be precise, in this chapter I want to establish two related points about Quine's compromise position. First, I want to emphasis that Quine's position is precisely a

compromise between the polar opposites of extreme realism and extreme relativism. And, as such, it must incorporate elements from both realism and relativism. While it is coherent to suggest that Quine cannot hold these competing tendencies in a coherent balance, it is simply misguided to suggest that either the realist or the relativist dimension is inconsistent with the overall Quinean project; rather, the overall project must be identified with both of these dimensions. That is, if Quine did not embrace a certain relativity in relation to language, but instead accepted absolute facts about language, it is clear that his position would collapse into Russell's extreme realism; likewise, if Quine did not adopt a certain realism stance toward language, such as taking the ontological presuppositions of what we say seriously, despite this relativism, then his compromise would collapse into Carnap's extreme relativism.

In developing this point, I begin by briefly outlining the views of a number of critics of Quine who, depending on the critic, argue that either the realist or the relativist dimension undermines the other, and is incompatible with what Quine is trying to achieve. Next, I outline the type of relativism about reference that Quine accepts; I show that this is a very profound type of relativism that has the potential to undermine any pretence Quine may have towards realism. However, it is clear that his relativism does not destabilize his version of realism; rather, I show that Quine's version of realism, so-called "robust realism", is predicated upon this relativity about language. I conclude that, in this sense, Quine views the relativity about language that he endorses to be "good relativism": it undermines extreme realism but does not lead to extreme relativism, and in this sense actually solidifies his compromise position.

The second point I make in this chapter is that in addition to the "good relativism" that Quine adopts, he is also susceptible to "bad relativism"; that is, versions of relativism that would undermine the compromise position, leading his position to collapse into either extreme realism or extreme relativism. The archetypical "bad relativism" is relativism about truth. In section 2, I show that the question of whether Quine is susceptible to the relativist doctrine of truth is a complicated matter. I begin by setting out Quine's official, non-relative, version of truth, and then consider a number of objections from Donald Davidson, which argues that Quine's version of truth implicitly commits him to the epistemic theory of truth, and hence to a relativistic doctrine of truth. I show that while Davidson is incorrect to impute the epistemological doctrine of truth of Quine, there is an interesting sense in which Quine is susceptible to a relativistic theory of truth, namely — Quine's rebuttal of Russell's extreme realism presupposes the relative theory of truth in the sense that at end-of-inquiry, there are a number of alternative conceptual schemes, each of which is true from its own perspective.

SECTION 1

THE TWO SIDES OF QUINE

1.1 Introduction.

In this section I show that, for Quine, our on-going conceptual scheme is characterised by both realist and relativist doctrines. And that, according to Quine, these opposing doctrines do not undermine one another, but come together to form a scientific account of on-going inquiry.

As a starting point for this discussion, I begin by outlining a number of criticisms of Quine's compromise position, which argue that Quine cannot accommodate both realist and relativist dimensions in a coherent, unified position. Here I briefly set out both the case for viewing Quine's realism as undermining his relativism, and the opposing case that his relativism precludes any possibility of him holding a coherent version of realism.

Following on from this, I show that both of these lines of argument are incorrect. In contrast, I show that the forms of relativism and realism that Quine develops are consistent with one another. The significance of Quine's philosophy lies in his combining a certain type of relativism with a certain type of realism, for it is precisely by facilitating this combination that Quine achieves a compromise between the polarities of extreme realism and extreme relativism. I conclude that one cannot properly understand Quine's overall philosophical project unless equal weight is given to both the realist and the relativist dimensions of his position.

1.2 Realism and relativism.

To begin, a number of philosophers who applaud the realist dimension of Quine's position have argued that this realism is incompatible with his acceptance of relativism. For example, J.J.C. Smart commenting on <u>Word and Object</u> finds to his surprise Quine's "full blown realist philosophy of the theoretical entities of physics"; thus, Smart writes

Before beginning to write this paper I expected to find lingering traces of a pragmatism and instrumentalism which is evident in some of Quine's earlier writings. However I found no definite evidence of such traces, and in WO Quine seems to me to have moved right over to a

definitely realistic attitude to the theoretical entities of physical science. For evidence of his earlier pragmatism and instrumentalism I would draw attention to his *From a Logical Point of View* ... Such a point of view seems to have been eliminated from Quine's thought in WO ... Indeed, if we needed to interpret Quine in this instrumentalist way he would surely be saying something inconsistent with his own position about ontological criteria. (In this respect I think there is probably an inconsistency in his earlier position, but there is no good evidence for thinking it survives in WO.) ¹⁶²

Smart contrast what he sees as Quine's early pragmatism and instrumentalism against his more mature acceptance of "full blown realism", and he argues that this early and mature versions of Quine are inconsistent. Consequently, Smart concludes that Quine's mature realism precludes any suggestion of instrumentalism.

Similarly, Robert J. Fogelin distinguishes the components of Quine's philosophy into two broad categories, which he terms the "austere or hard component, and the more open or soft component", ¹⁶³ corresponding more or less to what I have called the realistic and the relativistic dimensions of Quine's philosophy, and he argues that ultimately commitments defining these two categories are incompatible with one another. Fogelin writes,

If we look separately at these two clusters of commitments, the items in each seem, intuitively at least, to suit one another. Quine exhibits great skill in his writing in showing how the themes in each cluster interrelate with one another. In contrast, if we compare the two clusters as wholes, they seem, again intuitively, to display fundamentally different tendencies. Depending on which way we proceed, it can seem that all the toughness in the first cluster is given away by the softness in the second, or, going the other direction, that the openness of the second cluster can seem to be throttled by the narrow constraints of the first. Quine, of course, thinks that he has brought these apparently competing viewpoints into proper balance. ¹⁶⁴

¹⁶² J.J.C. Smart, 'Quine's Philosophy of Science, reprinted in <u>Words and Objections</u>, (eds.) D. Davidson & J. Hintikka; pp. 7-8

¹⁶³ Robert J. Fogelin, 'Quine's Limited Naturalism'; *Journal of Philosophy*, XCIV, number 11, November 1997; pp. 543-564, p. 543

¹⁶⁴ Robert J. Fogelin, 'Quine's Limited Naturalism'; p. 544.

Fogelin argues that Quine does not succeed in bringing these competing clusters into a proper balance; rather, ultimately if the "hard" realist side of Quine's position is pursued in an unrestricted manner it would undermine the "soft" relativist side; he says,

In fact, as the centre of gravity of Quine's position shifts towards naturalized epistemology, all the components in what I have called the soft cluster come under pressure. 165

For Fogelin, the aspects of Quine's position that come from the relativistic or soft side of this theory are at odds with his naturalistic program.

More recently, Stephen Yablo has implied that there is a similar conflict between Quine's early realism and his later relativism about ontology. 166 Yablo takes it that early on in his career 167 Quine takes existence questions "deadly seriously", 168 but implies that his later writings are more relativist and incompatible with this early realism.

In contrast, to this view that Quine's realism must be prioritised over his relativism, which is seen to be somehow incompatible with Quine's overall project, a number of philosophers have argued the other side of the toss – that Quine's relativism undermines his claims to realism, and ultimately realism does not fit into the Quinean project.

For example, Richard Rorty argues that Quine's rejection of the extreme realist metaphysical notion of reality as *it is in itself*, ¹⁶⁹ his rebuttal of the analytic-synthetic distinction, and his holistic approach to rationality and justification, lead to a type of

¹⁶⁵ Robert J. Fogelin, 'Quine's Limited Naturalism'; p. 550-551

¹⁶⁶ Stephen Yablo, 'Does Ontology Rest on a Mistake?', Proceedings of the Aristotelian Society, Vol. pp. 229-261

¹⁰⁷ Specifically, Yablo mentions the period from 'On What There Is', up to Word and Object as when Quine is taking ontological questions seriously; Yablo, 'Does Ontology Rest on a Mistake?', footnote 3, p. 230

¹⁶⁸ Yablo p. 230

¹⁶⁹ For example, see Rorty Consequences of Pragmatism, (Brighton: Harvester 1982) Introduction p. xiv.

relativism that both he applauds and appropriates. 170 But this relativism, Rorty maintains, means that Quine must pass up on any claims to realism. Rorty holds that all claims to realism are based on an appeal to a transcendent perspective that Quine has claimed to give up; for Rorty, without the transcendent perspective, immersed in our own culture and our own community, we have *neither the need nor the legitimate means* to prioritise physical science as limning the nature of reality. Rorty argues that once Quine accepts that all theories are convenient fictions Quine must accept all theories as equally non-factual; the only way Quine can substantiate the claim that physics picks out substantive laws and limns the nature of reality is to appeal to reality *as it is in itself*, but without the transcendental perspective to back it up, his preference for physics is little more than a nostalgic prejudices, a remnant of his positivist heritage, that is unjustified, "purely aesthetie", and "will not work". Thus, Rorty writes,

Why, however, do "believes in..." and "translates as..." owe more to the necessities of practice than "is the same electron as..." and "is the same set as..."? Why do the *Naturwissenschaften* limn reality while the *Geisteswissenschaften* merely enable us to cope with it? What is it that sets them apart, given that we no longer think of any sort of statement having a privileged epistemological status, but of all statements as working together for the good of the race in that process of gradual holistic adjustment made famous by "Two Dogmas of Empiricism"? Why should not the unity of empirical inquiry be the whole of culture (including both the *Natur*- and the *Geisteswissenschaften*) rather than just the whole of physical science?¹⁷¹

Moreover, for Rorty, Quine's prioritisation of physics is *unnecessary*; he dismisses it as an embarrassing remnant of the old metaphysical picture of reality. In contrast, Rorty holds that all areas of culture on a par. Thus, Rorty writes,

Pragmatism...does not erect Science as an idol to fill the place once held by God. It views science as one genre of literature – or, put the other

¹⁷⁰ For example, see Rorty 'Solidarity or Objectivity' p. 26

¹⁷¹ Rorty Philosophy and the Mirror of Nature, (Oxford: Blackwell 1980) p. 201

way around, literature and the arts as inquiries, on the same footing as scientific inquiries. Thus it sees ethics as neither more "relative" or "subjective" than scientific theory, nor as needing to be made "scientific". Physics is a way of trying to cope with various bits of the universe; ethics is a matter of trying to cope with other bits... The question of what propositions to assert, which pictures to look at, what narratives to listen to and comment on and retell, are all questions about what will help us get what we want (or about what we *should* want). ¹⁷²

For Rorty, Quine's claims to realism are incompatible with his insistence on an immanent perspective, and should be eliminated from the Quinean project.

Likewise, Hilary Putnam also argues that once Quine has given up on the metaphysical notion of reality *as it is in itself*, then Quine's version of realism is empty of content, and his insistences that he is a realist ring hollow. Thus, Putnam writes,

Quine is asking us to think that there is something about which we should be "realists" and telling us that the relation between our thoughts and that something is purely "immanent", that is, internal to our language and theory; that that language and theory do not have a relation to that something which is singled out in a way that can be scientifically determined by rational inquirers independently of how or whether we interpret them. This sounds like saying that there is a reality, but you aren't really thinking about it. Or like saying there isn't a reality, but you pretend there is one whenever you think, or you have to take seriously the reality you pretend there is. Or still more like Hume saying that when he is in his study he sees that total skepticism is correct, but whenever he leaves his study he is a "robust realist". (Hume didn't use those exact words.)

Here Putnam maintains that Quine is being disingenuous in claiming to be a realist; instead, Putnam compares Quine's view of robust realism to Hume's ambivalent view of scepticism: in the same way that Hume's intellectual commitment to scepticism wavers at the billiard table, while in his study Quine accepts that his arguments point only to relativism and the rejection of realism, but outside his study he tries to forget these

¹⁷² Rorty Consequences of Pragmatism, p. xliii

Hilary Putnam, 'A Comparison of Something with Something Else', reprinted in Words and Life, (Cambridge, MA: Harvard University Press 1994) p. 347

arguments and to pretend that reality actually does exist. Once again, the point is that

Quine cannot balance relativism with realism; rather his relativism undermines and
precludes his claims to realism.

More recently, Nicholas Georgalis¹⁷⁴ has also argues that the tension between the realist and relativist tendencies in Quine's philosophy cannot be balanced.

To my mind there has always been a fundamental tension in Quine's work between his commitment to a kind of scientific realism, on the one hand, and his ...rejection of transcendental metaphysics on the other. 175

In addition to identifying this tension, Georgalis argues that the Quine's acceptance that observation sentences arise immanent to our on-going conceptual scheme, and in this sense are "theory-dependent", undermines his claims to realism.

Quine has given up the claim that helophrastic observation sentences are independent of theory ... Quine came to agree that the relevant holophrastic observation sentences are theory dependent. Nevertheless, Quine appears reluctant to accept the fact that this concession undermines the alleged virtues of observation sentences just mentioned. In what follows I detail the theory dependence of an important class of holophrastic observation sentences to show how this forces a rejection of Quine's realism. ¹⁷⁶

Georgalis holds that Quine's relativistic side, in particular his rejection of transcendent metaphysics, undermines Quine's claims to what Georgalis calls his "scientific realism". He concludes that Quine should give up on his claims to realism and "downgrade ontology all the way".

It is clear that each of these philosophers emphasise one side of the Quinean compromise over the other, and holds that the alternative dimension ought to be

¹⁷⁴ Nicholas Georgalis, 'Ontology Downgraded All The Way', *Pacific Philosophical Quarterly* 80 (1999) 238-256

Nicholas Georgalis, 'Ontology Downgraded All The Way', p. 238
 Nicholas Georgalis, 'Ontology Downgraded All The Way', p. 239

abandoned as incompatible with the overall Quinean project. In the remainder of this section I show that this criticism of Quine is misguided; rather, the realism and the relativism that Quine espouses are compatible and can be held together in a coherent philosophical position. Moreover, I stress that Quine's position can be properly understood only by acknowledging that the realist and relativist dimensions have equal weight for Quine; otherwise, his position would not be a genuine compromise between them.

1.3 Quine's relativism about language.

To begin, Quine argues that a scientific account of how we actually use language shows us that there are no absolute facts about language in the sense that Russell assumed there to be. Rather, Quine holds that all facts about language are relative; more precisely, the facts about any language are relative to a further interpretation in a background language. This is the case because from our perspective, immersed in our on-going conceptual scheme, it is not possible to give an absolute interpretation of our language; rather the meaning, reference, and ontological commitments, of what we say is always relative to a further interpretation in a background language. This leads Quine to develop three related relativistic theses about language, namely - the "inscrutability of reference" (IR), ¹⁷⁷ the "indeterminacy of translation" (IT), ¹⁷⁸ and "ontological relativity (OR). ¹⁷⁹

¹⁷⁷ For example, Quine, <u>Ontological Relativity and Other Essays</u>, (New York: Colombia University Press 1969)

¹⁷³ For example, Quine, Word and Object, I will discuss the indeterminacy of translation thesis in more detail in chapter 4.

¹⁷⁹ For example, Quine, Ontological Relativity and Other Essays,

Taking Quine's thesis of (IR), Quine develops this idea in terms of the notions of a 'proxy function' and 'cosmic complement'. He explains a proxy function as a function that maps one system of reference into part or all of another. For example, in <u>Pursuit of Truth</u> Quine defines proxy functions as follows,

A proxy function is an explicit one-to-one transformation, f, defined over the objects in our purported universe. By 'explicit' I mean that for any object x, specified in an acceptable notation, we can specify fx. Suppose now we shift our ontology by reinterpreting each of our predicates as true rather of the correlates fx of the object x that it had been true of. Thus, we reinterpret 'Px' as meaning that x is f of a P. Correspondingly for two-pace predicates and higher. ¹⁸⁰

The origin for his idea of a proxy function is the distinction between direct and deferred ostension, i.e., between pointing to the ocean to indicate blue, and pointing to the petrol gauge to indicate that the tank is empty. ¹⁸¹ Quine develops a more sophisticated example of this distinction in terms of the mathematical device of Gödel-numbering: he shows that by giving each element in a system a Gödel-number we can specify any original elements by pointing to its Gödel-number. The process of Gödel-numbering gives a permutation, or one-to-one mapping, of the terms of one language onto those of another, such that by reinterpreting our theory T under a proxy function f as T₁, we switch the entire system of reference of T while ensuring that the truth-values assigned to each sentence in T remain invariant under their reinterpretation by proxy function f as T₁. Donald Davidson offers an illuminating example of how such a proxy function might work. First, assume that every object has one and only one shadow. Take f to mean 'the shadow of'. On system S we take 'Wilt' to be true of Wilt, and 'is tall' to be true of tall things. On S' we take 'Wilt' to be true to Wilt's shadow and 'is tall' to be true of the shadow of tall things.

¹⁸¹ Quine, Ontological Relativity and Other Essays. p. 40

¹⁸⁰ Quine <u>Pursuit of Truth</u>, 2nd rev ed, (Cambridge, MA: Harvard University Press 1992)p. 31-32

Thus, on S 'Wilt is tall' is true if and only if Wilt is tall, while on S' 'Wilt is tall' is true if and only if the shadow of Wilt is the shadow of a tall thing. Clearly, under proxy function f the truth conditions remain invariant. The key point here is that the evidence for or against S or S' consists of the set of circumstances in which the speaker would assent to or dissent from each sentence. 182

In addition, Quine has introduced the notion of a 'cosmic complement' to illustrate just how extreme the shift in reference can be with. The cosmic complement of my watch, for Quine, is the entire universe apart from my watch. Thus he writes,

The word 'rabbit' would now denote not each rabbit but the cosmic complement of each, and the predicate 'furry' would now denote not each furry thing but the cosmic complement of each. Saying that rabbits are furry would thus be reinterpreted as saying that complements-of-rabbits are complements-of-furry things, with 'complements-of-rabbits' and 'complements-of furry' seen as atomic predicates. The two sentences are obviously equivalent. 183

Properly understood, therefore, it is possible to reinterpret any sentence in such a fashion that a term taken to refer to the object 'x' in the original now refers to the entire universe apart from the object 'x'. Moreover, Quine holds that the truth-values of any sentences referring to my watch remain invariant even though these sentences now refer to the cosmic complement of my watch. For Quine, the conclusion is that the reference of any term cannot be stated absolutely but is always relative to the particular interpretation or translation manual employed. ¹⁸⁴

Donald Davidson, 'The Indeterminacy of Reference', reprinted in <u>Truth and Interpretation</u>, (Oxford: Blackwell 1986)p, 230

¹⁸³ Quine From Stimulus to Science, (Cambridge, MA: Harvard University Press 1995) p. 71-72

We know from the dectrine of ontological commitment that, for Quine, reference and ontology are closely connected, so it comes as no surprise that the relativity of reference implies that ontology is also relative to a particular interpretation. For Quine, inscrurability of reference (IR) begots ontological relativity (OR), and in either case there is no way to specify reference or ontology absolutely

What makes ontological questions meaningless when taken absolutely is not universality but circularity; rather, to say what object term in one language refers to we must retreat to another term in some other background language. Thus Quine writes,

A question of the form 'What is an F?' can be answered only by recourse to a further term: 'An F is a G'. The answer makes only relative sense: sense relative to the uncritical acceptance of 'G'. 185

For Quine, what we say makes sense only through the uncritical acceptance of some background language to translate the object language into. However, this background language must itself be interpreted, and so is itself relative to its interpretation in yet another background language, and so on and so forth. For example, the question "Does 'rabbit' really refer to rabbits and not rabbit parts?" is meaningless if asked in an absolute sense; someone can always counter with their own question: "Refer to rabbits in what sense of rabbits?". For Quine, such is immanent relativity: we need a background language to interpret any utterance, but as (IR) applies to that background language also, we appear to have begun an infinite regress of background languages. ¹⁸⁶

More significantly, however, immanent relativity arises in our home language also; both in how we interpret other speakers of our own language and in how we interpret what we ourselves say. First, relativity arises in connection to other speakers of the same language because according to Quine's model we must employ a translation manual whenever we interpret what is said in our home language. That is, Quine holds that this translation, which equates my neighbour's English words with the string of phonemes in my own mouth, proceeds purely on the basis of behavioural evidence and

¹⁸⁵ Quine, Ontological Relativity, p. 53

Moreover, for Quine, the relativity to a background language itself has to components: first, the choice of background language, second the choice of prexy function that maps one language onto the other. Ontology, therefore, is doubly relative.

the concurrent environmental surroundings. It follows that it is possible to completely reinterpret the reference of my neighbour's utterances through proxy functions, and given extensive readjustments, the behavioural evidence will be indifferent to switch of reference and ontology. Thus, I can reinterpret my neighbour's apparent references to rabbits as in fact references to undetached rabbit-parts, and her apparent references to formulas as actually references to Gödel numbers, etc. ¹⁸⁷ It follows that what has been said about translating alien languages applies equally to communicating in the home language. That is, (IR) pervades all aspects of the home language. ¹⁸⁸

Even more disturbingly, however, it follows from this that immanent relativity applies equally to my own speech. That is, for Quine, it is not possible for me to fix the reference or ontology of my own utterances in any absolute sense. This more troubling situation follows from the fact that there can be no private language: if reference in public language is relative then reference in my own language must also be relative. ¹⁸⁹ Clearly, if immanent relativism affects my own use of my home language the notion of reference truly does become nonsensical: it means that I do not know whether in saying 'rabbit' I am referring to rabbits or to some other devicusly permuted denotation. It follows, Quine argues, that

We begin to appreciate that a grand and ingenious permutation of these denotations, along with compensatory adjustments in the interpretations of the auxiliary particles, might still accommodate all existing speech dispositions. This was the inscrutability of reference, applied to ourselves; and it makes a nonsense of reference. 190

Indeed, Quine readily admits the absurdity of this conclusion. He writes,

¹⁸⁷ Quine Ontologica! Relativity p. 47

¹⁸⁸ Quine Ontological Relativity p. 45-46

¹⁸⁹ Quine Ontological Relativity p. 47

¹⁹⁰ Quine Ontological Relativity p. 48

We seem to be manoeuvring ourselves into the absurd position that there is no difference on any terms, interlinguistic or intralinguistic, objective or subjective, between referring to rabbits and referring to rabbit parts or stages; or between referring to formulas and referring to their Gödel numbers. ¹⁹¹

Thus, immanent relativity appears to raise the possibility that a speaker cannot know the difference between referring to a rabbit and referring to each of its parts, or between referring to a formula or referring to its Gödel number.

It is clear that Quine embraces a very comprehensive notion of relativity. In relation to language, relativity arises because from our immersed perspective we cannot get an absolute interpretation of what we say; rather, we must interpret what we say in some further background language or other. This type of relativism is significantly different from Carnap's extreme relativism, in that it does not rely on a transcendent standpoint; however, the type of relativism that Quine embraces also threatens to overwhelm his compromise position, and to force him to adopt an outlook just as extreme as Carnapian relativism. In particular, when applied to our own use of the home language Quine's relativism about language threatens to create a kind of referential nihilism, where there is no objective basis for determining the meaning, reference or ontology of what someone says, thereby making communication impossible.

1.4 Working within the home language as 'robust realism'.

It is clear that incorporating this relativism about meaning, reference, and so on, does not lead to the drastic situation that it first appears to; rather, Quine holds that what this relativism actually illustrates is not that communication is undermined by the failure to

¹⁹¹ Quine Ontological Relativity p. 47

access absolute facts about language, but that absolute facts about language are not necessary for communication to happen. Quine holds that using a language is all there is to understanding that language, and because this relativism does not undermine our ability to use language, this relativism does not undermine our understanding of language. That is, Quine holds that in communicating we do not stand back and question the meaning, reference or ontology of a language but simply use it or "acquiesce" in it, taking its terms "at face value".

The problem raised by Quine's relativism about language is that it appears to require the speaker to construct an endless series of meta-languages to determine what she is talking about. However, Quine holds that in practice this regress of background languages would not go on for very long; no one is going to formulate a meta-meta-language in order to determine what terms in the language refer to – not because it is impossible to formulate such a language but because there is no point in doing so. Rather, in order to speak at all we must stand somewhere – it is not possible to question all background languages at once – so even though there are no absolute facts about language, we simply *use* the relative facts about language that we do have. Thus Quine writes,

We need a background language, I said, to regress into. Are we involved no in an infinite regress? If questions of reference of the sort we are considering make sense only relative to a background language, then evidently questions of reference for the background language make sense in turn only relative to a further background language. In these terms the situation sounds desperate, but in fact it is little different from questions of position and velocity. When we are given position and velocity relative to a given coordinate system, we can always ask in turn about the placing of origin and orientation of axes of that system of coordinates; and there is no end to the succession of further coordinate systems that could be adduced in answering successive questions thus generated.

In practice of course we end the regress of coordinate systems by something like pointing. And in practice we end the regress of background languages, in discussions of reference, by acquiescing in our mother tongue and taking its words at face value. 192

The key point, for Quine, is that when we acquiesce in our home language we do not question the reference of these terms; rather we employ its terms 'at face value'. That is, for Quine simply using language prevents the regress from getting started. 193

But doesn't this simply beg the question? Doesn't his relativity about language put the very possibility of 'using' a language in doubt? In particular, by entangling it with considerations to do with translation manuals and background languages, it appears very much as if it is impossible to use a language because the terms we are using are always up for grabs. For Quine, however, this is not the case, and it is important to see why.

Quine has at times attempted to clarify the notion of acquiescence in terms of a distinction between the 'heterophonic' and the 'homophonic' translation manuals. He explains the difference between these manuals as follows. The heterophonic rule correlates different words to one another, such as those of one language to words of another – thus the field linguist engaged in radical translation must employ a heterophonic translation rule. In contrast, the homophonic rule simply maps terms onto themselves; it is what Quine calls the 'identity transformation'. Quine writes,

The homophonic rule is a handy one on the whole. That it works so well is no accident, since imitation and feedback are what propagate a language. We acquired a great fund of basic words and phrases in this way, imitating our elders and encouraged by our elders amid external circumstances to which the phrases suitably apply. Homophonic translation is implicit in the social method of learning. Departure from homophonic translation in this quarter would only hinder communication. ¹⁹⁴

¹⁹² Quine Ontological Relativity p. 49

¹⁹³ Stewart Shapiro, 'Second-Order Logic, Foundations, And Rules', *Journal of Philosophy* (1990) p. 252 ¹⁹⁴ Quine Ontological Relativity p.46-47

For Quine, acquiescing in the home language means employing the homophonic translation manual, which simply maps terms in the home language onto themselves. It follows therefore, that the home language is taken as its own background language: the homophonic translation manual takes each sentence of the home language as its own translation in the background language, and map each term in the home language into itself. Thus, relativity of meaning, reference, and so on, arise in the home language only if one systematically departs from the homophonic translation and applies a heterophonic translation rule. He writes,

In short, we can reproduce the inscrutability of reference at home... The problem at home differs none from radical translation ordinarily so called except in the wilfulness of this suspension of homophonic translation. 196

Properly understood, Quine holds that by choosing the homophonic translation manual, thus taking the home language at face value, the relativity is resolved.

For Quine, acquiescence continues naturalism's central theme of adopting an immanent perspective on inquiry, but in this case we must be immanent to *language* rather than to the conceptual scheme of physical science. Quine holds that when we use language we 'staying aboard our own boat' and see it from 'the inside out'. Thus, Quine writes

The point is not that we ourselves are casting about in vain for a mooring. Staying aboard our own language and not rocking the boat, we are borne smoothly along on it and all is well; 'rabbit' denotes rabbits, and there is no sense in asking 'Rabbits in what sense of 'rabbit'?' 197

So, viewed from within we use language and take its terms at face value. Of course, it is possible to view our current home language as an alien inscrutable language, but we can

¹⁹⁷ Quine "Things and Their Place in Theories", in <u>Theories and Things</u>, p. 20

¹⁹⁵ Hilary Putnam, 'A Comparison of Something with Something Else', in Words and Life, p. 335-337

¹⁹⁶ Quine Ontological Relativity p. 47

do this only by adopting some further language as the home language. Treating our current home language as an alien language and questioning the reference of its terms requires that we retreat from our current home language into some further language, but acquiescing in it and taking its terms at face value means accepting the home language as the home language.

For Quine, the key point here is that relativity arises only if one views language from outside; that is, if we question it from the perspective of some other language. But as Quine notes, it is not possible to question a language while we are using it; rather, we must accept the language we use, and take its terms unquestioningly at face value.

Therefore, even though our acceptance of our home language is provisional, because it is not possible to stand outside of all languages and question them all at once from some neutral perspective, we have no option but to accept some language unquestioningly while we are speaking. It follows, therefore, that in one clear sense acquiescence is a form of realism, namely – acquiescence means that the relativism about language that Quine does accept will not descend into the type of Carnap-style extreme relativism it threatens to.

Therefore, while there are no absolute facts about language in Russell's sense, taking the language we use at face value does constitute a version of realism; it is a version of realism that acknowledges a certain, quite comprehensive, type of relativism. Quine's so-called "robust realism", is thus realism notwithstanding comprehensive relativism. At the beginning of the section, we saw that a number of philosophers argue that the relativism that Quine embraces undermines his claims to realism, and therefore is incompatible with the overall Quinean project. But we now see that Quine's relativistic

view of language does not lead to Carnap-style extreme relativism, or undermine Quine's claim to be a realist; just the opposite, in fact. For, it turns out that Quine's relativistic view of language is also the basis for his particular version of realism; that is, realism notwithstanding relativism about language.

1.5 Realism and relativism from within.

If we return to the objection raised at the start of the section, we saw that a number of philosophers have argued that Quine's acceptance of relativity about meaning, reference, and so on, preclude any claims he makes to realism. This point is illustrated clearly by looking at Putnam's ¹⁹⁸ criticism of Quine outlined above.

Putnam has argued that Quine's insistence that he is a realist rings hollow; in contrast, Putnam holds that any claims to realism that Quine makes are undermined by his extreme relativistic doctrines of meaning, reference and ontology. It is, on Putnam's account, symptomatic, or even definitive, of 'realism' to hold that the objects we are realists about exist completely independent of our conceptual system; the fact that they exist independently invests these objects with an authority over our conceptual system. Putnam's problem with Quine is that since Quine has rejected the notion of reality *as it is in itself*, he does not take robust realism to be about a transcendent relation between language and reality *as it is in itself*, however, Quine nevertheless wants his immanent construal of these concepts to have the authority they would have if they were transcendent. Thus, Putnam writes,

¹⁹⁸ Hilary Putnam, 'A Comparison of Something with Something Else', reprinted in Words and Life

Quine's denial of "transcendental reality" is the denial of reality as traditionally, metaphysically conceived. Quine's claim is that "immanent" reality, the reality internal to our text contains a part – the "first-class" part – that is certified by science, and therefore deserves to be just as authoritative, just as coercive, as the metaphysician's reality ever was. But why should the "reality" of science be more coercive than our reflective intuition that what we say is true or false? ... Quine's view is that neither the authority of ontology nor the authority of epistemology is impaired in any way by being seen to be "immanent". In my view, whatever authority they had depended entirely on our conceiving of reality and sensations as, respectively, the makers-true and the makers-justified of the sentences we produce – not the makers-true and makers-justified from within the story, but the things outside the story that hook language onto something outside of itself. 199

Putnam recognizes that Quine's robust realism is immanent realism – it is a doctrine about language and the objects internal to language – but for Putnam, it is incoherent to talk about "immanent" realism; ultimately, Putnam does not believe Quine's robust realism deserves to be called "realism". Putnam's point is that, on Quine's view, an alien's conception of reality is inscrutable to us unless we can translate it into our own language, and, likewise, my conception of reality, while obvious to me, is inscrutable to the alien. Therefore, there is no objective conception of reality that both the alien and I must acknowledge. For Putnam, without a connection to something external to theory, the ontological notions of reality and fact cannot claim any authority over both the alien's and my own conceptual system, and thus it is simply false to call this picture 'realism' in any sense of the word.

Now, while one might question the significance that Putnam gives to the notion of objects having 'authority' over our conceptual system as the benchmark for realism, but even granting this point, it is clear that robust realism also holds that objects have this aforementioned authority. The authority here derives from robust realism's role as anti-

¹⁹⁹ Hilary Putnam, 'A Comparison of Something with Something Else', p. 347-348

relativism: the robust realist is no different than the metaphysical realist in taking seriously whatever is asserted in the home language. Because robust realism rules out immanent relativism, we have no option but to take the home language seriously. And, what more can there be to taking a language seriously other than ruling out its relativity to a background language? Thus, when Quine discusses realism he characterizes it in terms of the scientist who confidently takes his science seriously. Quine writes,

But I also expressed, at the beginning, my unswerving belief in external things – people, nerve endings, sticks, stones. This I reaffirm. I believe also, if less firmly, in atoms and electrons and in classes. Now how is all this robust realism to be reconciled with the barren scene that I have just been depicting? The answer is naturalism: the recognition that it is within science itself, and not in some prior philosophy, that reality is to be identified and described.²⁰⁰

Quine holds that realism is the robust attitude of turning back to one's own theory, and not questioning the meaning of the terms one uses while one is using them. It is, he says,

the robust state of mind of the natural scientist who has never felt any qualms beyond the negotiable uncertainties internal to science.²⁰¹

For Quine, we are robust realists because in taking our home language at face value we do not begin the regress of background languages and the relativism that this involves.

Quine emphasises this point by highlighting that we acquiesce in the use of terms like 'evidence' and 'reality', and do not question them from the external perspective of some background language. Thus, Quine writes,

We cannot significantly question the reality of the external world, or deny that there is evidence of external objects in the testimony of our senses; for, to do so is simply to dissociate the terms 'reality' and 'evidence' from the very applications which originally did most to invest those terms with whatever intelligibility they may have for us.²⁰²

²⁰¹ Quine, 'Five Milestones of Empiricism' p. 72

²⁰⁰ Quine, "Things and Their Place in Theories" p. 21

²⁰² Quine 'The Scope and Language of Science' Ways of Paradox p. 229

For Quine, the robust realist does not entertain these doubts either; in this case, however, the realist does not significantly question the existence of external reality because to do so would be to question the language she is using rather than take it at face value. Of course, this does not mean that Quine takes ordinary language as sacrosanct, but in ordinary usage we use the word 'real' to separate those things that we believe to be real from those that we do not.²⁰³ Quine writes.

Everything of course, is real; but there are sheep and there are no unicorns, there are clouds and there is (in the specified sense of the term) no sky, there are odd numbers and there are no even primes other than 2. Such is the ordinary usage of the word 'real', a separation of the sheep from the unicorns. Failing such aberrant definition which is clearly not before us, this is the only usage we have to go on. ²⁰⁴

It is difficult to imagine what Putnam can say here that Quine cannot also endorse. How do we take reality any more seriously than by taking seriously the sentence 'the external world really exists''? Anything more that we say to emphasize our belief in the reality of reality will be superfluous: we can only add more words to those that we already take seriously. Even if Putnam adds a desk-thumping, foot-stamping shout of 'Realiy!', this is still just another part of the home language that we are realists about.

1.6 Conclusion.

In conclusion, then, it is clear that robust realism is very different to traditional versions of realism. However, this comes as no surprise as from the outset Quine has branded traditional metaphysical realism redundant for relying on the fallacious assumption of a

²⁰³ Quine Word and Object p. 3

Quine 'On Mental Entities', Ways of Paradox., p. 225

transcendent perspective. In contrast, robust realism concerns the use of language not the connection between language and something independent of language. Robust realism is clearly a very deflated form of realism.²⁰⁵ It follows that when Quine says that he is a realist about the objects of science, and that he takes the terms of the home language at face value he is not talking about an unquestioned acceptance of the nature of reality as it is in itself. In contrast, Quine's point is subtler than this: Quine describes acquiescence in the home language as 'realism' only because it rules out immanent relativism.

Because it is such a thin doctrine, I think that Quine's robust realism offers a revolutionary new way to understand realism. Its minimal metaphysical commitments allow Quine to show that the appeal to the notion of correspondence to independent reality is neither legitimate nor necessary. For Quine, realism is simply about taking seriously the language we use. Naturalism is of a piece with the human predicament: we are always immersed in some conceptual system or other and have no option but to adopt an immanent perspective. In robust realism the point of view is still naturalism: but in a slightly different sense than usual. Here, Quine holds that we are naturally immersed in language and have to take seriously whatever language we use. Because it is so deflated, Quine exhibits a general tendency to assume that we have no options but to be a robust realist.

In the next section I show that although Quine can incorporate considerable relativism about reference, meaning, and so on, with his so-called "robust realism", there is a type of relativism that cannot be accommodated by Quine's compromise position, namely – relativism about truth

Nicholas Georgalis, in 'Ontology Downgraded all the Way' *Pacific Philosophical Quarterly 80 (1999)*, p. 247, in my opinion, aptly calls Quine's realism 'anaemic realism', however, Georgalis means this as a criticism similar to Putnam's.

SECTION 2

ROBUST REALISM AND TRUTH

2.1 Introduction.

In the previous section, I argued that not only can Quine accommodate both realist and relativist tendencies in his position, but that his entire project can be understood only in terms of an attempt to balance these competing tendencies. So, in contrast to those who argue that either the realist or the relativist dimension is inconsistent with the Quinean project, I argued that abandoning either of these dimensions will collapse the Quinean project into one or other extreme position. In this sense, we can talk about the relativism in reference, meaning, and so on, that Quine embraces, as "good relativism"; that is, far from undermining his compromise position, relativism of this type is the basis for Quine's so-called "robust realism".

In this section I want to argue that, in contrast to this "good relativism", Quine's position is also susceptible to a form of "bad relativism", namely – relativism about truth. The relativistic doctrine of truth holds that truth is relative to theory, and I show here that this is a form of "bad relativism" because Quine's compromise position cannot accommodate this version of relativism; rather, should it arise, relativism about truth would undermine Quine's so-called "robust realism".

I begin this section by making Quine's view of truth explicit. I show here that Quine holds a "robust realist version of truth". This "robust realist version of truth" is a "deflationary" account of truth: it holds that a complete account of truth is given by

accounting for our use of the term "true", or to put it in terms of "robust realism", we account for truth by simply taking our use of the term "true" at face value. Following on from this, I consider the arguments of a number of philosophers, most notably Donald Davidson, who contend that Quine's so-called "robust realist version of truth" leads to an epistemic theory of truth, which makes truth relative to epistemic factors and hence relative to theory. I argue that none of Davidson's arguments are conclusive, and that it is incorrect to convict Quine of implicitly holding the epistemic theory of truth. Finally, I argue that, though Quine is not committed to the epistemic theory of truth, there is another sense in which he may be committed to relativising truth to theory. I show that some of Quine's responses to the problem raised by strong-global under-determination at end-of-inquiry make truth relative to theory. I argue that these responses are incompatible with his so-called "robust realist" version of truth. I conclude that should strong-global under-determination arise in on-going inquiry, as distinct from end-of-inquiry, then Quine's view of truth would undermine his compromise position.

2.2 Quine's robust realist view of truth.

To begin, I want to outline Quine's so-called "robust realist" view of truth. I show that Quine's view of truth is closely related to his notion of acquiescence in the home language, and ultimately boils down to an account of how we use the term "true". I show that Quine's so-called "robust realist" view of truth has two important characteristics; first, it is a "deflationary" account of truth, and second, it makes a true sentence relative to the language that it occurs in.

The first point to note here is that although Quine calls his version of truth a "realist" account of truth, he does not hold a correspondence theory of truth. The correspondence theory of truth holds that truths qualify as true in virtue of corresponding to reality. Thus stated, however, the correspondence theory is either vague or vacuous. Quine explains this as follows;

What on the part of true sentences is meant to correspond to what on the part of reality? If we seek a correspondence word by word, we find ourselves eking reality out with a complement of abstract objects fabricated for the sake of the correspondence. Or perhaps we settle for a correspondence of whole sentences with *facts*: a sentence is true if it reports a fact. But here again we have fabricated substance for an empty doctrine. The world is full of things, variously related, but what, in addition to all that, are facts? They are projected from true sentences for the sake of correspondence. ²⁰⁶

Taking the example of the declarative sentence "Snow is white", the correspondence theory usually accounts for this truth by claiming that the meaning of the sentence corresponds to the state of affairs, or facts as they actually are in reality. However, for Quine, the correspondence theory suffers from two problems. First, as Quine says above the correspondence theory must posit "facts" for truths to correspond to. And, second, proponents of the correspondence theory tend to postulate meanings as truth bearers of sentences. The correspondence is therefore taken to hold between two intangible elements intervening between the true sentence and the white snow; that is, the sentence "Snow is white" is true because the *meaning* of the sentence is that snow is white and this corresponds to the *fact* that snow is white.

As we know, Quine rejects the postulation of meanings of sentences as nonlinguistic entities, and similarly, we have seen that he does not accept facts in the sense required for the correspondence theory to go through. Thus, it is clear that Quine does not

²⁰⁶ Quine, 'Truth', <u>Quiddities</u>, (Cambridge Massachusetts: Harvard University Press 1987); p. 213

accept the correspondence theory of truth. However, there is one sense in which Quine believes the correspondence theory is correct, and that is that Quine agrees that truth hinges on reality not language. Thus, Quine writes,

No sentence is true but reality makes it so. The sentence 'Snow is whiter' is true, as Tarski has taught us, if and only if real snow is really white. The same can be said of the sentence 'Der Schnee ist weiss'; language is not the point.²⁰⁷

For Quine, truth hinges on reality, but it is sentences are true. The truth predicate is needed only in cases where, though we are concerned with reality, we are forced to mention sentences. In this type of case, the truth predicate allows us to show that although sentences are mentioned, the point is still about reality.

To be precise, there are certain types of generalisations where we are impelled to talk of sentences as being true. For example, when we generalise from "Grass is green or grass is not green", "Snow is white or snow is not white", and so on, to say "Every sentence of the form 'p or not p' is true", we must ascend semantically to talk of truth and of sentences. However, this semantic ascent does not imply that "Grass is green or grass is not green" is about sentences not about reality; rather, this sentence is about reality, but because the instances we are generalising over are related to one another in an oblique way, we must go one step up and talk about sentences.

When we do ascend to the linguistic plane the truth predicate is useful because it reminds that although our talk is about sentences, our eye is on the world. It does this by cancelling linguistics reference. This is explicit in Tarski's paradigm:

"Snow is white" is true if and only if snow is white.

²⁰⁷ Quine, <u>Philosophy of Logic</u>, (second edition): (Cambridge Massachusetts: Harvard University Press 1970); p. 10

The quotation marks indicate when we are speaking about words, i.e., the name of the sentence mentioned, and when we are talking about snow itself. The important insight captured by Tarski here, is that the quotation is the name of a sentence that contains the name of snow, i.e., "snow"; hence, in calling this sentence true, we call snow white. 208

This is the sense in which the truth predicate is a device of disquotation that cancels linguistic reference. Thus, Quine writes,

Here, as Tarski has urged, is the significant residue of the correspondence theory of truth. To attribute truth to the sentence is to attribute whiteness to the snow. Attribution of truth to 'Snow is white' just cancels the quotation marks and says that snow is white. Truth is disquotation. ²⁰⁹

Where we are speaking of the truth of singly given sentences, or in generalisations that do not speak about sentences, the truth predicate adds nothing to the sentence being asserted; but in affirming an infinite number of sentences that can be distinguished only by talking about sentences, then the truth predicate is useful.

This type of approach to the question of truth is usually termed "deflationary". Deflationary accounts hold that the apparent philosophical problem of the nature of truth deflates to the question of the use of the term "true". It is clear that this is in keeping with Quine's notion of acquiescence; to be a "robust realist" about the term "true", or any other predicate, simply means taking the term "true" at face value and using it rather than questioning it. Thus, it is clear that, for Quine, the "robust realist" account of truth is a deflationary account of truth. Thus, Quine writes,

We understand what it is for the sentence "Snow is white" to be true as clearly as we understand what it is for snow to be white.²¹⁰

²⁰⁸ Quine, Philosophy of Logic, p. 12

²⁰⁹ Quine, 'Truth', in <u>Quiddities</u>, p. 213 ²¹⁰ Quine, Pursuit of Truth, (1992); p. 82

The disquotational paradigm explains the truth of the mentioned sentence in words that are as clear as the sentence itself, and, in this sense, the term "true" is transparent.

However, as Quine points out, there is a certain inadequacy about calling this approach "deflationary". In particular, the term "deflationary" doesn't convey the power of this approach to specify truth uniquely in any language. Thus, Quine writes,

Still it is hard to think of disquotation as deflationary, or as mere, when we reflect that it pins truth and denotation down uniquely. No two truth predicates, or denotation predicates for *n*-place predicates, can fulfil disquotation across the board without being coextensive.²¹¹

As with all terms, the term "true" is relative to language in the sense that language figures as a parameter for any sentence that occurs in it. For this reason, the disquotational paradigm of "true" specifies unambiguously the extension or range of applicability of the term "true" in that language. That is, the disquotational paradigm of truth is sufficient, of itself, to specify, but not define, truth uniquely. Thus, Quine writes,

Supposing two different interpretations of 'true-in-L' compatible with (7) [i.e., '____' is true-in-L if and only if ____], let us distinguish them by writing 'true₁-in-L' and 'true₂-in-L', and let (7)₁ and (7)₂ be (7) with these respective subscripts inserted. From (7)₁ and (7)₂ it follows logically that ____' is 'true₁-in-L' if and only if '____' is 'true₂-in-L', no matter what statement of L we write for '____'. Thus 'true₁-in-L' and 'true₂-in-L' coincide. ²¹³

The truth paradigm, though trivial on the surface, determines that if there are two truth-predicates in L, say "true₁-in-L" and "true₂-in-L", both of which fulfil the paradigm, then the two predicates are coextensive. Quine writes,

²¹¹ Quine, 'Response to Davidson', *Inquiry* 37 (1994): 496-498; p. 499: reprinted in <u>The Philosophy of Quine</u>, ed. D. Follestal, Vol. 4; p. 248-250; p. 249

More precisely, Quine says that it does not even specify truth uniquely, as certain uses of truth escape this paradigm. "Reply to Bergstrom", *Inquiry* 37 (1994)

²¹³ Quine, 'Notes on the Theory of Reference', in From a Logical Point of View, p. 136

For all its surface triviality, the paradigm is quickly shown to have extraordinary powers. For one thing, it suffices, of itself, to determine truth uniquely. If there are two truth predicates 'True₁' and 'True₂', both fulfilling the paradigm, then the two are coextensive.²¹⁴

The truth paradigm specifies truth uniquely because it rules out the possibility of two truth predicates 'True₁' and 'True₂' in English that do not apply to the same sentences in English..

This point merely reflects the fact that, strictly speaking, acquiescence in the home language makes truth, and all notions from the theory of reference, always relative to the containing language. That is, language always figures as a parameter of any true sentence, because the same set of words could at the same time constitute different sentences in different languages, one of which is true and the other of which is false. Consequently, I will call this the view that truth is relative to language in a "pedestrian" sense 16, i.e., in a sense that is philosophically trivial.

This pedestrian sense of the relativity of truth must be contrasted with the far from trivial thesis that truth is relative to theory. Indeed, for Quine, in contrast to the "good relativism" outlines in the previous section that is compatible with the compromise position, relativising truth to theory is the archetypal "bad relativism"; that is, this type of relativism will undermine the compromise position and force Quine to collapse his philosophy into either extreme realism or extreme relativism. Relativising truth to theory would be detrimental to Quine's overall compromise for at least two reasons.

²¹⁴ Quine 'On Austin's Method' <u>Theories and Things</u>, p. 90

²¹⁵ Quine, 'Notes on the Theory of Reference', in From a Logical Point of View, p. 134-135

Davidson comes up with this term in, D. Davidson, 'The Structure and Content of Truth', p. 306
 Notwithstanding his view of the capacity of the disquotational approach to specify truth uniquely in a language, Quine appears to view the relativity of truth to language as a trivial point.

First, to hold that truth is relative to theory is, in effect, to accept that each theory is true from its own perspective and brooks no higher arbiter that can adjudicate between these theories; rather, on this view both are actually true. This point seems to be definitive of extreme relativism. For example, as we saw, Carnap holds that because the rules constituting a framework are proposals rather than assertions, no framework is true or false; rather, each is true from its own perspective. More generally, the extreme relativist holds that truth is relative to theory, accepts that all are true from their own perspective, and adopts a tolerant attitude to them all. This tolerant attitude would appear to be incompatible with taking our own on-going theory seriously; in particular, it would force Quine to abandon the criterion of ontological commitment, since incompatible true theories are committed to incompatible entities. Moreover, it would appear to presuppose a position aloof from our on-going conceptual scheme from where to view them all as true. Thus, in itself relativising truth to theory is enough to collapse the compromise into extreme relativism.

In addition, however, relativising truth to theory would also create problems for Quine's view that we can explain acquiescence in terms of paradigms analogous to Tarski's truth scheme. For, holding that truth is different relative to each true theory implies that the truth predicate is not specified uniquely in the language; rather, there must be multiple truth predicates in the home language that are not coextensive. However, this would suggest a problem for acquiescence. Quine thinks that we acquiesce in the home language by adopting the identity transformation manual of translation. Taking the example of English, Quine argues that this manual will connect the free-floating reference of terms in English, taken as the object language, with the free-floating

²¹⁸ This point is discussed in more detail in chapter 5

reference of English taken as the background language. ²¹⁹Quine holds that in mapping English onto itself in this manner, we specify the reference of our terms in what he calls "disquotational paradigms analogous to Tarski's truth paradigm". 220 Therefore, by relativising truth to theory, thereby introducing multiple different truth predicates into English, it seems to me that we would be unable to map English onto itself in the manner. suggested by Quine. Moreover, we would be unable to take the term "true" at fact value, as we would have to ask which sense of "true" was meant; that is, do we mean "true" relative to theory₁ or "true" relative to theory₂? As these truth predicates are not coextensive, we would appear to have launched the regress of background languages all over again. 221

In the next section I consider whether in addition to making truth relative to language in the pedestrian sense outlined above. Quine also implicitly makes truth relative to theory.

2.3 Is truth relative to theory?

A number of philosophers have argued that in addition to making truth relative to language Quine's account of truth thereby makes truth relative to theory, i.e., physical

²¹⁹ Quine, 'Things and their Place in Theories', Theories and Things, p. 20

²²⁰ Quine, Pursuit of Truth, p. 52

²²¹ I am not suggesting here that this is the whole story, and I deal with this issue in detail later; but it does seem that this type of problem would support those who are unsympathetic to Quine's notions of (IR) and acquiescence, who argue that Quine's account of language is incoherent. For example, Barry Stroud, 'Quine on Exile and Acquaintance', reprinted in Meaning, Understanding, and Practice, (Oxford: Oxford University Press, 2000); pp. 151-170

science.²²² Is this interpretation is correct? Does Quine's robust realist account of truth imply that truth is relative to theory?

The argument that Quine's robust realist account of truth implicitly makes truth relative to theory can be set out as follows. It is clear Quine holds that truth is "immanent" to theory. For example, in <u>Word and Object</u> he writes.

It is ... when we turn back into the midst of an actually present *theory* ... that we can and do speak sensibly of this or that sentence as true. Where it makes sense to apply 'true' is to a sentence couched in the terms of a given *theory*, and seen from within the *theory*. ²²³

And in Theories and Things he reaffirms his commitment to this view, saying,

Truth is immanent, and there is no higher. We must speak from within a *theory*, albeit any of various.²²⁴

It is often argued that in passages such as these that in making truth *immanent* to theory Quine thereby makes truth *relative* to theory. ²²⁵ To be precise, Davidson argues that in making truth immanent to theory Quine implicitly holds an epistemic theory of truth and in this sense makes truth relative to theory. ²²⁶

The epistemic theory of truth holds that the epistemic factors internal to theory determine truth in itself. There are a number of different ways in which this claim can be cashed out. For instance, it could be that our on-going theory determines truth, as in for example Rorty's notion of truth as "ethnocentricity" or "solidarity", or that an ideal theory determines truth; for example, Peirce's view that truth is the ideal end point or limit achieved by the successive application of the correct scientific method. It follows

Davidson, 'What is Quine's View of Truth?', *Inquiry* 37 (1994), 'The Structure and Content of Truth' *Journal of Philosophy* 1990, Lars Bergstrom has suggested that Quine ought to adopt an "empiricist" theory of truth, which would make truth relative to empirical evidence; Quine's Truth', *Inquiry* 1994, p. 424

²²³ Quine Word and Object, p.24 (my italics)

²²⁴ Quine "Things and Their Place in Theories", Theories and Things, p. 21-22 (my italics)

L. Bergstrom, 'Quinc's Truth',

²²⁶ For example, Davidson 'The Structure and Content of Truth', pp. 298, 306

that the epistemic theory of truth is a substantive rather than a deflationary account of truth. The deflationary theory of truth argues that all there is to the nature of truth is accounted for in explaining our use of the term "true", and that our use of the term "true" can be accounted for in terms of the disquotational paradigm, without investigating truth in terms of some alleged "substantial property". In contrast to this, epistemological accounts of truth argue that truth is a substantive property of sentences, and hold that there is a connection between judgment and truth that cannot be severed. 227 That is, the epistemological theory of truth holds that any assertion or judgment of truth already presuppose some substantive notion of the nature of truth. This means that, for the epistemic theory, asserting that p presupposes the notion of truth, and the nature of truth is reflected, not in our use of the term "true", but in our judgment that p is true. 228 In this sense, to assert a sentence as true is to do more than simply reaffirm it; rather, it is to attribute a real property, specifically an epistemological property, to that sentence. Consequently, truth is connected firmly to knowledge. Moreover, as truth is an epistemic concept it depends on the variance of certain epistemic factors, which in turn makes truth relative to theory: truth itself changes from theory to theory.

Davidson appears to have developed his argument that Quine is implicitly committed to the epistemological theory of truth, thereby making truth relative to theory, in two different ways: Davidson appears to develop a "narrow" argument deriving from the pedestrian sense in which a true sentence is relative to the language in which it

²²⁷ For example, Hilary Putnam, "On Truth" in Words and Life,

Thus, Putnam, for example, argues that deflationary accounts, which hold that asserting that p is true is equivalent to asserting that p, presuppose an explanation of assertion or judgment that does not itself assume some notion of truth; but, Putnam argues, because the act of judgment or assertion does presuppose the notion of truth the deflationary account is untenable, and he concludes that truth must therefore be a substantive notion.

occurs; and a separate more "general" argument deriving from Quine's strong-global under-determination.

Taking the narrow argument first, Davidson points out that Quine has made a true sentence relative to the language that contains it, and argues that since Quine has also rejected the distinction between language and theory, this makes a true sentence relative to the epistemological factors within theory. Thus, Davidson writes,

I had worried that when he wrote that truth is 'immanent' he was expressing the idea that truth is relative not only to a language, but also is relative in some further way... My confusion here may well be traceable back to the fact that 'theory' and 'language' are not to be clearly distinguished in Quine's writing. No wonder. Once one repudiates the analytic/synthetic distinction, one has given up the distinction between belief and meaning, overall theory and language. Given a way of translating another's language, one has arbitrarily fastened on a way of seeming to draw the line, but equally good translation manuals would draw the line in other places, and so dole out truth to the translated sentences in other ways. Hence, perhaps, the apparent relativity of truth to a theory as well as a language.

As Davidson says here, the view that Quine rejects the distinction between language and theory derives from his repudiation of the analytic-synthetic distinction. Indeed, this view that rejecting the analytic-synthetic distinction implies rejecting any distinction between language and theory is shared by Richard Rorty. Rorty cites as evidence the following passage from Words and Objections, where Quine comments on his tendency to use the terms "theory" and "language" interchangeably writing,

This tendency is related to my rejection of the traditional distinction between analytic and synthetic statements; or, what comes to the same thing, the distinction between meaning and widely shared collateral information; or, what comes in the end to much the same thing again,

²²⁹ Donald Davidson, 'What is Quine's View of Truth?', <u>The Philosophy of W.V. Quine</u> Vol 4., (ed) D. Follesdal p. 243-244

²³⁰ R. Rorty, 'Indeterminacy of Translation and of Truth', *Synthese* 23 (1972): reprinted in <u>Philosophy of Quine</u>, Vol. 3; D. Follestal ed.(New York: Garland Publishing, Inc. 2001); pp.71-91
²³⁷ D. Davidson & J. Hintikka (Eds.) <u>Words and Objections</u>, Rorty cites 'Reply to Chomsky' pp. 308ff

the notion that the sentences of a theory have their several and separable empirical contents. 232

Rorty concludes that:

But a Quinean must be more cautious about presupposing a clear-cut division between 'language' and 'theory'. 233

Thus, Davidson argues that because Quine acknowledges no clear-cut distinction between language and theory, it follows from the pedestrian sense in which the truth of sentences is relative to the language in which they occur that truth is also relative to the epistemological factors of the theory in which it is couched. This implies that our home language and current physics are coextensive. Indeed, Quine at times appears to corroborate this interpretation; for example he say,

Where I have spoken of a conceptual scheme I could have spoken of a language. Where I have spoken of a very alien conceptual scheme I would have been content, Davidson will be glad to know, to speak of a language awkward or baffling to translate.²³⁴

Here, in saying that where he has spoke of conceptual scheme, or theory, he could have spoken of language, Quine appear to imply that he does not see any distinction between language and theory.

However, it seems clear that this argument does not go through. To begin with, once he rejects the distinction between analytic and synthetic sentences, Quine does indeed hold that the terms "theory" and "language" are interchangeable in *certain* contexts; but he is quite clear that they are *not* interchangeable in *all* contexts.²³⁵ To be precise, Quine holds that when speaking about language or theory as a total fabric of

²³² Quine, 'Reply to Chomsky', Words and Objections, p. 309

²³³ Rorty, 'Indeterminacy of Translation and Truth,' *Synthese* 23 (1972) p. 453-454: reprinted in <u>Philosophy of Quine</u>, Vol. 3; D. Follestal ed.(New York: Garland Publishing, Inc. 2001); pp.71-91; p.79-80; Rorty also cites Quine, 'Carnap and Logical Truth', reprinted in <u>Ways of Paradox</u>, Rorty cites pp. 123ff of first edition.

²³⁴ Quine, 'On the Very Idea of a Third Dogma', Theories and Things., p. 41

²³⁵ Quine, 'Reply to Chomsky', Words and Objections, p. 310

sentences associated with one another and to external stimuli through dispositions for response, these terms can be interchanged: in learning a language, once we progress beyond observation sentences, we learn the truth conditions of certain sentences relative to other sentences, and having rejected the analytic-synthetic distinction, Quine rejects the possibility of distinguishing between dependencies of truth value that are due to language and those that are due to theory. Hence, in this context, "language" and "theory" are indeed interchangeable. But there clearly are cases where the terms are not interchangeable. In particular, Quine holds that two theories can belong to, and be stated in, the same language, as they must be if we are to understand the claim that the theories conflict. Thus, continuing the passage cited by Rorty above, Quine writes,

Even limiting our consideration to theory within a language, however, we see ... many theories, even conflicting theories, can be couched in one language. Language settles the sentences and what they mean; a theory adds, selectively, the assertive quality or the simulation of selective belief. A language has its grammar and semantics; a theory goes farther and asserts some of the sentences. 236

As Quine says here, if language and theory were interchangeable in all contexts, then it would not be possible to state conflicting theories in the same language. Consequently, assimilating theory and language would rule out the possibility of the underdetermination thesis, as it would mean that rival theories are necessarily in different languages. Likewise, if language and theory were coextensive in all contexts, then we would be unable to state false sentences in any language.²³⁷ The sentence 'Snow is Green' is not part of current physics, i.e., is not part of theory, but a fluent English speaker will nevertheless take this sentence at face value; on hearing it she does not

Quine, Reply to Chomsky', Words and Objections, p. 309
 Quine, Reply to Chomsky', Words and Objections, p. 309: Quine says that he uses the term 'theory' to indicate the class of all sentences that a man believes to be true.

abandon the homophonic translation manual, retreat to a further background language and ask "Green in what sense of "Green"?". But, if language and theory were coextensive, then false sentences would not be part of our language and could not be taken at face value.

It is clear that the fact that we can state conflicting theories in the same language, and take false sentences as well as true ones at face value, means that language and theory are not coextensive in all contexts. And, consequently, it is clear that Davidson is wrong to infer from the fact that Quine takes truth to be relative to language that he thereby makes truth relative to the epistemological factors constituting theory.

In contrast to this "narrow" argument, Davidson's other more general argument turns on Quine's acceptance of the strong-global under-determination thesis. ²³⁸ It can be set out as follows. Davison argues that Quine's acceptance of strong-global under-determination commits him to accepting competing ideal theories as true from their own perspective, thereby making truth relative to the epistemological factors in that theory. Referring to Quine's strong-global under-determination thesis, Davidson writes:

Quine has at different times embraced different ways of thinking of this situation. According to one way, both theories are true. I see no reason to object to the view that empirically equivalent theories (however one characterises empirical content) are true or false together. According to Quine's other view, a speaker or thinker at a given time operates with one theory and, for him at that time, the theory he is using is true and the other theory false. If he shifts to the alternative theory, then it becomes true and the previously accepted theory false. The position may illustrate what Quine means when he says that truth is "immanent". This conception of the immanence or relativity of truth should not be confused with the pedestrian sense in

²³⁸ In 'What is Quine's View of Truth?' (*Inquiry* (1994): p. 437; <u>Philosophy of Quine</u>, Vol. 4: p. 243) Davidson does not appear to notice this conflict between what I have called the "narrow" argument, which implies that the strong-global under-determination is impossible, and what I have called the "general" argument (formulated in 'The Structure and Content of Truth', Journal of Philosophy (1990): p. 306), which presupposes the strong-global under-determination thesis.

which the truth or sentences is relative to the language in which they occur. Quine's two theories can belong to, and be stated in, the same language; indeed, they must be if we are to understand the claim that the theories conflict. It is not easy to see how the same sentence (without indexical elements), with interpretation unchanged, can be true for one person and not for another, or for a given person at one time and not at another. The difficulty seems due to the attempt to import epistemological considerations into the concept of truth. ²³⁹

Davidson points out that because he accepts strong-global under-determination, Quine is faced with the question of how to account for truth in the case of rival ideal theories that account for all possible evidence, are incompatible with one another, but are stated in the same language. Davidson notes that Quine has vacillated between two responses to this "cosmic question" one hand, Quine sometimes takes both theories as true and, on the other, he sometimes takes the theory he operates in at a given time to be true for him at that time, and the other false, and should he change to the alternative theory it becomes true and the original false. But, Davidson argues, either of these explains the sense in which truth is inimanent to theory in a way that makes truth relative to epistemic factors: either view implies that the same sentence, interpreted in the same way, can be true for one person but false for another, and similarly, true and false for the same person at different times. Davidson concludes that in relativising truth to theory in this way Quine has incorporated epistemological factors into his conception of truth. To quote Davidson again,

Many philosophers, particularly recently, have held that truth is an epistemic concept; even when they have not explicitly held this thesis, their views have often implied it. Coherence theories of truth are usually driven by an epistemic engine, as are pragmatic characterizations of truth ... Quine also, at least at times, has maintained that truth is internal to a theory of the world and so to that extent is dependent on our epistemological stance. Relativism about truth is perhaps always a

Davidson, 'The Structure and Content of Truth', p. 306 (footnote omitted)

²⁴⁰ Quine introduces the term "cosmic question" in <u>Pursuit of Truth</u>, (revised edition); p. 100

symptom of infection by the epistemological virus; this seems to be true in any case for Quine, Nelson Goodman, and Putnam.²⁴¹

Furthermore, in 'On the Very Idea of a Conceptual Scheme', Davidson maintains that strong-global under-determination results from the more general scheme-content dualism, and he argues that, as with all systems that operate with this dualism, it will lead to relativism. Thus, Davidson writes,

In giving up dependence on the concept of an uninterpreted reality, something outside all schemes and science, we do not relinquish the notion of objective truth – quite the contrary. Given the dogma of a dualism of scheme and reality, we get conceptual relativity, and truth relative to a scheme. Without the dogma, this kind of relativity goes by the board.²⁴³

Interpreted in this way, Quine makes truth relative to the epistemic factors constituting the theory we assert, not just at idealised end-of-inquiry, but also in on-going inquiry. Davidson holds that this imputes Quine of a general relativism that aligns him with Thomas Kuhn and Paul Feyerabend. Let Kuhn holds that scientists working in different conceptual schemes (or different "paradigms") are "working in different worlds", in the sense that they view the same world with incommensurable systems of concepts; similarly, Feyerabend holds that incommensurable theories, i.e., theories that are not inter-translatable, can be compared to one another by stepping outside of the theory or language from which to contrast both. For Davidson, Quine's view of truth is identical to both of these in that he makes it an epistemic concept that is relative to the particular theory held at a given time.

Davidson, 'The Structure and Content of Truth', *Journal of Philosophy* LXXXVII, No. 6, (June 1990); p. 298

p. 298
²⁴² Davidson, 'On the very Idea of a Conceptual Scheme', reprinted in Inquiries into <u>Truth and Interpretation</u>, (Oxford: Clarendon Press 1984)

Davidson, 'On the very Idea of a Conceptual Scheme', p. 198

²⁴⁴ Davidson, 'On the very Idea of a Conceptual Scheme', p. 198.

²⁴⁵ T. S. Kuhn, <u>The Structure of Scientific Revolutions</u>, (Chicago: Chicago University Press 1962) p. 134 ²⁴⁶ P. Feyerabend, "Problems of Empiricism", p. 214

What are we to make of Davidson's more general argument? If we look closely at Davidson's argument, it is clear that he does not convict Quine of the epistemic theory. For starters, it is clear that Davidson is wrong to identify epistemic theories of truth and relativist theories of truth, as he appears to in the passage quoted above. Surely a Hegelian would hold an absolute notion of truth despite also holding a coherence theory, and making truth a property of epistemology. More pertinent still, Peirce holds that truth is defined in terms of scientific method, but rejects a relativist theory of truth. Peirce defines truth as the outcome of the continuous application of scientific method, thereby making truth an epistemic property. However, central to Peirce's view is the assumption that successful scientific investigation is converging on an ideal theory. 247 Peirce holds that it makes no difference which point of view is taken, or which facts are selected for study, because whatever way we approach a question in science the results produced will be found to converge together steadily towards a single, ultimate solution; that is, Peirce believes that all scientific investigation leads us inexorably towards a single, ideal theory, and sees this convergence of scientific investigation to one and the same conclusion as the "operation of destiny" "to a fore-ordained goal". However, this is clearly an absolutist

In C. S. Peirce, Collected Papers, Peirce explains the idea of an ideal theory as follows, he writes: All followers of science are animated by a cheerful hope that the processes of investigation, if only pushed far enough, will give one certain solution to each question to which they apply it. One may investigate the velocity of light by studying the transits of Venus and the aberration of the stars; another by the oppositions of Mars and the eclipse of Jupiter's satellites; a third by the method of Fizeay; a fourth by that of Foucault; a fifth by the motions of the curves of Lissajoux; a sixth, a seventh, an eight, and a ninth, may follow the different methods of comparing the measures of statical and dynamical electricity. They may at first obtain different results, but, as each perfects his method and his process, the results are found to move steadily together towards a destined centre. So with all scientific research. Different minds may set out with the most antagonistic views, but the progress of investigation carries them by a force outside themselves to one and the same conclusion. This activity of thought by which we are carried, not where we wish, but to a fore-ordained goal, is the point of view taken, no selection of other facts for study, no natural bent of mind even, can enable a man to escape the predestined opinion. This great hope is embodied in the conception of truth and reality. The opinion which is fated to be ultimately agreed to by all who investigate is what we mean by the truth, and the object represented in this opinion is real. That is the way I would explain reality. (Vol. 5, § 407, p. 268)

not a relativist conception of truth: Peirce rejects that each person or culture has its own system of reality, which determines its own conception of truth; rather, for Peirce, truth is defined completely independent of any particular theory as the limit point of good scientific investigation. Thus, it is incorrect to identify coherence or epistemic theories of truth with relativist theory of truth.

But, more importantly, it is not clear exactly why, according to Davidson's argument, Quine is supposed to be committed to the epistemic theory of truth. It should be noted, first of all, that it is not obvious exactly which response to the "cosmic question" raised by strong-global under-determination we should take as Quine's ultimate response. However, even if Quine's considered response is to accept either that all ideal theories are true, or to switch opportunistically between idealised theories taking each as true while one holds it, it still doesn't follow that Quine has thereby made truth an epistemic property. In contrast, while either of these responses does show is that, at end-of-inquiry, Quine makes truth *relative* to theory, this does not imply that Quine is *defining truth in terms of the ideal theory*. That is, at end-of-inquiry Quine still holds a deflationary account of truth, and while it is questionable whether it is consistent for him to do this, ²⁴⁹ the key point is that the deflationary account, on its own, does not lead to an epistemological theory of truth.

²⁴⁸ Quine vacillated between a number of responses to the "cosmic question" in addition to the two responses note by Davidson above, for example, Quine also proposes and defends the so-called "sectarian" response, which holds that only one idealised theory can be asserted as true. See "Things and Their Place in Theory", in Theories and Things: p. 1-24, and 'Reply to Roger F. Gibson JR.' in <u>The Philosophy of V. W. Quine</u>, eds. L. E. Hahn & P. A. Schilpp, pp. 155-157. I argue in chapter 5 that none of the proposed responses is consistent with Quine's philosophical position as a compromise between extreme realism and extreme relativism.

²⁴⁹ In the next section I argue that he cannot hold a "robust realist" account of truth and accept that truth is relative to theory.

Thus we must separate out two issues that Davidson appears to conflate together, namely – whether, at end-of-inquiry, Quine is implicitly committed to an epistemological theory of truth, or whether, at end-of-inquiry, he makes truth relative to theory. I think that if Quine's view of end-of-inquiry is as Davidson suggests, then it is clear that Quine has made truth relative to theory; that is, Quine accepts that whatever theory or theories we accept are true from their own perspective, and brook no higher criticism. However, this on its own does not commit Quine to the epistemic theory of truth. This becomes clear if we look at Quine's response to Lars Bergström. Bergström argues that Quine's view of end-of-inquiry implies an epistemic theory of truth, namely – that a sentence is true if it is entailed by some theory that entails all possible evidence. ²⁵⁰ In reply Quine writes,

Bergström wonders whether I am an empiricist or realist in my theory of truth ... He rightly quotes me as saying that if a theory conforms to every possible observation, 'then the world cannot be said to deviate from what the theory claims', but this only requires truth to be compatible with observation, not determined by it.²⁵¹

And, Quine goes on to say that,

In my naturalism I do reckon truth as immanent, but that is another matter. It means that I view 'true' as a predicate within science; second-order, yes, like 'sentence' or 'phoneme', but not transcendent. When we find to our surprise that an accepted sentence was not true, this is on a par with finding to our surprise that light rays are not straight. I am a realist about truth in whatever sense I am a realist about light rays or straightness. ²⁵²

²⁵⁰ L. Bergström, 'Underdetermination of Physical Theory' in <u>The Cambridge Companion to Quine</u>, ed. Roger F. Gibsen JR. p. 106-107. To be precise, Bergström takes this response to imply an "empiricist" theory of truth, which he has elsewhere argued is a particular version of an epistemic theory of truth; 'Quine's Truth', *Inquiry* 37 (1994); pp. 427-453

²⁵¹ Quine, 'Reply to Bergström', *Inquiry* 37 (1994) p. 497
²⁵² Quine, 'Response to Bergström', *Inquiry* 37 (1994): 496-498; p. 497: reprinted in <u>Philosophy of Quine</u>,
Vol. 4 (New York: Garland Publishing Inc. 2001) p. 240

Quine can hold the deflationary account of truth even at end-of-inquiry because he continues to insist though truth conforms to science, science does not determine truth.

This means that even at end-of-inquiry, for Quine, empiricism is a theory of evidence not of truth. For example, in a famous essay about the scheme-content dogma, Quine writes that,

The proper role of experience or surface irritation is as a basis not for truth but for warranted belief.

If empiricism is construed as a theory of truth, then what Davidson imputes to it as a third dogma is rightly imputed and rightly renounced. Empiricism as a theory of truth thereupon goes by the board, and good riddance. As a theory of evidence, however, empiricism remains with us. 253

This clearly indicates that Quine does accept that empiricism is the basis for meaning and evidence, but is not a basis for a theory of truth. So, even if Davidson is correct about Quine's ultimate view of end-of-inquiry, he still hesn't shown that Quine defines truth in terms of empiricism, or any other epistemic concept.

It is clear, therefore, that neither argument to convict Quine of the epistemic theory of truth goes through. In contrast, we can conclude that Quine's is committed to a deflationary, so-called "robust realist" view of truth, both in on-going inquiry and in hypothetical end-of-inquiry.

2.5 Conclusion.

in conclusion, in this section I argued that Quine's so-called "robust realist" account of truth is based on his notion of acquiescence in the home language. This means that the question of the nature of truth boils down to giving an account of our use of the term

²⁵³ Quine, 'On the Very Idea of a Third Dogma', reprinted in <u>Theories and Things</u>, p 39

"true" in the home language. In this sense, Quine's so-called "robust realist" view of truth is a deflationary account, which makes a true sentence relative to language in a pedestrian or trivial sense. In addition, I have explained the arguments to the effect that Quine is implicitly committed to an epistemic theory of truth, and hence to a relative theory of truth. I argued that from the perspective of the overall Quinean project of devising a compromise between extreme realism and extreme relativism, the relative theory of truth is the archetype of "bad relativism"; that is, relativism that will undermine the compromise position and collapse it into one or other extreme. However, I showed that none of these arguments is successful in convicting Quine of the epistemic theory. It is now clear that Quine does not hold an epistemic theory of truth; rather, Quine asserts that science does not determine truth. Thus, with reference to on-going inquiry, Quine can write.

To *call* a sentence true, I said, is to include it in our science, but this is not to say that science fixes truth. It can prove wrong. We go on testing our scientific theory by prediction and experiment, and modifying it as needed, in *quest* of the truth.²⁵⁴

In contrast to epistemic theories of truth, Quine holds that our on-going theories can be wrong, and he insists that our overall science does not decide truth.²⁵⁵ Consequently, Quine feels satisfied to reply to Davidson accusation that he relativises truth to theory by saying,

Davidson begins by questioning a passage in Word and Object that seemed, to his puzzlement, to offer aid and comfort to our common foe who would relativize truth to theory.²⁵⁶

²⁵⁶ Quine, 'Response to Davidson' *Inquiry* 37 (1994), p. 498

²⁵⁴ 'Reactions' in On Quine: New Essays (eds.) Paolo Leonardi & Marco Santambrogio (Cambridge: Cambridge University Press 1995) p. 353
²⁵⁵ Quine, 'Ontology and Ideology Revisited', *Journal of Philosophy* 1983 p. 499-502

Here, Quine describes that view that truth is relative to theory as his and Davidson's "common foe".

CONCLUSION

In this chapter I have tried to cash out my earlier suggestions that Quine offers a third way between the polar opposites of Russell's extreme realism and Carnap's extreme relativism. I have attempted to solidify this notion of a compromise position between these extremes by showing that Quine incorporates a specific, very profound, relativistic dimension with the "robustly realist" attitude of taking seriously the on-going conceptual scheme we are immersed in.

I have argued that in contrast to the views put forward by a number of critics, both those who think he is too-realist and those who see him as too-relativist, that the realist and relativist dimensions that Quine explicitly espouses do not undermine one another. Rather, the relativity Quine develops in relation to reference, meaning, and ontology, form the basis for his doctrine of acquiescence in the home language and thus of "robust realism". In this sense, I called the relativism in language that Quine develops "good relativism"; rather than undermine Quine's compromise position "good relativism" allows Quine to incorporate enough relativism to rule out Russell's extreme realism, but without collapsing the compromise into extreme relativism.

In contrast to this, I argued that relativism about truth is the archetypical "bad relativism", in the sense that should Quine be convicted of holding the relative theory of truth, this would undermine his proposed compromise position. In this connection, I

noted that while Quine's so-called "robust realist" version of truth is a deflationary account of truth, a number of philosophers have argued that it implicitly commits Quine to an epistemic theory of truth, and hence a relative theory of truth. I examined two arguments in support of the criticism that Quine is implicitly committed to the epistemic theory of truth, and concluded that neither of them is successful.

This chapter concludes Part 1 of my thesis. My aim so far has been to present Quine as achieving a compromise between the polarities of Russell's extreme realism and Carnap's extreme relativism. I argued that the key point for Quine in developing this compromise is acceptance of the inevitability of working from within some conceptual scheme or other. For Quine, both Russell's extreme realism and Carnap's extreme relativism are, in their own way, predicated upon the assumption of a transcendent perspective on our on-going inquiry: for Russell, the transcendent perspective is assumed in the epistemological doctrine of acquaintance; while for Carnap, it is implicit in the role of the philosopher as standing aloof from on-going inquiry, clarifying the rules of linguistic frameworks from a framework-neutral perspective. For Quine, however, because all on-going inquiry is conducted immanent to some conceptual scheme or other, there is no possibility of accessing a transcendent perspective, neither extreme realism nor extreme relativism can possibly arise. In relation to extreme realism, Quine argues that from our perspective, immersed in on-going inquiry, we must recognise that all inquiry is under-determined in the strong-global sense, thus ruling out the possibility of Russell's extreme realist metaphysics of reality as it is in itself. While, in relation to extreme relativism, Quine argues that from our immanent perspective, we cannot distinguish sentences into internal assertions and external proposals, and hence cannot

stand aloof from on-going inquiry, but must get involved in on-going debate, and take seriously the commitments of the position we embody.

So far, I have presented Quine's philosophy in as strong a reading as I can muster, but in Part 2, I argue that even if we grant as strong a reading of Quine's position as possible, his compromise position is still untenable. To be more precise, I argue that because Quine holds that ideal conceptual schemes end-of-inquiry will be strong-globally under-determined in order to rebut Russell's extreme realism, he is thereby committed to the existence of what I call "branching points" in on-going inquiry. A "branching point" is the point of separation in on-going inquiry at which two conceptual schemes that eventually turn into ideal, strong-globally under-determined conceptual schemes at end-of-inquiry. I argue that the existence of branching points in on-going inquiry ultimately undermines Quine's proposed compromise position.

CHAPTER 4

REAL DECISIONS AND PHYSICS

INTRODUCTION

In part one, we saw that at its most elementary level Quine's compromise position turns on the distinction between theory choices that are true or false, and those that are neither true nor false. We saw that this distinction is the basis on which Quine distinguishes his position from both Russell's extreme realism, and Carnap's extreme relativism. That is, in contrast to Russell, Quine holds that at end-of-inquiry our choice of ideal conceptual scheme is neither true nor false; likewise, in contrast to Carnap, Quine holds that theory choice in on-going inquiry is always true or false. I will call the class of true or false theory choices "real" decisions, and the class of theory choices that are neither true nor false "indeterminate" decisions. In this chapter I will try to clarify the basis for Quine's distinction between real and indeterminate theory choices.

However, in discussing this distinction between real and indeterminate theory choice we must not confine ourselves to Quine's view of the distinction between ongoing inquiry and end-of-inquiry; rather, Quine also applies the real-indeterminate distinction within on-going inquiry itself. In the previous chapter, I briefly mentioned Quine's famous (or notorious) doctrine of the inscrutability of reference. This is an example of a theory choice in on-going inquiry where alternative translation manuals are neither true nor false, and the decision between competing alternatives is indeterminate. For Quine, this indeterminacy contrasts with the situation in on-going scientific inquiry, where theory choice is always real.

It is therefore clear that Quine's distinction between real and indeterminate theory choices is linked to his distinction between different versions of the under-determination thesis. In this chapter, I argue that, for Quine, a theory choice is a real decision if it is only under-determined in the normal, i.e., non-strong-global, sense; while, in contrast, any theory choice that is strong-globally under-determined is also indeterminate. As I have argued, Quine's compromise position is based on his assertion, against Russell, that theory choice at end-of-inquiry is strong-globally under-determined, coupled with his assertion, against Carnap, that theory choices in on-going inquiry are real decisions. Now, given the connection between the real-indeterminate distinction and the distinction between different versions of the under-determination thesis, we can formulate the following picture of Quine's so-called "robust realist" account of on-going inquiry: for Quine, strong-global under-determination infects only end-of-inquiry and illegitimate, i.e., non-physical science, modes of on-going inquiry, but on-going scientific inquiry is insulated from strong-global under-determination; for this reason all theory choices in ongoing scientific inquiry are real decisions, even though theory choices at end-of-inquiry and in illegitimate on-going inquiry are indeterminate. In the second part of this chapter, I set out Quine's explanation of this connection between physical science, the realindeterminate distinction and various versions of the under-determination thesis in terms of the notions of full-coverage. facts-of-the-matter and the reciprocal containment of epistemology and ontology.

This chapter is structured as follows. In the first section, I give a detailed account of Quine's distinction between real and indeterminate theory choices in on-going inquiry.

To begin, I set out what I consider to be the primary example of a theory choice in on-

going inquiry that is under-determined by the evidence but which is nonetheless a real decision, namely – the choice between alternative systems of set theory. I then contrast this real decision with examples of theory choices that Quine accepts are indeterminate, namely – the choice of translation manuals, the choice of ways of reducing numbers to sets, and the choice between ideal conceptual schemes at end-of-inquiry. It is clear that Quine accepts that both real and indeterminate theory choices are under-determined by the available evidence, and in section 2, I explain the argument, proposed by a number of philosophers, that since these two theory choices are epistemologically on a par, they should also be ontologically on a par; that is, they should either both result in real decisions or both result in indeterminate decisions, but there is no legitimate basis for claiming one produces a real decision and one an indeterminate decision. Ultimately, these critics accuse Quine of privileging theory choice in on-going physical science on the basis of a gratuitous bias towards empiricism.

Following on from this I argue that this criticism of Quine is misconceived. In contrast, if we take seriously Quine's insistence that all inquiry proceeds immanent to our on-going conceptual scheme, it becomes clear that from the perspective that Quine embodies, it simply is the case that theory choice in physical science is real, whereas in these other cases theory choice is indeterminate. I clarify this point in terms of Quine's doctrine of the reciprocal containment of epistemology and ontology, and his related idea that physics alone provides full coverage of reality.

I conclude that the distinction between real and indeterminate theory choices corresponds to the distinction between under-determination and strong-global under-determination. For Quine, when a theory choice is merely under-determined by the

available evidence our choice is still a real decision; however, if a theory choice is underdetermined in the strong-global sense, then our selection is indeterminate. Moreover, because Quine holds that all inquiry is carried out immanent to on-going physical science, physics is the final arbiter on whether a theory choice is strong-globally underdetermined or not. For this reason. Quine holds that on-going scientific inquiry is not strong-globally under-determined.

SECTION 1

REAL DECISIONS IN ON-GOING INQUIRY

1.1 Introduction.

In this section I want to explain Quine's distinction between real and indeterminate theory choices. To begin, I set out a case in on-going inquiry where theory choice is under-determined but nevertheless a real decision; here I give the example of the choice between alternative systems of set theory. In order to do this, I first explain how mathematics fits into Quine's overall philosophical position in terms of the so-called "indispensability argument". Following on from this, I show that Quine holds that although the choice between alternative versions of set theory is under-determined by the available data our choice here is a real decision. I show that, ultimately, Quine chooses Zermelo-Fraenkel set theory as the only true set theory. Following on from this I give three cases where Quine asserts that theory choice is indeterminate. First I give a brief account of Quine's well-known view that theory choice in linguistics is indeterminate. Second, I explain Quine's view of the choice of how to reduce numbers to sets within a

chosen set theory is indeterminate. Finally, I show that Quine's proper approach to strong-global under-determination at end-of-inquiry is to accept that theory choice here is indeterminate. In each of these cases Quine holds that, unlike the situation in the set theory, there is nothing for our theory choice to be true or false about.

1.2 Quine's indispensability argument.

The place of mathematics in Quine's overall philosophical position is determined by his so-called "indispensability argument". Quine's indispensability argument brings together two of his central ideas, namely – the criterion of ontological commitment, and holism. First, Quine argues that epistemological holism leads to a 'kinship' between mathematics and natural science, such that mathematical sentences are in the block of sentences that jointly imply observational categoricals. Thus, Quine writes,

The kinship I speak for is rather a kinship with the most general and systematic aspects of natural science, farthest from observation. Mathematics and logic are supported by observation only in the indirect way that those aspects of natural science are supported by observation; namely, as participating in an organized whole which, way up at its empirical edges, squares with observation. I am concerned to urge the empirical character of logical and mathematics no more than the unempirical character of theoretical physics; it is rather their kinship that I am urging, and a doctrine of gradualism.

Here Quine suggests that mathematical theories by virtue of belonging to the overall web-of-belief share in the empirical content of scientific theories, and are thus confirmed by empirical observation along with the web-of-belief as a whole. *Second*, holism means that the criterion of ontological commitment applies to mathematics. Quine's criterion of

²⁵⁹ Quine, Philosophy of Logic, p. 100

²⁵⁷ See for example, Quine, "On Multiplying Entities", in <u>Ways of Paradox</u>, pp259-264, p. 263 ²⁵⁸ Quine, 'On Austin's Method', reprinted in <u>Theories and Things</u>, p. 88

ontological commitment holds that to be assumed as an entity is to be reckoned as the value of a bound variable; in addition, the variables of quantification, 'something', 'nothing', 'everything', range over our whole ontology, whatever it may be; consequently, Quine holds that we are convicted of a particular ontological presupposition if, and only if, the alleged entity has to be reckoned among the entities over which our variables range in order to make one of our affirmed sentences true. Thus, to the extent that quantification over mathematical entities is indispensable for science, this quantification commits us to the existence of the mathematical entities in question. ²⁶⁰

However, on this view mathematics is a part of natural science only in so far as it is applied.²⁶¹ This means that it is only in so far as sentences of pure arithmetic, differential calculus, and so on, actually contribute indispensably to the mass of scientific theories that constitute our overall view of reality that they partake in the empirical content imbibed from observation categoricals underlying the overall theory of reality. So, while he is willing to stretch this to include some further extensions of inapplicable pure mathematics for the purposes of 'rounding out' our overall theory, Quine's official view is that

So much of mathematics as is wanted for use in empirical science is for me on a par with the rest of science. Transfinite ramifications are on the

²⁶⁰ Because he has rejected an absolute distinction between the analytic and the synthetic, Quine rejects the possibility of a double standard for ontological questions concerning abstract and concrete entities ("I wo Dogmas of Empiricism"., p. 45). In contrast, we believe in any object because of its place in the overall web-of-belief, and as abstract entities figure as values of variables in our overall theory of the world, they are posits on the same footing as common sense physical objects (Two Dogmas of Empiricism"., p. 44-46); it is simply intellectually dishonest to not take seriously the commitments we actually do make when we assert our scientific theories.

²⁶¹ Quine, 'Review of Charles Parsons Mathematics in Philosophy' *Journal of Philosophy* 1984 p. 788, and Quine, 'A Philosophical Self-Portrait', in <u>Dictionary of Philosophy</u>, ed. T. Mautner (Oxford: Blackwell, 1996), 465-466; On this point see Stewart Shapiro, <u>Thinking About Mathematics</u>, p. 212-220, and Penelope Maddy <u>Naturalism in Mathematics</u>, (Oxford: Clarendon 1997): p. 216

same footing insofar as they come of a simplificatory rounding out, but anything further is on a par rather with uninterpreted systems. 262

Quine will accept as true or false only those branches of mathematics that have some connection, however long-distance, between the sentences of this mathematical theory and sensory evidence. ²⁶³

However, as numerous philosophers have pointed out, the indispensability argument, by itself, cannot determine specifically what are the ultimate objects of mathematics. The point here is that indispensability for empirical science is a necessary but not a sufficient condition for ontological commitment in mathematics; the indispensability argument tells us *that* mathematical objects exist, but it does not tell us *which* mathematical objects exist. This is because there are a number of different systems

Mathematics', *Philosophical Quarterly*, (2003) p. 49-67; Mark Colyvan, <u>The Indispendsability of Mathematics</u>, (Oxford: Oxford University Press 2001); p. 142

²⁶² Quine, 'Review of Parsons' p. 788

²⁶³ It is perhaps worth pointing out at this point that a number of philosophers have rejected this criterion; depending on their own philosophical bent numerous philosophers have criticised the indispensability argument as being construed either too narrowly or too broadly for their taste. Many philosophers accept the indispensability argument in principle but argue that it does not lead to mathematical realism. For example, David Armstrong ('Naturalism and First Philosophy', in his The Nature of Mind and Other Essays p. 149) argues that while physics requires mathematics he does not consider them indispensable to our overall system because they do not have any causal effect on anything in the physical world. That is, he argues that they play an essential but not explanatory role. Likewise, Hartry Field Science without Numbers, (Princeton, NJ: Princeton University Press 1980)) argues that, despite appearances to the contrary, mathematics is not indispensable to physics and he has devoted considerable effort to reconstructing physics completely devoid of mathematics. In contrast, Penelope Maddy, (Naturalism in Mathematics,) argues that Quine's use of indispensability is not realist enough; she accepts the indispensability argument, but believes it should be applied to mathematical practice independent of scientific practice. That is, whatever objects are indispensable to mathematical practice exist. Moreover, it is not clear that Quine has been consistent about this issue. In particular in From Stimulus to Science (pg. 53) and in a late reply to Gibson Quine easts some doubt on this interpretation by stating that mathematics lacks empirical content. However, it does seem that the view that mathematics as a whole, and not just those parts that cannot be applied to physics, lacks empirical content is incompatible with Quine's fong standing commitment to holism and the rejection of Carnap's double standard of ontology. Consequently, without further explanation for how this view could be consistent with the major tenets of his philosophical position, I feel it should be set aside in favour of his long held view that mathematics shares the empirical content of science where it is applied. In any case, it is clear that accepting the indispensability argument raises a set of far more interesting problems for Quine. See Quine, 'Reply to Roger F. Gibson Jr.', in The Philosophy of W.V. Quine, ed. L. E. Hahn and P. A. Schilpp, expanded edition. (La Salle, Ill.: Open Court, 1998), p. 685. See also Daniel Isaacson, 'Quine and Logical Positivism' in The Cambridge Companion to Ouine, p 253-256.

See for example, Alan Baker, 'The Indispensability Argument and Multiple Foundations for

of entities that are sufficient to account for mathematics; the two most obvious being numbers and sets. Hence, the condition of being indispensable for best science alone cannot determine between, for example, numbers and sets. However, Quine takes it that the choice between numbers and sets is relatively straightforward: although he considers sets to be more obscure entities than numbers, for Quine, reducing numbers to set theory is scientifically efficacious because it reduces the objects we are committed to — Quine holds that we are committed to the existence of sets anyway, so if we can eliminate numbers and make do with just sets, this gives us a more efficient and streamlined theory. Thus, Quine writes,

The classes thus posited are, indeed, all the universals that mathematics needs. Numbers, as Frege showed, are definable as certain classes of classes. Relations, as noted, are likewise definable as certain classes of classes. And functions, as Peano emphasised, are relations. 265

For Quine, the choice between numbers and classes is a real decision, determined immanent to on-going inquiry, and, he believes, the best option is to keep classes and give up numbers. ²⁶⁶

The problem of course, is that simply reducing numbers to set theory is not sufficient to determine the ultimate objects of mathematics; rather, there are numerous different set theoretic systems, each of which is adequate to classical mathematics, but any of which posit sets as entities that are incompatible with the set posited in any other.²⁶⁷ For Quine, naïve set theory²⁶⁸ was the only intuitive or obvious version of set

²⁶⁶ Quine, Word and Object, p. 266

²⁶⁵ Quine, 'Reification of Universals', reprinted in From a Logical Point of View, p. 122

²⁶⁷ Examples that will not be discussed here include, intuitionist set theory, Solemon Feferman's predicative set theory, constructive set theory, to name but a few. Quine does not consider these as genuine alternatives to Cantorian set theory because they do not yet account for all of classical mathematics.

²⁶⁸ Fraenkel, Bar-Hillel, Levy, <u>Foundations of Set Theory</u>, p. 154 – 256: Naïve set theory is characterised by the following two key concepts. First, all entities within the universe of discourse are taken as having essentially the same status, hence it makes sense to say of any

theory; with the discovery of the set theoretic paradoxes, and the subsequent abandonment of naïve set theory, all subsequent versions of set theory have been postulated by convention to avoid the paradoxes, and here "intuition is bankrupt". ²⁶⁹ Thus, in <u>Word and Object</u> he writes,

Various ways are known. They have their several strengths and weaknesses, and none stands out clearly as the most satisfactory. All of them restrict, in some fashion, the universal applicability of the operator... of class abstraction. There ceases to be the old guarantee that for each open sentence there is a class whose members are just the values of the variable for which the sentence comes out true... Naturalness, for whatever it is worth, is of course lost; a multitude of mutually alternative, mutually incompatible systems of class theory arises, each with only the most bleakly pragmatic claims to attention. 270

Here Quine contrasts the arbitrary nature of set theory with the "obviousness" of logic; he holds that set theory, in its present state anyway, has been "straining at the leash of intuition" ever since the discovery of Cantor's transfinite numbers, and with the added momentum of the paradoxes of set theory the leash of intuition has "snapped". Hence, in set theory we have incompatible alternatives that are each adequate to account for mathematics. That is, set theory is under-determined by the totality of available evidence.

entity that it is a member of any other entity, indeed any entity can even be a member of itself. Thus all variables of naïve set theory are of the same kind, and expressions such as '... \in __' or '... = __' are formulas if '...' and '__' are filled in by either identical or different variables. The second important characteristic of this approach is characterised by two simple axioms. The first states that all entities that satisfy a certain condition will constitute another entity, namely a class. That is, naïve set theory contains an axiom of comprehension, which can be symbolised as " $\exists y \forall x \ [x \in y \leftrightarrow \varphi(x)]$ ", where $\varphi(x)$ is any formula containing 'x' as a free variable. The class y defined by this axiom is the class of entities fulfilling this condition. ²⁶⁸ The second axiom is the axiom of extensionality, symbolised as " $\forall x \forall y [\forall z \ (z \in x \leftrightarrow z \in y) \to x = y]$ ". This states that any two classes that have all their members in common are identical. However, as is well known, naïve set theory is inconsistent giving rise to, among others, Russell's paradox. For example, if the open sentence ' $x \notin x$ ', which is true of an object x if and only if x is not a member of itself, is taken to determine a class y, i.e., y is the class of all things that are not self-membered, then for all x we have $x \in y$ if and only if $x \notin x$. however, it follows that $y \in y$, i.e., y is a member of itself, if and only if $y \notin y$, i.e., y is not a member of itself.

Quine holds that set theory can be viewed as true by convention. 'Carnap and Logical Truth', Ways of

Paradox, p. 111-115

270 Quine Word and Object, p. 268 (footnote omitted)

Quine, "Carnap and Lógical Truth, Ways of Paradox, p. 111

Thus, because classical mathematics reduces to any system of (Cantorian) set theory one cares to choose, the indispensability argument determines that set theory is an indispensable part of empirical science, but it leaves Quine with a choice between underdetermined versions of set theory, which are logically incompatible with one another. In the next section, I show that Quine takes this choice between alternative versions of set theory as a real debate, determined immanent to our on-going conceptual scheme of science.

1.3 The choice between alternative versions of set theory.

There have been numerous different attempts to modify naïve set theory to avoid the paradoxes. Here, I will briefly look at three approaches that avoid the paradoxes in different ways. The choice between these alternatives is under-determined by the available data, as each of these systems of set theory is empirically equivalent, but is incompatible with the others. Despite this, however, Quine holds that theory choice here is a real decision.

First, in <u>Principia Mathematicia</u>²⁷² (PM), Russell and Whitehead argue that the fallacy that gives rise to the paradoxes is located in the language of naïve set theory rather than in its basic assumptions about the nature of a set. Consequently, he argues that restricting what can be said in the language of set theory can accommodate the paradoxes. To be precise, the defining characteristic of the paradoxical class y is $(\forall x)(x \in y \leftrightarrow x \notin x)$, this gives rise to the paradox by allowing the quantified variable x to

²⁷² B. Russell, A.N. Whitehead, <u>Principia Mathemtaicia</u>, (Cambridge: Cambridge University Press 1973) [originally published 1910]

take y as its value. Hence, the fallacy lies in including y in the range of quantification employed to define y itself. For Russell, such 'impredicative' definitions generate a vicious circle, so in (PM) Russell stipulates that impredicative definitions are not well formed. However, to block paradoxes it is not sufficient simply to bar expressions of the form ' $x \in x$ ', for the paradoxical class can be generated from a conjunction of two erstwhile legitimate expressions such as ' $x \in y \land y \in x$ '. In contrast, a more profound and more systematic alteration to the language of set theory is required. In order to address this problem Russell introduces his 'theory of types'. 273

An alternative approach to set theory is offered by German mathematician Ernst Zermelo,²⁷⁴ who discovered the Russell paradox independently of Russell (but did not publish it); and, in contrast to Russell, Zermelo locates the problem in the concept of a set itself. His response was to axiomatize naïve set theory in a way that prevents the paradoxes from arising. This "axiomatic" approach holds that the set theoretic paradoxes are the result of a failure of certain basic assumptions about the nature of a set, rather than

The key idea in type theory is to divide the universe into a denumerable hierarchy of levels, and to assign each variable to one and only one level. This contrasts sharply with naïve set theory where there is only one kind of variable, but doing this allows Russell to restrict what can be formulated in set theory. To be precise, to be a formula in type theory a string of symbols of the form '... \in ____' the left hand variable must be of a lower level than the right hand variable; that is, ' $x^a \in y^b$ ' is a formula in type theory if and only if a = b + 1. Similarly, a string of symbols of the form '... = ____' is a formula only if both variables are of the same level. This restricts the scheme of comprehension as follows: $\exists y^{a+1} \ \forall x^a \ [x^a \in y^{a+1} \leftrightarrow \varphi(x^a)].$

In (PM), if this scheme is not fulfilled, then the formula $(x \in y)$, or (x = y), is neither true nor false but meaningless. It follows that the formula that generates the paradox does not conform to this requirement and is thus eliminated from the language of set theory as meaningless. It follows that in type theory we are to suppose all objects in the set theoretic universe ordered into a hierarchy of 'types', in such a way that the lowest type consists of individuals or elements that are not sets, called "urelements", the next higher comprises of classes of urelements, the next higher classes of classes of urelements, and so on. In every context formulated in PM, each variable is restricted to values of one and only one type. In practice Russell adopted what he called 'typical ambiguity'. This means that he leaves unspecified the subscripts and relations between subscripts representing the types appropriate to specific variables. Contexts can remain ambiguously so long as they meet the requirement that ' \in ' hold between variables of ascending type only. Thus an expression will be deemed meaningless only if it is not possible to assign types to its variables in conformity with this requirement.

²⁷⁴ A. Fraenkel, Y. Bar-Hillel, A. Levy, <u>Foundations of Set Theory</u>, (Amsterdam: North Holland Publishing Company 1973)

the result of a failure of logic. On this view, the logic used in mathematics is sound, and the solution to the paradoxes lies in adding new axioms to set theory, thus formulating more rigorous basic assumptions about the nature of sets, and thereby avoiding the paradoxes. Zermelo devises a list of eight axioms that put restrictions on the formation of sets to allow all the desirable results of naïve set theory but which prevented the paradoxes from being derived. Of these axioms the most important axiom proscribes the existence of sets unconditionally; rather, in Zermelo's axiomatization new sets are constructed recursively in a finite number of steps from pre-existing sets. This rules out the possibility of impredicative sets, and eliminated paradoxes such as the Russeli paradox. Zermelo introduces other axioms to capture the beneficial aspects of naïve set theory. In particular, Zermelo introduced the well-ordering principle, which later was found to be equivalent to the "axiom of choice", in order to allow transfinite induction.

Finally, Quine himself developed a system of set theory New Foundations²⁷⁵ (NF), and its extension as Mathematical Logic (ML)²⁷⁶, which combines elements of both (PM) and (ZF). Certain key aspects of NF are very much in the spirit of Russell, while others follow Zermelo's approach. For example, with Russell, Quine holds that the paradoxes are best avoided by restricting the axiom-schema of comprehension: he writes

The law of comprehension

(i) $(\exists y)(x) (x \in y := Fx)$ is in general what we restrict to avoid the paradoxes.²⁷⁷

However, in the spirit of Zermelo, Quine does not hold that the universe be divided into a denumerable hierarchy of types. Thus, he writes,

²⁷⁵ Quine, 'New Foundations for Mathematical Logic', <u>From A Logical Point of View</u>, p. 80-101

Quine, Mathematical Logic (Cambridge, MA: Harvard University Press 1943)
 Quine, Set Theory and its Logic, (Cambridge, MA; Harvard University Press 1963) p. 289

Under this method we abandon the hierarchy of types, and think of the variables as unrestricted in range.²⁷⁸

And again in Mathematical Logic he says that in

'New Foundations' ... types themselves, and the cleavages and reduplications which they involve, are abandoned.²⁷⁹

(NF) can perhaps best be seen as a composite of two ideas: first, variables that are typically ambiguous in (PM) are reconstrued as truly general, i.e., as ranging over a unique comprehensive universe²⁸⁰; and, second, Quine introduces the notion of 'stratification' to restrict the axiom-schema of comprehension. Thus, in place of a hierarchy of type distinctions, Quine argues that a formula is stratified if indices can be assigned to its variables in such a way that '∈' is always flanked by variables with consecutively ascending indices. The paradoxes are avoided by stipulating that the axiom-schema of comprehension must be stratified. However, stratification is not a criterion of meaningfulness, unstratified formulas are not eliminated from the language as meaningless. Rather, Quine adapts Zermelo's insight that a meaningful open sentence may or may not determine a class, those that do and those that do not is determined by the axioms of the system²⁸¹. Thus Quine writes,

In NF there are no types, nor is it required that formulas be stratified to be meaningful. Stratification is simply an ultimate irreducible stipulation to which a formula is to conform if it is to qualify as a case of 'Fx' in the particular axiom schema [of comprehension] 282

The paradoxes are avoided because the axioms specify that the open sentence ' $x \in x$ ' does not determine a class. Thus, in (NF) it is the stratified structure of type theory, rather than

²⁷⁸ Quine "Naw Foundations" p. 92

²⁷⁹ Ouine Mathematical Logic, p. 164

²⁸⁰ Quine, Set Theory and its Logic, p. 288

²⁸¹ Quine 'The Inception of NF' <u>Selected Logical Papers</u>, (Cambridge, MA: Harvard University Press)p. 288

²⁸² Quine Set Theory and its Logic p.289

the hierarchy of classes, that is essential to set theory, and, in contrast to (PM) the variables of set theory are stratified but their values are not.²⁸³

It is clear that set theory provides a prime example of under-determination in ongoing scientific inquiry: each of these versions of set theory is sufficient to account for all of classical mathematics, but each is incompatible with the others, positing sets to be fundamentally different entities. For example, for (PM) it makes no sense to say that the set of all sets is not an element of itself, while for (NF) this sentence makes sense but is false; similarly, in (PM) the unit class and the individual are different entities, whereas in (ZF) they are identical.²⁸⁴ However, despite the choice between these alternatives being under-determined by the evidence, Quine is clear that the choice between them is a real decision. Thus, Quine writes,

In set theory we discourse about certain immaterial entities, real or erroneously alleged, viz., sets or classes. And it is in the effort to make up our minds about genuine truth and falsity of sentences about these objects that we find ourselves engaged in something very like convention in an ordinary non-metaphorical sense of the word. We find ourselves making deliberate choices and setting them forth unaccompanied by any attempt at justification other than in terms of elegance and convenience. These adoptions, called postulates, are their

²⁸³ Quine is thus able to reintroduce general variables because the role performed by the hierarchy of types in the theory of types is now performed by general but stratified variables. Consequently, by abandoning the hierarchy of types Quine avoids the problem of the reduplication of numbers. Thus he writes, ("New Foundations", From a Logical Point of View, p. 92-93)

In the new system there is just one general Boclean class algebra; the negate -x embraces everything not belonging to x; the null class Λ is unique; and so is the universal class V, to which absolutely everything belongs, including V itself. The calculus of relations reappears as a single general calculus treating of relations without restriction. Likewise the numbers resume their uniqueness, and arithmetic its general applicability as a single calculus.

By abandoning the hierarchy of types and reinterpreting variables as truly general Quine avoids the problems that plagued the theory of types. That is, in (NF) mathematical definitions are not reduplicated from type to type but are absolute. Thus, in (NF) Quine proposes a way to avoid the paradoxes, which, while remaining faithful to Russell's key insight of restricting the axiom-schema of comprehension, does not employ a hierarchy of types.

²⁸⁴ J.J.C. Smart, 'Quine's Philosophy of Science', reprinted in <u>Words and Objections</u>, (eds.) D. Davidson & J. Hintikka, p. 6

logical consequences (via elementary logic), and are true until further notice. 285

So, for Quine, even though the rivals are empirically equivalent, and our choice is unaccompanied by any attempt at justification other than in terms of convenience, usefulness, simplicity, and so on, this choice is still a real decision determined immanent to our on-going scientific inquiry. Indeed, Quine accepts that even on this basis, there is no outstanding candidate amongst these alternatives. In this context, it is interesting that despite pioneering (NF) Quine does not endorse as the right or standard set theory; rather, Quine opts for the so-called 'iterative' conception of a set, and its development in Zermelo-Fraenkel set theory. Thus in 'Reply to Hao Wang' he writes,

He [Wang] cannot deny that there are incompatible alternative systems of set theory ... The most he can do is plump for the primacy of the iterative concept, but he recognises that I have plumped for it too, in *Set Theory and Its Logic* and *Roots of Reference*. ²⁸⁶

And, in 'Reply to Joseph S. Ullian', Quine makes this point again saying,

From Set Theory and Its Logic and The Roots of Reference it is perhaps clear that I do not single-mindedly espouse ML, let alone NF. In The Roots of Reference I plumped for the theory of types on psychogenetic grounds. I speculated on the steps of analogy and extrapolation that might plausibly lead to the positing of abstract objects, and I found the theory of types to be the system of set theory that could be made intelligible along such lined. One can slip easily into Zermelo's system by successive deliberate refinements of the theory of types, as seen in Set Theory and Its Logic.²⁸⁷

For Quine, because no set theory is obvious or natural and each is better suited to different purposes – in the above passage he argues that the theory of type is more amenable on 'psychogenetic' grounds – but ultimately he argues that (ZF) is the correct set theory.

²⁸⁵ Quine, 'Carnap and Logical Truth', reprinted in Ways of Paradox, p. 117

²⁸⁶ Quine, 'Reply to Hao Wang' in <u>The Philosophy of W. V. Quine</u>, (eds.) Hahn & Schilpp p. 646 ²⁸⁷ Quine, 'Peply to Josephy S. Ullian' <u>The Philosophy of W. V. Quine</u>, (eds.) Hahn & Schilpp p. 590

Quine chooses (ZF) on pragmatic grounds: it avoids both the paradoxes and the drawbacks of type theory. In particular, Quine sees it as a weakness of (PM) to abandon first-order logic: because it is developed on the basis of a sharp division of values into types the underlying logic in (PM) is the predicate calculus of order ω, for as Abraham Fraenkel notes, the logic of type theory must "contain quantifiable variables of any finite level whatsoever" Quine's originally motivation in developing (NF) was to avoid the need to abandon first-order logic. And Quine later admits that had he realised how naturally (ZF) emerges from (PM) he may not have developed (NF) in the first place.

Zermelo's system itself was free of both drawbacks [of type theory], but in its multiplicity of axioms it seems inelegant, artificial, and ad hoc. I had not yet appreciated how naturally his system emerges from the theory of types when we render the types cumulative and describe them by means of general variables. I came to see this only in January 1954, and set it forth in 'Unification of universals in set theory' and Set Theory and Its Logic. If I had appreciated it in 1936, I might not have passed on to 'New Foundations'.²⁸⁹

So while Quine appears to accept that theory choice in set theory is under-determined by the available data, and accepting that his decision to adopt (ZF) is somewhat arbitrary, and perfunctory, Quine nevertheless insists that that theory choice in set theory is a real choice.

1.4 Indeterminate theory choices.

Turning now to consider theory choices that are indeterminate, I want to give a brief account of three different instances of indeterminate theory choices: *first*, in relation to

²⁸⁸ A. Fraenkel, Y. Bar-Hillel, A. Levy, Foundations of Set Theory. (second revised edition)., p. 191 Ouine, 'The Inception of NF' reprinted in <u>Selected Logical Papers</u>, p. 287

Quine's well known thesis that in linguistics the choice between translation manuals is indeterminate; *second*, Quine's view that the choice of how to reduce numbers to set within set theory is indeterminate; and *finally*, I explain why Quine must accept that theory choice at end-of-inquiry is indeterminate. In each of these examples theory choice is under-determined by the available evidence, however these are cases where the decision of which alternative to adopt is not a real decision, i.e., no decision here is either true or false.

Quine's best known example of indeterminate theory choices in on-going inquiry is of course his thesis of the indeterminacy of translation (IT). In the previous chapter we saw, in relation to inscrutability of reference, the general structure of the type of relativity that Quine develops in relation to language. His argument for (IT) likewise exemplifies the general structure of immanent relativism, so in this section I will simply assume this general context as outlined in the previous chapter.

Quine's argument for (IT) begins by establishing that linguistics is underdetermined by the available evidence. Quine illustrates the under-determination of all linguistics by appealing to the thought experiment of 'radical translation'. ²⁹⁰

The idea of radical translation is formulated around the plight of a linguist caught in the hypothetical situation of having to translate the language of a previously unencountered tribe. The linguist can proceed to translate the native's language only

²⁹⁰ The thought experiment of 'radical translation' has a somewhat chequered past: it has been employed by both Quine and Carnap to support opposing viewpoints. Quine introduces this idea 'The problem of Meaning in Linguistics'. Carnap replies to Quine in 'Meaning and Synonymy in Natural Languages', he argues that because translation between languages is possible in the extreme case of 'radical translation', it follows that translation is in fact determinate and meaning in fact objective. In Word and Object Quine rejects this conclusion; rather, Quine holds that analyticity is a symptom of the view that meaning is determined in the speaker's mind over and above what is implied in her disposition to verbal behaviour, i.e., the 'myth of the museum'. Going behaviourist means rejecting the analytic-synthetic distinction and its intensional corollaries synonymy, necessity, etc. The (IT) thesis holds that in absence of synonymy, analyticity, etc., it is impossible to individuate meanings.

through correlating the native's utterances to concurrent events that are conspicuous to both the native and the linguist herself, and guessing that the utterance is connected to that situation. To progress, however, she must take the initiative and volunteering sentences for the native's assent or dissent (assuming she can identify the native's gestures of assent and dissent). Quine gives the following example of how the linguist would proceed:

A rabbit scurried by, the native says 'Gavagai', and the linguist notes down the sentence 'Rabbit' (or, 'Lo, a rabbit') as tentative translation, subject to testing in further cases.²⁹¹

In this way, the linguist can equate the meaning of native sentences to the meaning of her own language. However, most of the native's utterances will not be of this type. Indeed, few will be connected to concurrent situations that the linguist can share. The only way forward from here is for the linguist is to try to identify segments of observation sentences as words that can be paired off with English expressions in a way that fits the observation sentences. These translation schemes for pairing native words off with English ones, Quine calls 'analytic hypotheses'. Essentially, an analytic hypothesis is no more than the linguist's best guess. Quine writes,

The method of analytical hypotheses is a way of catapulting oneself into the jungle language by the momentum of the home language... From the point of view of a theory of translational meaning the most notable thing about the analytical hypotheses is that they exceed anything implicit in any native's disposition to speech behavior. 292

In constructing analytical hypotheses the linguist goes beyond anything that is implicit in the evidence and projects her own theory into the native's language. Continuing in this way, the linguist builds a tentative native vocabulary, grammar structure, etc., constantly

²⁹¹ Quine Word and Object p. 27

²⁹² Quine Word and Object p. 70

testing it against the native's speech, and continues on to higher and more conjectural levels. The translation will be firmly based on the linguist's conjectures as to what the native believes, and while this was already the case in translating observation sentences it continues to a greater extent now. The linguist will favour translations that ascribe views to the native that conform to the native's observed way of life, or at least appear to the linguist to be rational. Moreover, she will not unduly complicate the native's language; rather, she assumes the natives have minds similar to other humans, and ascribes a language that is simple enough for the natives to acquire. In short, the linguist is guided at all times by empathy with the native – by imagining herself in the native's situation as best she can.

The linguist judges her translation manual on the basis of how smooth or jarred the conversation based on it is, but, Quine argues, the linguist will be unable to devise a unique translation manual; in contrast, Quine holds that two linguists working on the same project in isolation could come up with incompatible but equally good translation manuals. That is, for Quine, the linguists could devise manuals that are mutually incompatible but which are equally justified by the empirical evidence. The reason for this is that the translation manual applied to the native's language by the linguist is underdetermined by the native's verbal dispositions; numerous different translations of the native's utterances are compatible with the totality of the native's observable behaviour. Moreover, it is clear that questioning the native cannot solve this problem as asking the native questions such as 'Is this gavagai the same as that?' itself presupposes a translation of the native's language. Thus Quine writes

[W]hen in the native language we try to ask "Is this gavagai the same as that?" we could well be asking "Does this gavagai belong with that?"

Insofar, the native's assent is no objective evidence for translating "gavagai" as "rabbit" rather that "undetached rabbit part" or "rabbit stage". 293

The key point, then, is that as the native's utterances admit of systematically divergent translations, all of which are compatible with the verbal behaviour of those concerned, but there is no non-arbitrary reason for translating the native's sentences one way rather than another.

Quine concludes that unlike the choice between under-determined rivals in physical science, the linguist's choice between competing translation manuals is indeterminate: that is, there is an ontological difference between the rivals in physical science but not in linguistics. Hence, while there is parallel between physical science and linguistics in relation to epistemology, this parallel breaks down in relation to ontology; and for this reason, Quine holds that the indeterminacy is additional to under-determination. Thus, Quine writes,

Though linguistics is of course a part of the theory of nature, the indeterminacy of translation is not just inherited as a special case of the under-determination of our theory of nature. It is parallel but additional. Thus, adopt for now my fully realistic attitude towards electrons and muons and curved space-time, thus falling in with the current theory of the world despite knowing that it is in principle deterministicly under-determined. Consider, from this realistic point of view, the totality of truths of nature, known and unknown, observable and unobservable, past and future. The point about indeterminacy of translation is that it withstands even all this truth, the whole truth about nature. This is what I mean by saying that, where indeterminacy of translation applies, there is no real question of right choice; there is no fact of the matter even to within the acknowledged under-determination of a theory of nature.

²⁹³ Quine Ontological Relativity and Other Essays, p. 34

²⁹⁴ Quine, 'Reply to Chomsky' in Words and Objections, p. 303

Elsewhere, Quine explains this by stating that while the traditional theory of meaning outruns the (physical) facts of language, in science the (physical) facts outrun theory.²⁹⁵

The second example that Quine gives of an indeterminate theory choice in ongoing inquiry arises in connection to the reduction of numbers to sets within a chosen system of set theory. We are well accustomed to the fact that within (ZF) set theory it is possible to construct a multitude of different ways to reduce numbers to sets. I shall briefly explaining two (of the arbitrary many) such reductions, namely - Zermelo's reduction and von Neumann's reduction. As both of these approaches arise within (ZF) set theory; the axioms for (ZF) set theory give definitions of "1", "number", "successor", the addition and multiplication operators, etc., are sufficient conditions that must be satisfied by both approaches. Hence, both accounts identify the number 3 as a set of sets: both define a recursive progression and a successor function that follows the order of that progression. However, these restraints still allow different reductions of numbers to sets. On one hand, in Zermelo's reduction for any two numbers x and y, x is less than y if and only if x is a member of y and x is a proper subset of y. Zermelo thus defines the number 3 as " $[\emptyset, [\emptyset], [\emptyset, [\emptyset]]]$ ". For Zermelo, a set had *n* members if and only if there is a oneto-one correspondence with the number n itself; hence, the number 3 has 3 members. In contrast, on von Neumann's reduction, any two numbers x and y, x is a member of y if and only if y is the successor of x. Thus, von Neumann defines 3 as " $\{\{\{\emptyset\}\}\}$ ". For von Neumann, every number has a sole member; thus, the number 3 has one member only.

It is clear that despite operating in the same set theory and with only the unit set as the null set, these approaches define different progressions: in Zermelo's reduction the successor of a number x is the set all the members of x, while in von Neumann's the

²⁹⁵ Quine, 'Indeterminacy of Translation Again' Journal of Philosophy, p. 10

successor of x was simply the unit set of x – the set whose only member is x. Moreover, in either case the number 3 is defined as a different object: depending on which approach one is employing the number 1 will or will not be a member of the number 3; in Zermelo's 1 is a member of 3, in von Neumann's 1 is not a member of 3. However, since both of these modes of reduction satisfy the sufficient conditions for a correct account of mathematics, they can be considered "empirically equivalent". But, it is clear that these alternatives are logically incompatible; given that for Quine the number 3 is in fact a particular set a, then as these two accounts assign different sets to the number 3 they cannot both be correct, and the alternative modes of reduction are incompatible. a

To someone contemplating Quine's compromise position as presented in this thesis, it might well be assumed that, by parity of the reasoning invoked to justify his view that there is a real decision between alternative versions of set theory, Quine would also see the alternative reductions of numbers to sets within (ZF) as a real theory choice soliciting a true and false answer. But in point of fact this is not Quine's response; rather, Quine does not believe that there is a real decision pending between alternative versions of the reduction of numbers to sets; rather, Quine holds that theory choice here is indeterminate, and there is no real choice between these alternatives. ²⁹⁷ Thus, Quine writes,

We are familiar with three adequate but incompatible ways of modelling number theory in ... the theory of classes. We bandy our numbers without caring which classes we are bandying from among this wealth of alternatives. We are just content that we are operating somewhere within

²⁹⁶ This point has led some philosophers to conclude that numbers do not exist and mathematical entities are superfluous. For example, Paul Benacerraf "What Numbers Could Not Be", *Philosophical Review* 74 (1965) 47-73, has famously concluded from this argument that numbers do not exist, and moreover, that mathematical entities are superfluous. Quine's conclusion from this fact is somewhat different that Benacerraf's.

²⁹⁷ Quine, Word and Object, pp 261-262

the ontology of classes to which we have committed ourselves anyway for other purposes... [The] structuralist treatment of number... is just a way of eliminating an idle question – 'what is a number?' – and a gratuitous decision among different alternatives. ²⁹⁸

For Quine, there is no real debate about which reduction of numbers to set is true or false; rather, I take it that what Quine means in saying that our choice here is "a gratuitous decision among different alternatives" is that theory choice here is indeterminate. For, as Quine says elsewhere, it is only in assuming that there is a unique correct reduction of the numbers to set theory that gives the whole issue the air of paradox.²⁹⁹

Moreover, Quine accepts that although each mode of reduction is adequate for mathematics, each is more geared towards some further purpose that the others are not, so depending on particular circumstances, it will be more pragmatic to choose one over the others. Hence, Quine advocates that we switch versions "opportunistically to suit the job in hand". Thus Quine writes,

The situation is unlike matrimony. Frege's progression, von Neumann's, and Zermelo's are three progressions of classes, all present in our universe of values of variables (if we accept the usual theory of classes), and available for selective use as convenient. That all are adequate as explications of natural number means that natural numbers, in any distinctive sense, do not need to be reckoned into our universe in addition. Each of the three progressions or any other will do the work of natural numbers, and each happens to be geared also to further jobs to which the others are not.³⁰¹

Quine holds that here we are dealing with alternative translation manuals; the sentence "One is a member of Three", is translated into a true or false sentence depending on whether we employ von Neumann's translation manual or Zermelo's respectively. And, for Quine, it makes no sense to say that either translation manual is true or false, although

²⁹⁸ Quine, "Structure and Nature", Journal of Philosophy LXXXIX, NO. 1 (1992); pp. 5-9. p.5

²⁹⁹ Quine, Word and Object, pp. 261-263

³⁰⁰ Quine, Word and Object, pp 263 ³⁰¹ Quine, Word and Object., p. 263

he accepts that there are certain contexts in which one is more useful than the other. Thus, Quine advocates that we should flip from theory to theory, viewing each as true only while we are employing it, but without thereby having to include these different sets as distinct objects in our universe. That is, the ontological commitments of mathematics remain unaffected when we switch from one mode of reduction to another. Thus, Quine writes,

Arithmetic is, in this sense, all there is to number: there is no saying absolutely what the numbers are; there is only arithmetic. ³⁰²

For Quine, then, specifying which set is the real object 3 is not a genuine problem; while the decision between (ZF), (PM), (NF) and so on, is a real theory choice, he holds that any further choice beyond this is gratuitous. Quine holds that once the structure of set theory is saved then "let the sets fall where they may". Quine holds that the indeterminacy identified in linguistic is replicated here as there is no difference which mode of reduction of numbers to sets we choose.

Finally, it seems clear that Quine is committed to the view that at end-of-inquiry the choice between competing ideal conceptual schemes is indeterminate. However, Quine has not always (and perhaps has never) seen strong-global under-determination at end-of-inquiry in this way. Rather, over the course of his career, Quine has proposed a series of mutually incompatible approaches to theory choice at end-of-inquiry. To begin with, he vacillated between what he called the "sectarian" and the "ecumenical" response. The sectarian response asserts that our own theory is true by our lights and the other does

³⁰² Quine Ontological Relativity., p. 45.

Ouine 'Foundations of Mathematics', Ways of Paradox, p. 32

not even make sense in our terms.³⁰⁴ In contrast, the ecumenical response holds that nothing more can be required for the truth of a theory than to be supported by every observational categorical, and hence holds that each ideal conceptual scheme is true.³⁰⁵ In addition to alternating between these two responses, Quine has at different points held one of a number of variations of these two basic positions.³⁰⁶ However, ultimately, all of these variations come down to either holding just our own theory is true, or accepting incompatible theories are equally true. I think that Quine is genuinely at a loss here, and is unable to devise a response that is consistent with his naturalistic stance.³⁰⁷ However, it seems to me that all of this debate misses the real point at issue.³⁰⁸

In contrast, if we return to our picture of Quine's compromise between extreme realism and extreme relativism, it is clear that the compromise is based, in part, on the view that no account of reality we can generate is the single best account of reality; rather, in order to rebut Russell's extreme realism Quine holds that at end-of-inquiry there are numerous equally good accounts of reality tied for first place. It follows, therefore, that if Quine accepts that there is a real decision at end-of-inquiry, such that this theory choice yields a true or false outcome, his compromise collapses into Russell's extreme realism. Consequently, if Quine is to retain his compromise position he has no

³⁰⁵ See, for example, "Empirical Content" in <u>Theories and Things</u> (1st ed.); p. 29.

For example, see "Reply to Gibson", in The Philosophy of W. V. Quine, H. Hahn & P. A. Schilpp (eds.), (La Salle: Open Court 1986); p. 157.

³⁰⁶ See for example, Quine, <u>Pursuit of Truth</u>, (2nd ed.), p. 95-101.

³⁰⁷ Quine's sectarian approach appears to be consistent with his view that we must assert truth immanently, but is inconsistent with his empiricism which holds that there is nothing more to truth than being implied by the evidence; this situation is reversed with ecumenism, which is compatible with his empiricism but incompatible with his view of truth.

My view here is in contrast to commentators such as Roger F. Gibson Jr. and Lars Bergstrom, who hold that the consistent position to adopt here is the sectarian view; see for example, Gibson, Enlightened Empiricism, p. 130; and Bergstrom. "Underdetermination of Physical Theroy", in The Cambridge Companion to Quine, (ed.) Roger F. Gibson Jr. p. 106-107. Likewise, my view here is in contrast to Donald Davidson's suggested "Davidson expedient", set out by Quine Pursuit of Truth (2nd cd) p. 97-98, which again holds that theory choice here is a real decision.

option here; rather he must acknowledge that there is no real decision to be made at endof-inquiry, and hence theory choice here is indeterminate.

I think that in the last few paragraphs of <u>Pursuit of Truth</u>³⁰⁹ Quine comes closest to acknowledging this point. Thus, Quine writes,

The fantasy of irresolubly rival systems of the world is a thought experiment out beyond where linguistic usage has been crystallized by use. No wonder the cosmic question whether to call two such world systems true should summer down, bathetically, to a question of words, hence also, meanwhile, my vacillation ... There is an evident parallel between the empirical under-determination of global science and the indeterminacy of translation. In both cases the totality of possible evidence is insufficient to clinch the system uniquely. But the indeterminacy is additional to the other. If we settle upon one of the equivalent systems of the world, however arbitrarily, we still have within it the indeterminacy of translation. ³¹⁰

Here Quine appears to confirm my view that theory choice at end-of-inquiry is indeterminate. He does say that indeterminacy of translation is additional to strong-global under-determination, as it arises even within a chosen conceptual scheme, but this point is irrelevant to the status of theory choice at end-of-inquiry.³¹¹

1.6 Conclusion.

To conclude, we have already seen that Quine's view that theory choices in on-going inquiry are real decisions is the principal difference between his and Carnap's account of actual inquiry. In this section I have set out an example of Quine's view of this in relation to theory choice in set theory. I showed that, for Quine, the indispensability of

³⁰⁹ Quine, <u>Pursuit of Truth</u>, (2nd ed.);100-102 ³¹⁰ Quine, <u>Pursuit of Truth</u>, (2nd ed.);100-101

It should be noted that here Quine also speaks of alternative conceptual schemes being different ways of conceiving the same reality, which appears to imply reality as it is in itself, in the extreme realist sense. But I take it that this is an unfortunate way to state his point and not a revision of his earlier views.

mathematics means that set theory is a genuine part of on-going scientific inquiry, and consequently, he holds that choice between different systems of set theory is a real-decision even though our choice is under-determined by the available data. In contrast, we saw that there are theory choices that are both under-determined and indeterminate. I set out the notion of indeterminate theory choices in three separate cases; first, in relation to the choice between translation manuals; second, in relation to the reduction of numbers to sets; and finally in relation to end-of-inquiry. In each case, Quine holds that our choice of theory cannot be either true or false, but is indeterminate. Hence, both indeterminacy of translation and the question of how to reduce numbers to set are models of strong-global under-determination in en-going inquiry, identical to the choice between ideal conceptual schemes at end-of-inquiry. In the next section I explain the philosophical basis for this distinction.

SECTION 2

FULL-COVERAGE

2.1 Introduction.

In this section I want to explain the philosophical basis for Quine's distinction between under-determined theory choices that are nevertheless real, true or false choices, and those that degenerate into indeterminacy.

To begin, I consider a number of criticisms of Quine's distinction between underdetermination and indeterminacy, which argue that Quine has no legitimate basis for making this distinction, and that, at bottom, this distinction rests on a gratuitous assumption in the priority of physical science over linguistics. Following on from this, I show here that, from Quine's perspective, this criticism is unfounded because we are faced with the inevitability of working immanent to physical science. If we take seriously this point about working from within physical science, then the distinction between real and indeterminate theory choices is decided by physics.

Quine clarifies this idea with the notions of full coverage and facts-of-the-matter: he holds that physics is the fundamental conceptual scheme in on-going inquiry because physics alone is motivated to determine the totality of facts-of-the-matter. Quine concludes that this characteristic means that once we accept physics at all, we must accept it as the fundamental conceptual scheme. He then explains the distinction between real and indeterminate theory choices in on-going inquiry in terms of whether there is a fact-of-the-matter, as determined by physics, at issue in the theory choice: where there is a fact-of-the-matter for a theory choice to be true or false about, then this choice is a real decision; where there is no fact-of-the-matter at issue, the choice is indeterminate. For Quine, this explains the distinction between, on one hand, theory choice in linguistics and modes of reducing numbers to sets, and on the other, theory choice in physics, such as between alternative versions of set theory. However, the distinction between real decisions in on-going inquiry and the indeterminate decision between strong-global under-determined rivals at end-of-inquiry is more difficult to explain, as at end-of-inquiry each ideal conceptual scheme has its own immanent set of facts-of-the-matter that makes it true from its own perspective. The point here, for Quine, however, is that while each conceptual scheme has its own immanent facts-of-the-matter, there is no fact-of-thematter at issue between them; that is, there are no transcendent facts-of-the-matter at

issue between rival ideal conceptual schemes, hence the choice between them is indeterminate.

2.2 An argument against the real-indeterminate distinction.

One strategy often employed by critics of Quine's doctrine of the indeterminacy of translation is to stress the comparison of linguistics to physical science. A number of critics have argued that, if Quine's account is correct then there is no epistemological difference between linguistics and physical science, i.e., both are under-determined by the totality of available evidence, consequently, they argue that there is no basis for Quine to assert that theory choices in one are real decisions while in the other are indeterminate.

Noam Chomsky was perhaps the first to develop this line of attack as part of an influential criticism of Quine's account of language; Chomsky writes,

To return to the thesis of indeterminacy of translation, there can surely be no doubt that Quine's statement about analytic hypotheses is true, though the question arises why it is important. It is, to be sure, undeniable that if a system of "analytical hypotheses" goes beyond evidence then it is possible to conceive alternatives compatible with the cvidence, just as in the case of Quine's "genuine hypotheses" about stimulus meaning and truth-functional connectives. Thus the situation in the case of language, or "common sense knowledge", is, in this respect, no different from the case of physics. ³¹²

Chomsky accepts that Quine has made the uncontroversial claim that current linguistics is under-determined by the totality of available data, and is merely one of a number of varied alternatives that fit the data. But, according to Chomsky, because physical science

³¹² Noam Chomsky, 'Quine's Empirical Assumptions', <u>Words and Objections</u>, eds., D. Davidson and J. Hintikka: 53-69; p. 61

is also under-determined, just as under-determination is not a problem in current physics, likewise it is not a problem in linguistics. In addition, Chomsky notes that while Quine could make a distinction between physics and linguistics, he has rather simply presupposed this distinction on the basis of his general bias towards physical science. Thus, Chomsky writes,

It would then be necessary for him to justify the empirical assumption that the mind is natively endowed with the properties that permit 'normal induction' to 'genuine hypotheses', but not 'theory construction' with some perhaps narrowly constrained class of "analytic hypotheses". 313

Richard Rorty also taps into this line of criticism. How, Rorty asks, can Quine grant that the linguists' analytical hypotheses are 'not capricious' but yet insist that there is no fact of the matter here? Rorty holds that in linguistics, as in physics, there is no more to a 'fact of the matter' than a rational procedure for reaching agreement about what to assert, 314 hence Rorty argues that if Quine treats the unverifiability of linguists' canons for devising analytic hypotheses as indicating a lack of truth-value, then he should "do it across the board", i.e., he should accept that by this standard much of physics will also be devoid of truth-value. Thus, Rorty writes,

If my argument is sound, the dilemma facing Quine is this: he should either give up the notion of 'objective matter of fact' all along the line, or reinstate it in linguistics. On the first alternative, he can say that the notion of 'being about the world', which the positivists used to explicate both 'analytic' and 'meaningless', was as empty as these latter notions themselves, and cannot survive in their absence. On the second alternative, he can say that the linguists discovers 'substantive laws; just as the chemists do, remarking merely that these discoveries are likely to

313 Chomsky, "Quine's Empirical Assumptions" p. 61

R. Rorty, Indeterminacy of Translation and of Truth', Synthese 23 (1972): 443-62; p. 453: Reprinted in Volume 3 of Philosophy of Quine ed. D. Follesdal, (New York: Garland Publishing, Inc. 2001): 71-91; p. 81

few surprises ... either alternative would make sense ... we cannot go between the horns in the way suggested [by Quine]³¹⁵

Similarly, Stephen Stich has argued that, if he is to be consistent, Quine should acknowledge that the indeterminacy he identifies in linguistics is also found in all empirical sciences. Thus, Stich writes,

My departure from Quine comes on the score of the implications of the indeterminacy. Were Quine to grant that grammars and translation manuals share a sort of indeterminacy, he would presumably conclude that for grammars, as for translations, *modulo* the indeterminacy, there is nothing to be right about ... My dissent comes in the step that passes from recognition of arbitrariness in quasi-universals or analytical hypotheses to the claim that there is (*modulo* the indeterminacy) noting to be right about. For I think that, *pace* Quine, the same indeterminacy could be shown lurking in the foundations of every empirical science. Grammar and translation are not to be distinguished, in this quarter, from psychology or biology or physics. If we are disinclined to say that in all science, modulo the indeterminacy, there is nothing to be right about, it is because the theories we are willing to allow as correct are those whose arbitrary features have the sanction of tradition. ³¹⁶

Stich holds that the sort of indeterminacy found in linguistics does not imply that there is no fact of the matter at issue in the choice between translation manuals; for the same type of indeterminacy is found in all empirical sciences, but Quine is unwilling to accept that there is nothing to be right about in science.

P. W. Bechtel makes a similar point. He argues that if both physical science and linguistics are under-determined, then if under-determination in physics does not prevent us choosing one theories as true, under-determination in linguistics cannot stop us choosing one translation manual as true. Thus, Bechtel writes,

Why, then, should the availability of alternative translation manuals count against our taking a realistic attitude toward one translation

Rorty, Indeterminacy of Translation and of Truth', p. 87-88

Stephen Stich, 'Grammar, Psychology, and Indeterminacy', *Journal of Philosophy*, LXIX, 22 (December 1972): 799-818; p. 815

manual? As we do with the physical theories, why can we not adopt one of these theories despite the underdetermination?³¹⁷

These are just some of a number of arguments that claim there is no legitimate basis for Quine to distinguishes physics from linguistics, and conclude by impeaching Quine of distinguishing them on the basis of simply assuming the priority of physical science.

In the next section, I show that, in contrast to these critics, the distinction between real and indeterminate theory choices is not based on a gratuitous assumption, so long as one accepts and takes seriously Quine's point about the inevitability of working from within.

2.3 Working from within.

As I have repeatedly emphasised, for Quine, once the illusory transcendent perspective is abandoned, we must acknowledge the inevitability of always working from within our on-going conceptual scheme. More precisely, Quine holds that we begin from the middle of the conceptual scheme of the culture we are born into; the inherited "lore of our fathers". And, for Quine, the conceptual scheme we are currently immersed in is dominated by natural science, in particular physics; hence, all inquiry proceeds from within the worldview of physical science.

Of course, there is no necessary connection between "working from within" and "working from within physical science", as the former is simply a consequence of rejecting of the possibility of a transcendent perspective, while the latter requires actually

³¹⁷ P. W. Bechtel, 'Indeterminacy and Intentionality: Quine's Purported Elimination of Propositions', Journal of Philosophy, LXXV, (1978): 649-661; p. 654

adopting a particular conceptual scheme of physical science; clearly a different culture could accept the former but work from within a different conceptual scheme to physical science. However, Quine thinks that it simply is the case that we are currently immersed in the conceptual scheme natural science, and he uses the term "naturalism" to denote "working from within", i.e., working from within the physical sciences. Thus, for example, Quine writes,

The reconciliation lies in my naturalism. Disavowing as I do a first philosophy outside science, I can attribute reality and truth only within the terms and standards of the scientific system of the world that I now accept: only immanently. But also, within this system, I can study man at work and appreciate how his theory – mine – is underdetermined. 319

In this passage, Quine describes the reconciliation between realism and relativism as working from within physical science and taking seriously the commitments implied by accepting this conceptual scheme. But in saying this Quine is simply expounding the position he embodies; he is not trying to justify this view from a more fundamental position.

This alerts us to an important dialectic point in Quine's philosophy. Quine always presents his philosophical arguments from a position embedded in the conceptual scheme of physical science; this is simply the view of reality that he embodies, and by implication, takes it as the position that mankind in general embodies. In this context, Quine simply embodies the perspective of the scientist operating within the physical science, adjudicating all theory choices from the privileged standpoint of physics. And as there is no possibility of justifying this prioritisation of physical science from a more secure, transcendent perspective, Quine presents this perspective as a matter of fact, and assumes that working from within means working from within the physical sciences.

W.V. Quine, The Philosophy of W.V. Quine, (ed.) Hahn &. Schilpp p.316

Quine's position, therefore, is simply to acknowledge the beliefs that we do hold and take them seriously without demanding the impossible "external" justification of these beliefs.

So, while he acknowledges that physical science is just one conceptual scheme among many possible alternatives, and is an "instrument" that we have devised in our ongoing effort to systematise and control our experience, ³²⁰ he takes it that as we are working within physical science we must take this embedded perspective seriously. This provides the basis for distinguishing between real and indeterminate theory choices in both on-going inquiry and at end-of-inquiry. In the next section I show that for Quine the distinction between real and indeterminate decisions cashes out in on-going inquiry in terms of the notions of "full coverage" and "facts-of-the-matter".

2.4 Full coverage and facts of the matter.

On a number of occasions when Quine has been pressed for a justification of his prioritisation of physical science, he has responded by developing the analogy that physics aims to provide "full-coverage" of reality. Quine presents this analogy in most detail, however, in his papers 'Goodman's Ways of Worldmaking,'321 and 'Facts of the Matter.'322

Quine introduces the notion of full coverage in response to the free-for-all among theories proposed by Nelson Goodman in <u>Ways of Worldmaking</u>. 323 Goodman, like

³²⁰ Quoted by Burton Dreben 'Putnam, Quine – and the facts', Vol., 4, <u>Philosophy of Quine</u> ed. D. Follesdal footnote 76,p. 327

³²¹ Quine, "Goodman's Ways of World Making" <u>Theories and Things</u>; pp 96-100
³²² Quine, 'Facts of the Matter' <u>American Philosophy Edwards to Quine</u>, (eds.) R.W. Shahan & K. R.

Merrill (Norman, OKLA: University of Oklahoma Press 1977)

373 W.V. Quine, 'Goodman's Ways of Worldmaking', and Nelson Goodman, Ways of Worldmaking, (Hassoks: Harvester 1978)

Quine, holds that our science is simply one conceptual scheme among many, but he suggests that once we have given up on the discredited notions of absolute ontology, truth as correspondence, etc., there is no longer any basis on which to evaluate conceptual schemes as legitimate or illegitimate, better or worse, and so on, and he holds that this leads to a view that he calls 'irrealism' 1324: that is, each conceptual scheme is judged only from a perspective immanent to that conceptual scheme. Thus, we do not work within one single conceptual scheme but have a free-for-ail between numerous different conceptual schemes, switching from one to another as desired, accepting each immanent conception of rationality. As a consequence sentences true in one conceptual scheme will be false in another, and switching between theories means switching between viewing a sentence as true or false. As there is no way to determine an inter-theoretic, or objective, way to assess all conceptual schemes, if different conceptual schemes give incompatible accounts of reality we must accept that they describe different realities. For Goodman, then, it makes no sense to talk about a single, objective reality.

Quine's response to Goodman is to stipulate that there is a single fundamental conceptual scheme, namely physics, and it gives the most comprehensive metaphysical account of reality. Thus, Quine writes,

One feels that this sequence of worlds or versions founders in absurdity. I take Goodman's defence of it to be that there is no reasonable intermediate point at which to end it. I would end it after the first step: physical theory. I grant the possibility of alternative physical theories, unsusceptible to adjudication; but I see the rest of his sequence of worlds or world versions only as a rather tenuous metaphor. 325

324 Nelson Goodman, Ways of Worldmaking, p. 20

³²⁵ Quine, "Goodman's Ways of Worldmaking" p. 97-93

In principle, Quine accepts Goodman's claim that there are numerous incompatible versions of reality, but he holds that physics must be recognized as the fundamental, most complete versions possible. So, what precisely does Quine mean by this?

First, it is clear that because there is no transcendent perspective, there is no possibility of justifying physical science from some "external" more secure position. In contrast, Quine attempts to "justify" the prioritisation of physics from an immanent perspective; specifically, he argues that by simply accepting that physics is one theory amongst any number of others in our conceptual scheme, entails that physics is the fundamental theory in our conceptual scheme. Thus, Quine writes

Anyone who will say, "Physics is all well in its place" – and who will not? – is then already committed to a physicalism of at least the nonreductive, nontranslational sort stated above. Hence my special deference to physical theory as a world version, and to the physical world as the world. 326

Against Goodman, then, Quine argues that physics cannot be understood as simply one conceptual scheme or "worldversion" among a series of other "worldversions" because by simply accepting that physics is one "worldversion" one is thereby committed to accepting that physics will provide the complete account of reality. Quine claims that this is the case because, ultimately, physics can settle for no less: the motivation for pursuing physics down the centuries has been the motivation to devise a fundamental account of reality; to come up with the minimum catalogue of states that suffices to account for all reality. Quine writes,

One major motivation of physics down the centuries might be said to have been just that: to say what counts as a physical difference, a physical trait, a physical state. The question can be put more explicitly thus: what minimum catalogue of states would be sufficient to justify us

³²⁶ Quine, "Goodman's Ways of Worldmaking" p. 98

in saying that there is no change without a change in positions or states?³²⁷

For Quine, then, physics is simply identified with the fundamental theory in any conceptual scheme. That is, the most fundamental theory in our possession at any time, whatever it is, is called "physics".

So while there may be alternative versions *of* physics, there are no alternatives *to* physics: there is no getting away from the fact that physics is the fundamental conceptual scheme. To illustrate this point further, we can turn to an unpublished manuscript of Quine's quoted by Burton Dreben as follows,

My basic position early and late is empiricism, and hence prediction as touchstone. Physics enters my picture only because in my naturalism, I take the current world picture as the last word to date. If evidence mounts for telepathy or ghosts, welcome. Physics would go back to their drawing boards. Whether to call their resulting theory physics, still, on determinationist grounds, is a verbal question. 328

Here Quine asserts that physics is identified with the motivation to be fundamental rather than with any particular set of claims that may constitute current or future physics. Hence physics can change, indeed it can change in radical and revolutionary ways, but because the purpose of physics remains the same – to collate the minimum catalogue of states sufficient to explain all change – whatever the content of the fundamental conceptual scheme, it will still be physics. For Quine, then, accepting physical science in any sense means accepting that physics is the most basic conceptual scheme, and must be prioritised over all other conceptual schemes. 329

In addition, in saying that physics provides full-coverage Quine is *not* claiming that all true sentences can be translated into the laws and vocabulary of physics, or that

³²⁷ Ouine "Facts of the Matter" p. 188-189

³²⁸ Quoted by Dreben, 'Putnam, Quine – and the Facts', Vol., 4, <u>Philosophy of Quine</u> ed. D. Follesdal p. 30 Quine "Facts of the Matter," p. 187

all theories reduce to physics; rather, Quine's claim here is that there is no change in reality without some redistribution of basic physical states. Thus Quine writes that

full coverage... is the very business of physics, and only of physics ... Nothing happens in the world, not the flutter of an eyelid, not the flicker of a thought, without some redistribution of physical states.³³⁰

For example, the principle of full-coverage holds that there is no change in dispositions without a physical change, and no difference in dispositions without a physical difference. Similarly, this principle applies to the mental life. Quine writes,

If a man were twice in the same physical state, then, the physicalist holds, he would believe the same things both times, he would have the same thoughts, and he would have all the same unactualized dispositions to thought and action. Where positions and states of bodies do not matter, there is no fact of the matter.³³¹

For Quine, physics provides full-coverage without reducing all mental events or dispositions to microbiological terms, and without claiming that the mental and the microbiological have natural kinds in common. Rather, full-coverage simply means that nothing happens without some redistribution of basic states of reality, but more importantly, it is up to physics to determine what these basic states are. In this sense all of the facts of reality, or as Quine says the "facts-of-the-matter", are determined by physics. This does not mean that our ontology is exclusively corporeal; rather, as they strengthen and simplify the overall theory sets, numbers and functions are posited by physics as residents of the universe in addition to basic bodies, but as these abstract objects are unchanging the principle of full-coverage does not apply to them.

Quine is thus asserting that from within our on-gong physical conceptual scheme, despite the obvious inadequacies of current physics, he is fully confident that physics will

³³⁰ Quine "Goodman's Ways of Worldmaking" p. 98

discover all the facts of the matter, and will provide full-coverage. The fact that current physics does not explain all change, only serves to show how far physics has yet to advance.

The contrast between real and indeterminate theory choices in *on-going* inquiry should now be clear. If we take seriously Quine's assertion that we are immersed in the conceptual scheme of on-going physical science, then physics becomes the final arbiter for all theory choice in on-going inquiry. And as we saw above, this means that physics determines that there is a fact-of-the-matter for a theory choice to be true or false about, or that the theory choice is indeterminate. For Quine, the theory choice between different versions of set theory does turn on a fact-of-the-matter; hence, there is a true system of set theory and a number of false systems of set theory. And, in contrast, both the theory choice between alternative translation manuals and the choice between alternative ways of reducing numbers to sets are indeterminate because in either case there is no fact-of-the-matter to be true or false about.

2.5 Reciprocal containment and indeterminacy at end-of-inquiry.

Quine takes the notions of full coverage and fact-of-the-matter to clarify the distinction between real and indeterminate theory choices in on-going inquiry, however, the relationship between fact-of-the-matter and indeterminate theory choice becomes more complicated when we consider the case of choosing between strong-globally underdetermined ideal conceptual schemes at *end-of-inquiry*. At end-of-inquiry the choice is between rival ideal conceptual schemes that are under-determined in the strong-global

sense, and as factuality is an immanent notion, 332 each of these ideal conceptual schemes will determine its own complete set of facts-of-the-matter. So in this sense there is a factof-the-matter at issue: each conceptual scheme will be true according to its own set of facts-of-the-matter. So while the analogy that Quine draws between facts-of-the-matter and the distinction between real and indeterminate theory choices is correct within a conceptual scheme, this analogy fails for the choice between ideal conceptual schemes at end-of-inquiry.

We can best explain this indeterminacy between theory choices at end-of-inquiry in terms of Quine's commitment to reciprocal containment of epistemology and ontology, i.e., both epistemology and ontology are conducted immanent to our on-going conceptual scheme. 333 This means that epistemology, our best theory of how we know what there is, is a part of science, namely – empirical psychology. Likewise, ontology, our account of what there is, is also a part of science, namely – the ontological commitments of theories we assert as true. The reciprocal containment, then, is that epistemology contains ontology as its subject matter (empirical psychology is an account of how we know what exists), but ontology also contains epistemology in that empirical psychology is carried out immanent to on-going science. Thus, Quine writes,

The old epistemology aspired to contain, in a sense, natural science; it would construct it somehow from sense data. Epistemology in its new setting, conversely, is contained in natural science, as a chapter of psychology. But the old containment remains valid too, in its way. We are studying how the human subject of our study posits bodies and projects his physics from his data, and we appreciate that our position in the world is just like his. Our very epistemological enterprise, therefore, and the psychology wherein it is a component chapter, and the whole of

Ouine, "Things and their Place in Theories", in Theories and Things, p. 23

³³³ For example, Roger F. Gibson JR. 'Translation, Physics and Facts of the Matter', in The Philosophy of Quine, (ed.) Hahn & Schilpp; pp. 139-153 The doctrine of reciprocal containment contrasts with the traditional picture of epistemology underlying ontology, justifying it from a more secure position.

natural science wherein psychology is a component book – all this is our own construction or projection from stimulations like those we were meting our to our epistemological subject. There is thus reciprocal containment, though containment in different senses: epistemology in natural science and natural science in epistemology. 334

The reciprocal containment of epistemology and ontology means that epistemology and ontology have no reach beyond our own conceptual scheme; that is, they do not apply in any other conceptual scheme, nor do they have any bearing between conceptual schemes. Hence, although theory choice immanent to each is real, there can be no transcendent ontological facts-of-the-matter to determine between competing conceptual schemes and the choice between them is indeterminate. Neither our conceptual scheme nor an alternative is true or false from some higher perspective, above the perspective immanent to each, i.e., there is no higher sense of epistemology or ontology.

In this sense, Quine's notion of fact-of-the-matter also clarifies the reason why theory choice between ideal conceptual schemes at end-of-inquiry is indeterminate. Because, for Quine, factuality is an immanent concept, arising within our on-going conceptual scheme of physical science, it is clear that there cannot be a transcendental fact-of-the-matter, i.e., outside all conceptual schemes, to make the choice between competing conceptual schemes a real decision.³³⁵

³³⁴ Ouine. 'Epistemology Naturalized', Ontological Relativity and Other Essays, p. 83

³³⁵ I think there is adequate textual support for calling the situation at end-of-inquiry a case of "indeterminacy": for example, Quine writes in "Response to Abel" *Inquiry*, 37 (1994)

[&]quot;I am pleased with Abel's idea of reckoning the empirical underdetermination of scientific theory as indeterminacy of truth". (p. 495)

And later in "Response to Bergstrom", we find,

[&]quot;A bright idea in the adjoining paper by Abel concerns the presumed empirical underdetermination of science: he aligns it with the indeterminacy of translation and the indeterminacy of reference, and calls it the indeterminacy of truth. This again fits nicely with the immanence of truth: no higher tribunal." (p. 497-8)

2.6 Conclusion.

In conclusion, for Quine, the inevitability of working from within the physical sciences is the ultimate basis for distinguishing under-determined theory choices that are real decisions from those that are indeterminate. Because our on-going conceptual scheme is dominated by physical science, physics determines the totality of facts-of-the-matter, which in turn determines whether a choice is real or indeterminate. This means that all real decisions are made internal to physical science, while indeterminate decisions are, from the perspective of physical science, theory choices that do not turn on a fact-of-the-matter. Hence, from this immanent perspective, Quine holds that there is no fact-of-the-matter to theory choices between translation manuals, between modes of reducing numbers to sets, and the choice between ideal conceptual schemes at end-of-inquiry are all indeterminate; but there is a fact-of-the-matter to theory choices in physical science is a real decision, such as that between alternative versions of set theory.

CONCLUSION

In this thesis I have repeatedly emphasised that Quine must be understood as proposing a compromise position between the polarities of extreme realism and extreme relativism. In this chapter, I argue that this compromise position rests on the distinction between real and indeterminate theory choices. That is, Quine rebuts Russell's extreme realism by arguing that theory choice at end-of-inquiry is indeterminate, and rebuts Carnap's extreme relativism by arguing that theory choice in on-going inquiry is always a real decision.

My aim in this chapter was to show that the philosophical basis for the real-indeterminate distinction is the notion of under-determination. I argued that this point comes out clearest in connection to the distinction between real and indeterminate theory choices in on-going inquiry. I showed that the examples of the real-indeterminate distinction in on-going inquiry that Quine himself presents turn on different versions of the under-determination thesis. Quine holds that all theory choices are under-determined by the available evidence, but argues that because we are immersed in the on-going conceptual scheme of physical science, physical science determines which of these under-determined theory choices are strong-globally under-determined. Quine explains how this happens in terms of his notion of "facts-of-the-matter". Quine holds that because physical science provides the facts-of-the-matter, theory choices in physical science can be under-determined but still turn upon a fact-of-the-matter. This means that under-determined theory choices in physical science are nevertheless real decisions, whereas theory choice that do not turn on a fact-of-the-matter are, in addition to being under-determined, also indeterminate. That is, they are strong-globally under-determined.

This means that Quine assumes that though on-going scientific inquiry is under-determined, it is insulated from strong-global under-determination; he holds that strong-global under-determination arises at end-of-inquiry, but believes that this indeterminacy does not infect theory choices in on-going scientific inquiry. Where strong-global under-determination does infect on-going inquiry, it infects only those modes of inquiry that are not sufficiently physics-like to belong to genuine on-going inquiry. For Quine, in genuine science, on-going theory choice is always real, and under-determination is never strong-global under-determination.

CHAPTER 5

COMPROMISE CONFOUNDED

INTRODUCTION

So far, in this thesis I have tried to establish two points in relation to Quine's philosophy. In Part 1, I showed that Quine's philosophical program is best understood as a compromise between Russell's extreme realism and Carnap's extreme relativism. In addition, I argued that in order for Quine's compromise to work, i.e., to hold together as a coherent philosophical position, Quine must accept both a certain type of relativism and a certain type of realism; this accounts for the appeal of his philosophy – by balancing these competing tendencies he avoids the problems that plague either extreme position.

So far in Part 2, I have argued that Quine's compromise is predicated upon the distinction between real and indeterminate theory choices. I explained that, for Quine, the distinction between the real and indeterminate theory choices is linked to the distinction between theory choices that are under-determined and those that are strong-globally under-determined. I showed that Quine's compromise position is based on holding that at end-of-inquiry, our conceptual scheme is strong-globally under-determined and theory choice here is indeterminate; while, in contrast to this, on-going inquiry is merely under-determined and theory choice here is a real decision.

In the first section of this chapter I argue that this gives Quine an account of ongoing inquiry that reduplicates Carnap's distinction between questions asked internal and external to a framework. Appropriating Carnap's terminology, I argue that, for Quine, ongoing physical science is the only "framework" we take seriously, hence all theory choices in genuine on-going inquiry are choices internal to physical science; in contrast, external choices between rival "frameworks" arise only at end-of-inquiry. Quine holds that in on-going inquiry, all legitimate investigation is internal to the "framework" of physical science; hence on-going theory choice is under-determined but produces real decisions. In contrast, at end-of-inquiry, theory choice is not internal to the "framework" of physical science but is between rival "frameworks"; this choice is strong-globally under-determined, and results in an indeterminate decision. I point out that this internal-external model shows us that Quine's compromise position works only because external, strong-globally under-determined theory choices are excluded from on-going inquiry. That is, while Quine needs external, strong-globally under-determined theory choices at end-of-inquiry in order to rebut Russell's extreme realism, he also argues against Carnap that this type of theory choice infects end-of-inquiry only, as on-going inquiry is always internal to physical science and so is insulated from strong-global under-determination.

The problem for Quine, however, is that he cannot ensure that it is the case that on-going inquiry is insulated from external, strong-globally under-determined theory choices. In fact, quite the opposite: because Quine accepts that strong-global under-determination arises at end-of-inquiry he is committed to the possibility of precisely such problematic theory choices arising in on-going inquiry. To be precise, Quine's compromise position leads him to accept that there are alternatives to our familiar conceptual scheme, hence, if we assume that these alternatives evolved from a common origin, then there must have been a last point in common to the evolutionary line of both alternative conceptual schemes, i.e., a "branching point" in the line of both conceptual schemes. The problem for Quine is that, by definition, theory choice at a "branching

point" is strong-globally under-determined, and hence indeterminate. Thus, the existence of branching points in on-going inquiry threatens to reproduce the internal-external distinction into on-going scientific inquiry. In the final part of this section I conclude that the presence of just one branching point in on-going inquiry is sufficient to undermine the Quinean project of developing a compromise between extreme realism and extreme relativism.

SECTION 1

UNDER-DETERMINATION AND REAL DEBATE.

1.1 Introduction.

In this section I want to outline an interesting problem for Quine's compromise position.

First, I argue that in his account of on-going inquiry Quine has reintroduced Carnap's internal-external distinction, albeit from an immanent rather than a transcendent perspective. Quine holds that all legitimate on-going inquiry is carried out internal to physical science; hence all theory choices in legitimate on-going inquiry are real decisions. In contrast, external choices between alternative conceptual schemes arise only at end-of-inquiry where theory choice is strong-globally under-determined and consequently is indeterminate. I argue that this model shows us that the primary difference between Quine and Carnap's account of on-going inquiry is that Carnap holds, but Quine denies, that indeterminate external choices arise in legitimate on-going inquiry.

Following on from this, I introduce the idea of a "branching point" in on-going inquiry. A branching point is the last point in common on the line of evolution of proto-

complete conceptual schemes; before they separate and go on to evolve in unique ways. I argue that because Quine is committed to the existence of alternative conceptual schemes at end-of-inquiry, he is also committed to the possibility of "branching points" in ongoing inquiry. However, a branching point presents a difficulty for Quine's compromise, namely – theory choice at a branching point is, by definition, indeterminate.

I go on to argue that the existence of a branching point in on-going inquiry would present a series of problems for Quine, which ultimately, threaten the coherence of his proposed compromise position.

1.2 The real-indeterminate distinction and the internal-external distinction.

In the previous chapter I argued that the distinction between real and indeterminate theory choices corresponds to the distinction between under-determination and strong-global under-determination. That is, when a theory choice is just under-determined our choice is still a real decision, whereas, in contrast, if a theory choice is under-determined in the strong-global sense, then our decision between the rivals is indeterminate.

Moreover, in the previous chapter we saw that Quine holds that theory choice at end-of-inquiry is strong-globally under-determined and therefore indeterminate. It follows that Quine's belief that theory choice in on-going scientific inquiry is a real decision implies that strong-global under-determination does not arise in on-going scientific inquiry; that is, while he accepts that on-going scientific inquiry is under-determined he believes that it is not under-determined in the strong-global sense.

It seems to me, that this gives Quine a picture of on-going inquiry that is in certain general terms similar to Carnap's account; in particular, it shows that Quine's real-indeterminate distinction replicates Carnap's internal-external distinction, albeit from an immanent rather than a transcendent perspective. 336 Adopting Carnap's terminology for a moment, this point can be set out as follows. For Quine, the only "framework" that is taken seriously in on-going inquiry is the "framework" of physical science. That is, Quine holds that all inquiry is conducted internal to the framework of physical science. This means two things for Quine.

First, it follows that many theory choices viewed by Carnap as indeterminate. external decisions are, for Quine, internal, real decisions, Returning to Carnap for a moment, we have seen that Carnap's purpose is to avoid the controversies in traditional metaphysics, which appeared to him to be sterile and useless. For him, these controversies are characterised by the inclusive nature of the arguments employed, the vagueness of the concepts used, and the absence of mutual understanding or possible basis for agreement between opponents who talked at cross purposes.³³⁷ Carnap's proposed solution was to stand back from on-going controversies and distinguish between the different linguistic frameworks involved; thus characterising the argument into external, practical questions and internal empirically answerable questions. For Carnap, only internal questions were real theory choices; external framework choices were indeterminate.

R. Carnap, "Autobiography", in The Philosophy of Rudolf Carnap, eds. H. Hahn & P. A. Schiipp, ((La

Salle, IL: Open Court 1963); p. 44-45.

³³⁶ Whereas Carnap holds that we can stand aloof from on-going inquiry and distinguish internal, real decisions from external, pragmatic choices, by insisting that all inquiry is carried out internal to on-going physics, Quine insists on taking all theory choices seriously.

There are numerous examples of precisely where Carnap draws this distinction between real and indeterminate theory choices. In particular, for Carnap, almost all traditional philosophical disputes can be deflated to indeterminate choices between alternative linguistic frameworks. In Logical Syntax of Language 338, for example, Carnap responds to a number of philosophical disputes, taken to be real debates by the disputants, by declaring that each side is simply putting forward a proposal to construct a linguistic framework or formal calculus of a specific kind. For example, we have already seen that Carnap does not regard the theory choice between alternative accounts of the nature of protocol sentences as a real debate, and this is also his view of the dispute over alternative foundational systems in mathematics; rather, Carnap takes these alternatives as different linguistic frameworks, and holds that the choice between them is purely pragmatic and neither true nor false, i.e., indeterminate. For this reason, Carnap argued that Brouwer was right to develop an intuitionistic account of the foundations of arithmetic as an alternative to Frege-Russell logicism, but was wrong to insist that his account of the foundations of arithmetic was the correct account and that logicism was the wrong approach. In contrast, Carnap argues that since neither framework is true or false, theory choice here is an indeterminate, external choice; hence Brouwer should have been tolerant of alternative frameworks.³³⁹

He goes on to list a number of traditional philosophical disputes as deflated external disputes about the relative pragmatic merits of proposed linguistic frameworks: relations are primitive or depend on the properties of their members; a thing is a complex of sense-data or a thing is a complex of atoms; the mathematical continuum is not

Carnap, Logical Syntax of Language, pp. 300-305
 Carnap, Logical Syntax of Language, p. 47-49

composed of atomic elements but is a whole analysable into further analysable subintervals or the mathematical continuum is a series of a certain structure whose terms are
real numbers; and so on. Similarly, in "My Views on Ontological Problems" Carnap
argues that the traditional philosophical controversy between realists and idealists over
the reality of the external world, the controversy over the reality or irreality of other
minds, the reality or irreality of abstract entities, are not real disputes but are
indeterminate practical questions concerning the choices of certain language forms. For
example, the phenomenal language speaks only of sense data, raw feels, and so on, but it
can't refer to material objects or other minds. In contrast, the thing language can refer to
intersubjectively observable spatio-temporal objects or events. Thus, Carnap writes,

We now replace the ontological theses about the reality or irreality of certain entities, those which we regard as pseudo-theses, by proposals or decisions concerning the use of certain languages. Thus realism is replaced by the practical decision to use only the phenomenal language, and traditional psycho-physical dualism by the decision to use a dualistic language; and so on. 341

The essential point here is that no linguistic framework is more correct than any other; indeed, the notion of correctness or truth has no meaning here. Rather, as each is a proposal to construct a linguistic framework of a specific type, the apparently opposing philosophical positions are all equally legitimate, and the choice between them is indeterminate.

Thus, Carnap draws a sharp distinction between real and indeterminate theory choices; internal to a framework a theory choice is a real, true or false decision, but

³⁴⁰ R. Carnap, "My Views on Ontological Problems", in <u>The Philosophy of Rudolf Carnap</u>, (eds.) H. Hann & P. A. Schilpp, (La Salle: Open Court 1963); 868-874

³⁴¹ R. Carnap, "My Views on Ontological Problems", p. 870; we have already seen that Carnap views the dispute between Neurath and Schlick over the nature of protocol sentences to be an external indeterminate decision between proposed forms of language.

external to a framework it is indeterminate. It is clear that Quine holds a similar distinction between real and indeterminate theory choices, but, because Quine holds that all on-going inquiry proceeds internal to the "framework" of physical science, it follows that all on-going theory choices are an internal, real decision with a true or false outcome. Thus, Quine holds that theory choices viewed by Carnap as external, indeterminate decisions about proposed linguistic frameworks, are real decisions determined internal to on-going scientific inquiry.

For example, with regard to the supposedly external question of whether to adopt mental entities, Quine writes.

I urged earlier that we decide what things there are, or what things to treat as there being, by considerations of simplicity of the overall system and its utility in connection with experience ... we are virtually bound, as remarked earlier, to hold to an ontology of external objects; but it is moot indeed whether the positing of additional objects of a mental kind is a help or a hindrance to science. ³⁴²

For Carnap, the question of whether mental entities existed is a pseudo-theoretical ontological question that must be transformed into a discussion leading to a practical decision about the form of a language to be adopted. But, for Quine, because physical science is the only "framework" taken seriously in on-going inquiry, this issue is a real question that arises internal to on-going physical science. Thus, in contrast to Carnap, Quine writes:

The issue is merely whether, in an ideal last accounting of everything or a present practical accounting of everything we can, it is efficacious so to frame our conceptual scheme as to mark out a range of entities or units of a so-called mental kind in addition to the physical ones. My hypothesis, put forward in the spirit of a hypothesis of natural science, is that it is not efficacious.³⁴³

³⁴³ Quine, "On Mental Entities", p. 227

³⁴² Quine, "On Mental Entities", in Ways of Paradox, p. 221-227; p. 226

Similarly, in regard to the phenomenal and physical conceptual schemes, although Quine initially expressed some tolerance of both as being fundamental from different perspectives,³⁴⁴ he ultimately views the choice between these as a real decision. Thus, he writes,

Sense data, if they are to be posited at all, are fundamental in one respect; the small particles of physics are fundamental in a second respect, and common-sense bodies in a third ... But these three types of priority must not be viewed as somehow determining three competing, self-sufficient conceptual schemes. Our one serious conceptual scheme is the inclusive, evolving one of science, which we inherit and, in our several small ways, help to improve.³⁴⁵

Likewise, as we have seen, this is also Quine's view of the choices between taking numbers or sets as basic entities in mathematics. For example, Quine says,

Mathematics reduces only to set theory and not to logic proper. Such reduction still enhances clarity, but only because of the interrelations that emerge and not because the end terms of the analysis are clearer than others.³⁴⁶

Here, again, Quine believes there are good scientific arguments that determine the choice definitively in favour of one side over the other; and because we are immersed in ongoing physical science, he holds that we should take these arguments seriously, and therefore see this theory choice as a real debate with a true and false outcome.³⁴⁷

However, the fact that there are compelling scientific reasons for seeing these choices as real debates rather than as an indeterminate preference for proposed forms of language, hides that Quine's almost "knee-jerk" reaction to Carnap is to insist that all of the debates that Carnap wants to stand aloof from are genuine real debates, and that we

³⁴⁵ Quine, "Posits and Reality", in <u>Ways of Paradox</u>, p. 252

³⁴⁶ Quine, "Epistemology Naturalized" in Ontological Relativity and other Essays, p. 70

³⁴⁴ Quine 2On What There Is" From A Logical Point of View, p. 17

Apart from Quine's view of the choice between competing versions of the space-time continuum, which I examine in detail in the next chapter. I will not discuss his view of the rest of these debates apart from noting that it is clear that Quine sees all of these theory choices as real decisions.

must get our hands dirty taking sides on these controversies. This knee-jerk anti-Carnapian attitude is most evident in the example of the choice between different versions of set theory, where in contrast to the examples above, there are no compelling scientific reasons to view this as a real choice. As we know, Quine describes naïve set theory as the "natural attitude", and concludes from the existence of the antinomies that our natural attitude here must be abandoned. He writes,

The natural attitude on the question what classes exist is that any open sentence determines a class. Since this is discredited, we have to be deliberate about our axioms of class existence and explicit about our reasoning from them; intuition is not in general to be trusted here. 348

Having given up on intuition in the choice between proposals for the general foundations of set theory, Quine notes that all proposals are "unnatural" in some sense or other, and that our choice between them is an arbitrary matter of weighing up their competing strengths and weaknesses for particular purposes. Quine writes:

Each proposed scheme is unnatural, because the natural scheme is the unrestricted one that the antinomies discredit; and each has advantages, in power or simplicity or in attractive consequences in special directions, that each of its rivals lacks.³⁴⁹

But, as was explained in the previous chapter, Quine nevertheless takes this to be a real decision. So, even though there is no unequivocal or intuitive basis for taking one version of set theory as the best set theory, Quine's anti-Carnapian inclination is to assert that there is still a real decision here. Moreover, he goes on to suggest that while this choice between set theories seems to us to be unnatural and arbitrary, given enough time (Quine

³⁴⁹ Quine, "Ways of Paradox", in Ways of Paradox, p. 16

Ouine, Set Theory and its Logic, p. 5

suggests a couple of thousand years)³⁵⁰ this choice will seem natural, intuitive, and a real decision to our descendants. Thus, Quine writes,

Russell's paradox is a genuine antinomy because the principle of class existence that it compels us to give up is so fundamental. When in a future century the absurdity of that principle has become a commonplace, and some substitute principle has enjoyed long enough tenure to take on somewhat the air of common sense, perhaps we can begin to see Russell's paradox as no more than a veridical paradox, showing that there is no such class as that of non-self-members. One man's antinomy can be another man's veridical paradox, and one man's veridical paradox can be another man's platitude.³⁵¹

Quine's assumption that even though there is no basis for seeing this as a real choice rather than an indeterminate practical decision, as between reduction of numbers to sets within set theory, and that the nature of this choice as a real decision will become evident given enough time, signifies his knee-jerk anti-Carnapian insistence that all theory choices in on-going inquiry are swallowed up by physical science. He never takes seriously the possibility that Carnap is right about some choices being decisions between alternative proposals, and hence indeterminate.

In addition to this view that all theory choices in on-going inquiry arise internal to the "framework" of physical science, Quine holds that no external "framework" choices can arise in on-going scientific inquiry. As we saw, against Russell's extreme realism, Quine holds that at end-of-inquiry the choice between ideal "frameworks" is an indeterminate decision that is neither true nor false. Consequently, this choice is an external "framework" choice between rival ideal conceptual schemes. Because this decision does not arise internal to physical science, and, like Carnap, Quine holds that it is an indeterminate theory choice.

Quine, "Ways of Paradox", p. 9Quine, "Ways of Paradox", p. 12

It follows, therefore, that Quine has drawn a picture of on-going inquiry that is in certain very general terms similar to the model of internal and external statements presented by Carnap. A key difference between their views is that Quine is committed to working immanent to on-going science, and consequently, Quine distinguishes between internal and external sentences on the basis of the immanently conceived underdetermination thesis. Pulling these threads together, we can say that internal to the "framework" of physical science under-determination is not strong-global and theory choice is real; while in contrast, external to the "framework" of physical science underdetermination is strong-global and theory choice is indeterminate. This explains one fundamental difference between Quine's and Carnap's accounts of on-going inquiry: because Quine takes all of legitimate on-going inquiry to be carried out internal to the "framework" of physical science, he holds that all theory choices in on-going inquiry are real decisions.

When set out in this way, the difference between Quine and Carnap is simply that whereas Carnap holds that external theory choices infect on-going inquiry (hence theory choices in on-going inquiry can be indeterminate), Quine holds that external theory choices do not infect on-going inquiry (hence all theory choices in on-going inquiry are real). The reason Quine believes this, we have seen, is that he holds that on-going inquiry is insulated from strong-global under-determination: for Quine, strong-global under-determination infects end-of-inquiry only. If in contrast, Quine were forced to accept that there are instances of strong-global under-determination in on-going inquiry, then he would have to reintroduce the internal-external distinction into on-going inquiry itself.

And, clearly, if Quine were to accept this, then it becomes questionable whether his position is that different from Carnap's

In the next section I argue that because Quine is committed to strong-global under-determination at end-of-inquiry it follows that he is in fact committed to the possibility of strong-global under-determined rivals in on-going scientific inquiry.

1.3 Theory choice at branching points.

In this section I want to show that, in contrast to the model of on-going inquiry that he sets out, Quine is in fact committed to the possibility of strong-globally under-determined theory choices in on-going scientific inquiry. To begin this argument, let me briefly restate Quine's compromise position.

Properly understood, Quine's compromise between the polarities of extreme realism and extreme relativism is based on accepting the twin claims of strong-global under-determination and real decisions. Quine balances these competing doctrines as follows. In relation to end-of-inquiry Quine must hold that theory choice is indeterminate: were Quine to accept that a real debate is possible at end-of-inquiry, this implies accepting that there is a best overall idealised conceptual scheme, meaning that his compromise position would collapse into Russell's version of extreme realism. Thus, to rebut Russell's version of extreme realism, Quine must hold strong-global under-determination at end-of-inquiry, and accept, with Carnap's extreme relativism, that the choice between idealised conceptual schemes is indeterminate.

In relation to on-going inquiry, however, things are much different. Here, in order to rebut Carnap's version of extreme relativism Quine must hold that theory choice in ongoing inquiry is a real decision. This implies that Quine must ensure that theory choice in on-going inquiry is not strong-globally under-determined. It is quite obvious that as there are no complete, idealised conceptual schemes in on-going inquiry, strong-global under-determination in on-going inquiry does not mean that complete, idealised conceptual schemes are under-determined; rather, here the issue concerns *proto-idealised conceptual schemes*, i.e., conceptual schemes that will ultimately develop into idealised conceptual schemes at end-of-inquiry. Thus, I specify the view that there is strong-global under-determination in on-going inquiry as:

(SG*) There are proto-idealised conceptual schemes in on-going inquiry, i.e., conceptual schemes that at end-of-inquiry will become empirically equivalent and logically incompatible ideal conceptual schemes, which are strong-globally under-determined.

Were Quine to accept (SG*), then he would have to accept that theory choices here are indeterminate rather than real decisions; if the choice between alternative strong-globally under-determined proto-idealised conceptual schemes in on-going inquiry were a real decision, then Quine would have to accept that there is a real decision between strong-globally under-determined idealised conceptual scheme at end-of-inquiry, thereby collapsing his compromise position into Russell's version of extreme realism. This means that in order to rebut Carnap's version of extreme relativism in on-going inquiry in a way that does not collapse his compromise into Russell's version of extreme realism, Quine

must hold both that theory choices in on-going inquiry are real decisions, and hence reject (SG*).

But can Quine really reject (SG*)? I think the answer must be no, he cannot. In contrast, the basic principles of his compromise position commit Quine to accepting (SG*). This can be seen from the following.

Because he accepts strong-global under-determination at end-of-day inquiry, Quine accepts that there are alternatives to the conceptual scheme that we occupy; he accepts that another culture or species may have taken a radically different line of scientific development to achieve their overall conceptual scheme of the world. For Quine, there is no way to disprove this claim without adopting a transcendent perspective above all conceptual schemes.³⁵² Moreover, it is safe to assume that at least some of these alternative conceptual schemes share a common origin. That is, it is at least possible that alternative idealised conceptual schemes have evolved from a common origin, and that they differ by evolving in a unique way after that point of branching. Thus, at some point in the evolution of our conceptual scheme, either for a conscious reason or by long unplanned development along lines of least resistance, the foreigner's conceptual scheme branched-off from the line of development that leads to our familiar conceptual scheme. One might have to go back far enough into pre-science or pre-individuated stage in the evolution of our conceptual scheme to find this point of branching, but at some point in the line of development of both conceptual schemes there is a last point common to the evolution of both. Let us call this the "branching point" in the evolution of both our and the foreigner's conceptual scheme.

³⁵² Quine, "Responses", in <u>Theories and Things</u>, p. 181

Now, the key point is that, for Quine, theory choice at a branching point is not a real decision. At a branching point, it may appear that an alternative branch is just our theory going wrong, and the choice between these theories is a real choice, but in fact a branching point is an instance of (SG*); that is, a branching point is the point at which one proto-idealised conceptual scheme branches into two or more proto-idealised conceptual schemes, each of which is under-determined in the strong-global sense. And according to the basic precepts of Quine's compromise position, the choice at a branching point must be indeterminate; if, in contrast, the choice here were a real decision, Quine would have to concede that the choice between strong-globally under-determined rivals at end-of-inquiry is also a real decision, thereby collapsing his position into Russell's extreme realism. It seems clear, therefore, that the presence of branching points in ongoing inquiry threatens to collapse Quine's compromise position into Carnap's extreme relativism. To be precise, the presence of branching points in on-going inquiry reintroduces the internal-external distinction into on-going scientific inquiry; while the version of the internal-external distinction introduced here is unlike Carnap's in that it arises from a perspective immanent to on-going conceptual scheme of physical science rather than from the transcendent perspective of the philosopher aloof from all on-going inquiry, it nevertheless replicates Carnap's distinction within on-going scientific inquiry between internal, real decisions and external, indeterminate decisions.

1.4 The impact of a branching point on Quine's compromise position.

Despite his evident uncertainty about how to respond to theory choice at end-of-inquiry, I have argued that strong-global under-determination does not pose a problem for Quine, as the coherent response to it is to view theory choice here as indeterminate, and, in the sense set out above, as an external framework choice. For Quine, however, the reason he thinks strong-global under-determination does not pose a problem for his philosophical position is because he believes that this type of theory choice can arise only at end-of-inquiry, and does not infect on-going inquiry. But, once we acknowledge the significance of Quine's anti-Russell, anti-extreme realist arguments, we now see that if it is rational, immanent to our on-going conceptual scheme, to view a particular theory choice as the branching point of two proto-ideal conceptual schemes *rather* than as a real choice between two hypotheses on the same "branch", then Quine is committed to accepting (SG*).

What, then, is the impact on Quine's compromise position of accepting (SG*)? I think there are three important implications to be considered here.

First, accepting a branching point in on-going inquiry would mean that Quine's view of on-going inquiry is much closer to Carnap's than is generally thought. This becomes particularly apparent when we consider the type of revisions Quine must make to his overall naturalism in order to accommodate a branching point. Let us call the acceptance that certain theory choices in on-going inquiry are indeterminate "retrenchment". Retrenchment thus means that Quine accepts it is rational to hold in specific cases that theory choice is indeterminate, but still holds that the majority of disputes that Carnap viewed as indeterminate framework decisions are in fact real

³⁵³ See for example, Quine, <u>Pursuit of Truth</u> 2nd cd p. 100-101

disputes internal to on-going science. That is, Quine can continue to view the dispute between Neurath and Schlick over protocol sentences, between physicalism and phenomenalism, between different versions of set theory, and so on, as real debates that are either true or false; in case such as these Quine can still insist that Carnap has dogmatically impeded genuine progress in on-going inquiry by viewing these as indeterminate decisions. Retrenchment means conceding only that Carnap got it right in some specific cases, where it is rational to view theory choice as an indeterminate branching point, but not that he got it right in all cases.

The challenge, however, is that retrenchment calls for a considerable revision of some of the central tenets of naturalism. To begin with, retrenchment would force the following two important changes upon naturalism. First, retrenchment necessitates revising the criterion of ontological commitment, and the notion that whatever is the value of a bound variable exists. Second, adopting retrenchment necessitates revising holism: rather a part of mathematics is now separated from physical science such that it is no longer be the case that "the unit of empirical significance is the whole of science".

Taking the first of these, Quine's criterion of ontological commitment simply reaffirms the normal usage of the term 'there are'. Thus Quine writes,

To insist on the correctness of the criterion is this application is, indeed, merely to say that no distinction is being drawn between the 'there are' of 'there are universals,' 'there are unicorns,' 'there are hippopotami', and the 'there are' of ' $(\exists x)$ ', 'there are entities x such that'. To contest the criterion, as applied to the familiar quantificational form of discourse, is simply to say either that the familiar quantificational notation is being re-used in some new sense (in which we need not concern ourselves) or else that the familiar 'there are' of 'there are

355 Quine "Two Dogmas of Empiricism" p. 42

³⁵⁴ For example, Quine "On What There Is", From a Logical Point of View, p. 12

universals' et al. is being re-used in some new sense (in which case again we need not concern ourselves). 356

The criterion holds that we are committed to whatever we take as values of bound variables, and it does not make exceptions for particular parts of discourse; it holds that there is no distinction between the "there are" of "there are numbers" and "there are students". However, admitting that there are branching points would raise the possibility of being ontologically committed to incompatible entities; if the branches are logically incompatible it is likely that they presuppose the existence of incompatible entities.

But, it seems clear that distinguishing one part of the conceptual scheme as not ontologically committing would be inconsistent, as it would imply drawing a distinction between the "there are" used in one branch and the "there are" used in another.

Instead, retrenchment can be accommodated by giving up on the notion of ontology altogether. Moreover, Quine has on a number of occasions expressed his openness to the possibility that the ontology and existence may have had their day as scientific notions. As was explained in chapter 2, Quine points out that by translating ordinary language into an idiom that dispenses with quantification, such as Schönfinkel's combinatorial logic, removes the notions of reference and ontology. In such a language the theories we assert as true imply no ontological commitments at all. Thus, he writes,

When the dust has settled, we may find that the very notion of existence, the old one, has had its day. A kindred notion may then stand forth that seemed sufficiently akin to warrant application of the same word; such is the way of terminology. Whether to say at that point that we have gained new insight into existence, or that we have outgrown the notion and reapplied the term, is a question of terminology as well.³⁵⁷

³⁵⁷ Quine, Pursuit of Truth, 2nd ed. p. 36

³⁵⁶ Quine, 'Reification of Universals', From a Logical Point of View., p. 105

For Quine, it may turn out that the notions of reference and ontology have outlived their usefulness, in which case these concepts can be abandoned. So, rather than distinguishing invidiously between our use of "there are" in different branches, retrenchment is consistent with naturalism so long as the notion of existence is abandoned across the board. Indeed, one could then view the discovery of a branching point as simply pointing out that ontology has had its day. Thus, changing the criterion of ontological commitment will not unduly damage naturalism, and will still mean it is a compromise position between the polarities of extreme realism and extreme relativism.

In addition, as it implies that Quine must distinguish the branches from one another, retrenchment will also mean giving up on one form of holism, namely – the extreme form of holism expounded by Quine in "Two Dogmas of Empiricism". Early in his career, Quine espouses a strong or extreme form of holism, which asserted that the system of science as a whole is the basic unit of meaning, and that it is only as a complete corporate body that statements about the world face the tribunal of experience. Over time, however, Quine makes significant revisions to this thesis, and ultimately he holds a much more moderate version of holism than that of "Two Dogmas of Empiricism". From Word and Object onwards Quine holds that part of the overall system rather than the entire system forms the basic unit of meaning. Quine writes,

Science is neither discontinuous not monolithic. It is variously jointed, and loose in the joints in varying degrees... Little is gained by saying that the unit is in principle the whole of science, however defensible this claim may be in a legalistic way. 359

And in 'Five Milestones of Empiricism' he qualifies this view further, writing

³⁵⁸ Quine, 'Two Dogmas of Empiricism', <u>From a Logical Point of View</u>, p. 41 Ouine, 'On Empirically Equivalent Systems of the World', p. 314-315

It is an uninteresting legalism, however, to think of our scientific system of the world as involved *en bloc* in every prediction. More modest chunks suffice, and so may be ascribed their independent empirical meaning, nearly enough, since some vagueness in meaning must be allowed for in any event. 360

Moderate holism accepts that our conceptual scheme is considerably disjointed, and interlocks only to the extent that all aspects of it share a common logic and some common part of mathematics.³⁶¹ Thus, the subject matter of different chunks of our conceptual scheme are not connected in the significant way that Quine's extreme holism first suggested; rather, Quine's moderate holism is consistent with the distinction between the different branches that retrenchment implies.

It is clear, then, that both the revisions of ontology and holism required by retrenchment can be accommodated by naturalism. However, these revisions mean that, like Carnap, Quine rejects that anything we say is ontologically committing, and, like Carnap, Quine adopts the moderate holist view that modest chunks of theory have individual empirical meaning. Furthermore, as we saw in chapter 3, Quine's so-called "robust realism" is simply the acquiescence in a realistic language; Quine holds that we take at face value our use of language to speak about and refer to reality independent of us. However, it is clear that Carnap also favours the "thing language" which describes intersubjectively observable, spatially and temporally located things and events over alternatives such as the "phenomenal language", which takes sense data as primitive terms, or the "physical language", whose primitive terms designate fundamental particles and magnitudes. ³⁶² Moreover, Carnap also considers this preference for the "thing

³⁶⁰ Quine, "Five Milestones of Empiricism", in Theories and Things., p. 71

³⁶¹ Quine, "Five Milestones of Empiricism" p. 71

³⁶² R. Carnap, "My Views on Cntological Problems", p. 869-9

language" to make him a "realist" in the only meaningful sense of the term. ³⁶³ For example, Carnap writes,

[Schlick] and Reichenbach, like Russell, Einstein and many of the leading scientists, believes that realism was the indispensable basis of science. I maintained that what was needed for science was merely the acceptance of a realistic language, but that the thesis of the reality of the external world was an empty addition to the system of science. 364

So it is clear that once he accepts a branching point in on-going inquiry, the correlations between Quine and Carnap run very deep indeed: both Quine and Carnap reject ontology, both hold moderate holistic views of meaning and verification, and both hold that realism is simply a matter of taking seriously the common sense language typically used to speak about intersubjectively observable physical objects.

Clearly, Quinc's acceptance of revisability means he is open to revising or retaining any statement or law in as he sees fit, so while in principle there is no problem with amending his naturalism, but the worry for him is that, so conceived, the difference between Quine's position and Carnap's is merely one of degree, and not a difference in kind as Quine thinks it is. To be precise, the principle difference between their views, it now seems, lies in where they draw the line between real and indeterminate theory choices in on-going inquiry: Carnap wants to deflate the majority, if not all, traditional philosophical disputes into external questions of a practical nature about a proposed framework; whereas, Quine holds that most of these traditional philosophical questions are internal real questions that can be answered by empirical science, in contrast, it is only in certain extreme circumstances that we must recognise an on-going theory choice as an indeterminate branching point. However, this question of where and how to draw

364 R. Carnap, "Autobiography", p. 46

³⁶³ R. Carnap, "My Views on Ontological Problems", p. 870

the line between real and indeterminate theory choices in on-going inquiry leads us to the *second*, deeper implication of accepting a branching point in on-going inquiry, namely – it forces us to re-evaluate the nature of the dispute between Carnap and Quine.

Having recognised the possibility of branching points arising in on-going inquiry, the onus would then be on Quine to show whether a particular dispute is or is not a branching point. The central question becomes how Quine can draw this line between real and indeterminate theory choices without reintroducing a distinction between purely theoretical and purely pragmatic sentences, or between change in theory and change in belief.

Quine's argument against Carnap's analytic-synthetic distinction had been precisely the denial of the distinction between the empirical and the pragmatic; rather, Quine's holism means that the acceptance or rejection of any decision involves pragmatic factors to some degree, while, at the same time, the acceptance of every decision amounts to a judgment on its truth. But this point turns on the assumption that there is no separate quarter from which genuine judgment is excluded, i.e., all theory choices in on-going inquiry are real decisions. However, the presence of a branching point would mean that this view must be revised. Because theory choice at a branching point is by definition indeterminate, accepting a branching point in on-going inquiry means accepting certain sentences on a pragmatic decision (neither true nor false) as opposed to a theoretical decision (true or false); that is, branching points appear to isolate the pragmatic from the theoretical in on-going inquiry. It follows that Quine needs to tell us how to distinguish between internal, real decisions from external, indeterminate decisions, and hence a change in meaning from a change in belief, and the pragmatic from the theoretical in on-

going inquiry. I do not wish to suggest that Quine could not provide such an account of this distinction, perhaps in terms of a gradualist view of the change from more pragmatic to more theoretical rather than the sharp distinction assumed by Carnap, but the point is that since both Quine and Carnap need to make this distinction, this distinction cannot be the point at issue between them.

Therefore, when Quine's anti-Russell, anti-extreme realist arguments are fully appreciated, it is clear that the logical core of the disagreement between Quine and Carnap cannot be about the pragmatic-theoretical distinction, as has been generally thought.

This leads us to the *third*, and most profound, implication for Quine of accepting a branching point in on-going inquiry. Given that their views of on-going inquiry turn out to be quite similar, and given that the dispute between them does not centre on the internal-external, or pragmatic-theoretical distinctions, the deeper issue concerns the true nature of the difference between Quine and Carnap. It turns out that the dispute between them is over the nature of philosophy, and whether it has a role distinct from science.

The key point here is that Quine now shares with Carnap the task of avoiding useless, purely verbal disputes over questions that are not empirically answerable (as he himself appears to have gotten caught up in when discussing strong-global underdetermination at end-of-inquiry). And, like Carnap, in order to ensure that purely verbal disputes are avoided, Quine will also have to distinguish between the (proto-idealised) conceptual scheme presupposed by one "branch" of on-going scientific inquiry, from the application of that "branch" of inquiry itself. But, whereas Carnap had assumed philosophy allowed him to stand back from a wholehearted immersion in on-going

scientific inquiry in order to show that certain disputes that looked like a real debate concerning empirically answerable questions were in fact based on questions that concerned the pragmatic nature of different frameworks, now it seems that Ouine wants to do the same sort of thing from an immanent perspective. For Quine, it is in thinking within our on-going conceptual scheme, i.e., thinking about the processes of the physical world, that we come to appreciate that there is a genuine distinction in on-going inquiry between theory choices that are real and those that are indeterminate. It is from an immanent perspective that we come to appreciate the internal-external distinction in ongoing inquiry, not transcendentally as Carnap had tried to establish. Hence, Quine's position here would still be naturalism in the fundamental sense that there still is no special mode of philosophical knowledge that is distinct from physical science. Unlike Carnap, that is, Quine rejects that there is a special mode of philosophical knowledge that is superior to and grounds empirical knowledge, or that philosophy offers a methodology distinct from empirical science. In contrast to this, Quine wants to hold that this distinguishing between internal and external sentences is not the special preserve of the philosopher, but is a part of on-going scientific inquiry, carried out by working scientists.

The heart of the debate now becomes one concerning the nature of philosophy;

Carnap holds that we must employ philosophy to clarify the nature of internal and external debates, but Quine rules out the possibility of such a distinct role for philosophy; however, because Quine also needs to distinguish between internal and external theory choices the onus is now on him to show how this can be done from a perspective immersed in on-going scientific inquiry.

This is the question of how Quine draws the line between theory choices in ongoing inquiry that are real decisions, such as that between protocol sentences, versions of set theory, mental entities, and those that are indeterminate. While it seems that even to recognise a branching point as a branching point suggests that the scientist has taken a step back from a wholehearted immersion in on-going scientific enterprise, for Quine this cannot be the case. The deep problem raised by branching points in on-going inquiry, therefore, is to explain how we distinguish within on-going scientific inquiry between real and indeterminate theory choices at a branching point, without appealing to a distinct philosophical methodology. Quine must replace Carnap's notion of philosophy with some alternative that plays the same role, but what could this be?

CONCLUSION

In conclusion, I have argued in this chapter that Quine's compromise position between the polarities of extreme realism and extreme relativism is based on an internal-external distinction similar to Carnap's; but, in contrast to Carnap, Quine holds that all of ongoing inquiry is carried out internal to physical science, and the only external theory choices are confined to end-of-inquiry, or aspects of inquiry that do not belong to physical science. Quine achieves this balance between internal and external theory choices by holding both strong-global under-determination at end-of-inquiry and that all theory choice in on-going scientific inquiry are real decisions; Quine holds that on-going scientific inquiry is insulated from the strong-global under-determination that infects end-of-inquiry.

The problem for Quine, however, is that his acceptance of strong-global underdetermination at end-of-inquiry commits him to the possibility of branching points in ongoing scientific inquiry. The prospect of branching points in on-going inquiry puts this model in jeopardy, because, for Quine, it is constitutive of a branching point that theory choice here is indeterminate. Hence, the presence of a branching point incorporates strong-global under-determination into on-going scientific inquiry. This threatens to reintroduce the internal-external distinction to on-going scientific inquiry.

Following on from this, I examined the implications for Quine of accepting a branching point in on-going inquiry. I argued that this phenomenon would generate three important implications for Quine.

First, I argued that should he accept a branching point and hence a reintroduction of the internal-external distinction in on-going inquiry, Quine's overall account of on-going inquiry would begin to look very similar to Carnap's. My point here is that in order to accommodate a branching point, a move I called "retrenchment", Quine would have to sacrifice both the criterion of ontological commitment and extreme holism. However, even when coupled with the fact that Quine's so-called "robust realism" is similar to Carnap's acceptance of the "thing language", in themselves these revisions to Quine's position are not particularly significant. What is important, however, is that these revisions show us that the difference between Quine and Carnap lies in where they draw the line between internal, real decisions and external, indeterminate decisions. This means that the locus of the disagreement between Carnap and Quine cannot be a dispute about the epistemological distinction between pragmatic and theoretical sentences.

Rather, if Quine accepts a branching point he must acknowledge that there are sentences

in on-going scientific inquiry that are accepted even though they are not true or false, i.e., they are not theoretical. This suggests that Quine himself needs to reintroduce some form of a distinction between purely pragmatic and purely theoretic sentences. Finally, I argued that a branching point shows is that when Quine's anti-Russell, anti-extreme realist arguments are fully appreciated, it becomes clear that the core of the disagreement between Carnap and Quine is a dispute over whether philosophy has a distinct methodology and yields distinct knowledge.

However, while Carnap employs philosophy to clarify the distinction between internal and external theory choices, in rejecting the possibility of this role for philosophy, it is Quine who owes us a coherent alternative account of how this can occur immanent to on-going scientific inquiry.

CHAPTER 6

A BRANCHING POINT IN THE CONTINUUM

INTRODUCTION

I have argued previously that Quine is committed to the possibility of branching points in on-going inquiry, and that no response, consistent with his compromise position, is available to Quine at a branching point. It should be quite clear from this, at least in outline, that my strategy in this chapter is to try to identify an example that can reasonably be taken as a genuine branching point in on-going inquiry. In this connection, I now turn to mathematics.

We are now quite accustomed to the view that the set theoretic account provides the true account of the space and time continuum, in that it has proved the most useful and is the proper one to employ. To some one of a naturalistic cast of mind contemporary developments of the analysis and its corresponding implications for the nature of the continuum over the last four centuries, it might well be assumed that this is to be a paradigm example of a real debate immanent to on-going science, where set theory and the discrete account of the continuum were conclusive victors. However, when we look more closely at the history of mathematics, or when we actually do analysis, things seem more complicated than this model suggests.

I begin by drawing a distinction between the continuous version of the continuum, which views the continuum as inherently connected in the sense of containing "no gaps", and the discrete version of the continuum, which views the continuum as composed of a series of separate, indivisible points. After briefly relating some well-known facts about

the ancient and modern history of these concepts, I shall make the case for seeing the distinction between the continuous and the discrete versions of the continuum as a genuine branching point in mathematics. I argue this by comparing Cantor's set theoretic representation of the discrete continuum with the continuous continuum of smooth infinitesimal analysis. I conclude that the adequacy of both Cantorian and smooth infinitesimal analysis for all empirical applications entails that there is no obvious answer to the question of whether the real line continuum is discrete or continuous; rather, Quine cannot reasonably rule out the possibility of the continuous and the discrete versions of the continuum constituting a genuine branching point in mathematics.

SECTION 1

THE CONTINUOUS VERSES THE DISCRETE

1.1 Introduction.

The distinction between the continuous and the discrete is well known. The word "continuous" comes from the Latin root meaning "to hang together" or "to cohere"; to be continuous, then, is to be an uninterrupted whole, an entity that contains no gaps – like the water in a swimming pool. In contrast, the word "discrete" comes from the Latin root meaning "to separate"; to be discrete, then, is to be a body of separated individual entities – like the tiles on the floor of a swimming pool. The continuous-discrete distinction, therefore, is a distinction between unity and plurality.

This distinction between the continuous and the discrete is reflected in the mathematical concepts that are traditionally associated with each. Typically, the

continuous is embodied mathematically as the geometric figure, most especially the straight line. In contrast, the discrete is encapsulated in the idea of a whole number; for example, in set theory a whole number is viewed as a collection of separate discrete objects, stripped of their individual nature, whose only characteristic is that they are distinct from one another. Traditionally, the realm of the continuous is associated with intuition and the realm of the discrete with reason. The realm of the continuous is ultimately based on the notions of space, time and extension that are central to our experience of the empirical world. Hence, the continuous is based on intuition, whereas, in contrast, the discrete is a paradigm of reason in which all difference is represented through plurality of indistinguishable units. The question of the reduction of the continuous to the discrete, of intuition to reason, has been a, more-or-less constant, source of controversy throughout the history of western mathematics.

In the next section I will give a brief historical account of this controversy.

1.2 A brief historical account.

In ancient times, Zeno was among the first to point out the difficulties that attend this question of whether or not the continuous is reducible to the discrete. Although the continuous is an undivided whole, it is usually characterised as being in principle indefinitely divisible. This means that each of the parts a continuum is divided into, however small, is also continuous: the process of dividing will never terminate in an indivisible point – a part that itself has no parts and cannot be further divided. The objection to this view was that this process of unlimited division would reduce a

extension, they could not be reassembled to form the original magnitude, as even an infinite sum of un-extended segments will surely lack extension. This leads Zeno to argue that if there are infinite segments after division, then in crossing a finite magnitude, such as a race track, one has crossed an infinite number of segments in a finite time, which he thought absurd. Difficulties such as this one, lead the atomists to deny that a continuum is capable of indefinite division; rather, they holds that it reduces to a series of discrete parts that are incapable of further division. As is well known, Zeno met this proposal with another type of paradox: Zeno argues that if a continuous entity, such as the motion of an arrow, is composed of a series of discrete, indivisible points, then at any point throughout its motion the arrow must be at rest, for in order to move at any point the arrow must move from one part of that point to another, which again he thought absurd, as the point contains no parts.

Closely allied with the distinction between the continuous and the discrete, is the notion of an infinitesimal. An infinitesimal magnitude can loosely be described as the ultimate part of a continuous continuum, corresponding to the discrete points or "indivisibles" that make up a discrete continuum. However, as in the continuous version of the continuum no part of the continuum is indivisible, infinitesimal magnitudes are divisible, and hence, of necessity, cannot be points. An infinitesimal number, therefore, is a number that is smaller than any finite number, but does not coincide with zero.

Infinitesimals have enjoyed a long and troubled history, having been repeatedly banished from one era of mathematics, only to repeatedly reappear in a later era. In ancient Greek mathematics, infinitesimals were banished by Eudoxus in 350 B.C.,

through what has become known as the Eudoxean or Archimedean axiom, which states: for x > y > 0, there is some positive natural number n such that y multiplied by n exceeds x. the adoption of the Archimedean axiom by official Euclidean mathematics rules out the possibility of infinitesimals. However, infinitesimals reappeared in the sixteenth and seventeenth centuries in the work of Kepler, Galileo's student Cavalieri, Newton's teacher Barrow, the Bernoulli tamily, among others. Most importantly, of course, both Newton and Leibniz incorporated them as central elements in the development of their separate versions of the calculus. Newton initially incorporated infinitesimals as "evanescent quantities", but was later to abandon them; however, Leibniz introduced infinitesimals as differentials and they remained central to the development of his version of the calculus. Thus, in the Marquis de l'Hôpital's first textbook on the calculus explicitly invokes infinitesimals as follows:

First requirement or supposition. On requires that one may substitute for one another two quantities which differ only by an infinitely small quantity: or (which is the same) that a quantity which is increased or decreased only by a quantity which is infinitely smaller that itself may be considered to have remained the same...

Second requirement or supposition. One requires that a curve may be regarded as the totality of an infinity of straight segments, each infinitely small: or (which is the same) as a polygon with an infinite number of sides which determine by the angle at which they meet, the curvature of the curve.³⁶⁵

Despite their impressive practical success it was clear that infinitesimals could not withstand logical scrutiny. Consequently, they were famously derided over three

³⁶⁵G. F. A. De l'Hopital, <u>Analyse des Infiniment Petites pour l'Intelligence des Linges Courbes</u>, Paris, (1st ed. 1696) 2nd ed. 1715. Quoted and translated by Abraham Robinson, 'The Metaphysics of the Calculus', <u>Selected Papers</u>, <u>Volume 2: Non-Standard Analysis and Philosophy</u>, p. 541

centuries as the "ghosts of departed quantities," the "cholera-bacilli" infecting mathematics 367, and as "unnecessary, erroneous, and self-contradictory" 368.

According to contemporary mathematical orthodoxy, a satisfactory and final resolution to these useful but logically problematic entities was achieved in the nineteenth century, when they were supplanted as the foundation for analysis by the rigorous form of the limit concept. Weierstrass is usually credited with developing the limit concept so as to eradicate all reference to infinitesimal quantities. And following his introduction of the ε , δ approach, all talk of derivatives as infinitesimals differences or quantities is not taken at face value, but rather as a "façon d'parler" Dedekind and Cantor apparently sealed the fate of infinitesimals with the arithmetization of the continuum, by constructed techniques for constructing an arithmetic or numerical continuum as an instrument for representing the geometric continuum. Philip Ehrlich sums up this development as follows,

The newly constructed ordered field of real numbers was dubbed the *arithmetic continuum* because it was held that this number system is completely adequate for the analytic representation of all types of continuous phenomena. In accordance with this view, the *geometric linear continuum* was assumed to be isomorphic with the arithmetic continuum, the axioms of geometry being so selected to insure this would be the case. In honour of Cantor and Dedekind, who first proposed the thesis, the presumed correspondence between the two structures has come to be called *the Cantor-Dedekind axiom*.³⁷⁰

³⁶⁶ G. Berkeley. De Motu; and <u>The Analyst: a Modern Edition with Introduction and Commentary</u>, (ed.) Douglas M. Josseph (Dordrecht: London: Kliwer Academic 1992)

³⁶⁷ G. Cantor, Letter to Vivanti, quoted by J. W. Dauben, <u>Georg Cantor: His Mathematics and Philosophy of the Infinite</u>, p. 131

Russell. Principles of Mathematics, p. 345

³⁶⁹ Abraham Robinson, "The Metaphysics of the Calculus", p. 546

Ehrlich, P., <u>Real Numbers, Generalizations of the Reals, and Theories of Continua</u>, edited by P. Ehrlich, (Kluwer Academic Publishers, Dordrecht, 1994,) p. viii.

Given the Archimedean nature of the real number system, once the Cantor-Dedekind axiom is adopted infinitesimals become redundant in the analysis of the real line continuum.

It thus appears that the long contest between the continuous and the discrete has been settled by this arithmeticization of the continuum, and the implied reduction of continuous magnitudes to a series of discrete points. And in this sense, it might seem to the naturalistic minded philosopher that the long and vigorous contest between the continuous and the discrete is a paradigm example of a real debate in mathematics, resulting in a right and a wrong theory choice. Thus, Quine writes,

Though the idea of infinitesimals was absurd, the differential calculus, in which infinitesimals were reckoned as values of the variables, gave true and valuable results. The conflict was resolved by Weierstrass, who showed by his theory of limits how sentences of the differential calculus could be systematically reconstrued so as to draw only on proper numbers as values of the variables, without impairing the utility of the calculus.³⁷¹

For Quine, the debate has been decisively settled in favour of the discrete over the continuous; he holds that this is a real decision and he takes a stand arguing that the set theoretic approach is the only viable account of the real line continuum that accounts for both classical and modern analysis. It is interesting that where Quine considers the possibility of non-Cantorian set theories as an alternative basis for mathematics, he always assumes that the choice here is a real decision with a true and false outcome. Thus, for example, Quine writes,

More sweeping economies have been envisioned by Herman Weyl, Paul Lorenzen, Erritt Bishop, and currently Hao Wang and Solomon Feferman, who would establish that all the mathematical needs of science can be supplied on the meagre basis of what has come to be known as predicative set theory. Such gains are of a piece with the

³⁷¹ Quine, Word and Object, p. 248

simplifications and economies that are hailed as progress within natural science itself.³⁷²

I read Quine here as arguing that *were* Feferman's predicative set theory³⁷³ sufficient to account for modern analysis, then the fact that it operates from a more economical basis than Cantorian set theory, this would be reason enough to choose Feferman over Cantor. However, the key point is that Quine assumes that the choice here is a real choice; he never considers the possibility that this case is similar to the reduction of numbers to sets within a particular set theory. Perhaps Quine's attitude here is due to the century-long entrenchment of Cantorian set theory as the orthodox foundational scheme.

However, it is no longer the case that set theory provides the only viable account of the continuum. Through out the late nineteenth and twentieth century, a number of mathematicians have resisted the imperialism of the discrete, and the dominance of set theory as the proper foundation for analysis. These dissenting voices have attempted to achieve the same technical results without reducing the continuous to the discrete. Many mathematicians working away from the mainstream have continued to work in non-Archimedean geometry and algebra; here we can think of such figures as Thomae, du Bois-Reymond, Stolz, Veronses, Vivanti, Hilbert, Hahn, to name but a few. Their various attempts to resist the set theoretic orthodoxy enjoyed varying degrees of success, but I think it is fair to say that in the mid- to late-twentieth century, a number of mathematicians have succeeded in developing genuine alternatives to Cantorian set-theory as the basis for the analysis. Of these I want to concentrate on Bell's "smooth

³⁷² Quine, <u>Pursuit of Truth</u> 2nd ed p. 95 (footnote omitted)

³⁷³ See Sciomon Feferman, In the Light of Logic, (Oxford: Oxford University Press 1998)

³⁷⁴ Philip Ehrlich, "General Introduction", Real Numbers, Generalizations of the Reals, and Theories of Continua, (Dordrecht: Kluwer Academic Publishers 1994) I do not mean to suggest here that all mathematicians who resisted the set theoretic reduction of the continuous to the discrete also accept infinitesimals, as clearly Brouwer, Wevl and Peirce, hold that the continuous is irreducible but do not accept infinitesimals.

infinitesimal analysis" in particular, as it provides not only an alternative to the Cantorian set theoretic foundation of the analysis, but, more importantly, it proposes a completely rigorous continuous version of the continuum. I argue that it thereby reopens the issue of whether the choice between the continuous and the discrete is a real decision or a branching point in on-going inquiry. That is, I argue against the assumption that this choice is a real debate that has been settled in favour of set theory, the contest between the continuous and the discrete has proved so intractable because it is a genuine branching point in mathematics.

In order to address in more detail this question of whether the contest between the continuous and the discrete is a real debate or a branching point, in the next section I briefly set out the mathematical structure of Cantor's set theoretic account of analysis, and the reduction of any continuous magnitude to a series of discrete points that it entails.

1.3 The set theoretic reduction of the continuous to the discrete.

The set theoretic reduction of the continuous to the discrete holds that the arithmetical continuum is adequate to represent the geometric continuum, and that the analysis can be based exclusively on numbers, completely independent of measurable magnitude and intuitions of space and time. The key idea here is that a straight line is no longer to be regarded as made up of infinitesimal lengths, each of which possesses all the qualities of a finite length, but is to be understood as made up of separate, discrete points. Moreover, each of these points on the straight line corresponds to a real number, and every theorem of analysis can be interpreted as a relation between numbers alone. This approach to

characterising the continuum requires an arithmetical account of the real numbers, i.e., both rational and irrational numbers. However, from the Greeks onwards there has been a problem in giving an arithmetical account for the irrational numbers because, unlike the rational numbers, irrational numbers cannot be identified with a decimal that either terminates or has a period expansion, but must be calculated in terms of complex infinite series. Cantor, however, succeeded in constructing a rigorous numerical identity of an irrational number as the limit point of an infinite series of rational numbers.

The key to Cantor's approach is to characterise the spatial continuum in terms of a series of transfinite numbers. He argues that an infinite series of numbers is adequate to represent the spatial continuum if it possesses two fundamental properties, namely – if the series is both 'compact' and 'perfect'. Traditionally, the notion of the continuum was characterised by the notion of unlimited divisibility, i.e., between any two points it is always possible to find another one. And, for Cantor, a series is "dense" that this property of unlimited divisibility. However, as the series of rational numbers is compact but is not continuous, it is clear that compactness is a necessary but not a sufficient condition for continuity. The second feature – that of being perfect – is a technical notion that is more difficult to explain. Essentially it turns on the notion of the limits of convergent sequences of numbers or points. Cantor defines a series as perfect if (a) all the numbers or points in the series are limit points of some convergent sequence of numbers or points, and (b) all the limit points of convergent sequences of numbers or points

³⁷⁶ The original mathematical term for this was "compact".

Numbers, Generalizations of the Reals, and Theories of Continua, (ed.) Philip Ehrlich (Dordrecht: Kluwer Academic Publishers (1994)); pp. 3-29, p. 15

belonging to the series of numbers or points do themselves also belong to the series.³⁷⁷ It is clear that the series of rational numbers is not "perfect" in this sense for, while every rational number is the limit point of a convergent sequence of rational numbers, since there are sequences of rational numbers that have irrational numbers as their limit points, there are sequences of rational numbers whose limit points does not belong to the series of rational numbers. In contrast, the series of real numbers is both compact and perfect. Taken together, this means that the series of real numbers is "connected"; that is, it cannot be divided into two nonempty subsets neither of which contains the limit point of the other.

Given the Cantor-Dedekind axiom, the series of real numbers is adequate to represent spatial continuity. E. W. Hobson explains this problem as follows;

The true ground of the difficulties of the older analysis as regards the existence of limits, and in relation to the application to measurable quantity, lies in its inadequate conception of the domain of number, in accordance with which the only numbers really defined were rational numbers. This inadequacy has now been removed by means of a purely arithmetical definition of the irrational numbers, by means of which the continuum of real numbers has been set up as the domain of the independent variable in ordinary analysis.³⁷⁸

In a reversal of the historical order the arithmetical continuum is taken to clarify the geometrical continuum and exploring it deepens our knowledge of the nature of space and time. This shifts the mathematical theory of continuity from geometric intuition of motion to the numerical notion of a series. To be precise, continuity is now defined as a series that is both dense and perfect. For any such series, because it is dense there will be an infinite number of terms between any of its two terms, which means that there is no next point or next instant of time for the body to pass through; and because it is perfect,

³⁷⁷ See Russell, Principles of Mathematics., p. 299-291

³⁷⁸ E. W. Hobson, "On the Infinite and the Infinitesimal in Mathematical Analysis" p. 13

there will be "enough" points on the line. Thus, continuous motion does not imply that a body occupies one point at one time and a consecutive point in the consecutive time. Rather, the continuous motion of a body is explained as that body occupying one position at a certain instant and another position at another instance, the distance between these two positions is always finite, but no matter how close the two points and two instances are there is an infinite number of points and instances that are still nearer together; consequently, the body never moves from one point to the next point, but continuously passes through an infinite number of intermediary positions. The movement across this series is continuous because as there are no "next" points, the body never jumps from one position to another.

In order to characterise the arithmetical continuum Cantor introduced set theory.

One central concept here is Cantor's idea of determining when two sets are equinumerous, or of the same size; Cantor argues that if the elements of two sets can be placed in a one-one relation with one another, such that every element in one set corresponds to one and only one element in the other, and vice versa, then these sets are said to be the same size. However, Cantor's characterisation of the arithmetical continuum requires him to deal in actual infinite sets. And as Cantor holds that there is no difference in principle between finite and infinite sets – he takes a set to be any collection that forms a whole of definite, well-differentiated objects – he holds that the relation of one-one correspondence will also determine whether infinite sets are

Russell, Our Knowledge of the External World, (1914) Lecture v, pp. 129-152

This follows from the fact that Cantor's theory is constructed specifically to prove the existence of limits in question; rather than inferring from within the domain of operation the existence of a number that remains undefined within that domain, as Dedekind had done, Cantor's strategy is to introduce the idea of one series being wholly contained in another larger series.

equivalent. This leads to a series of surprising results: for instance, an infinite set can legitimately be equivalent to a proper part of itself; as is the case with the set of all natural numbers and the set of even natural numbers. More surprisingly, however, Cantor shows that there are infinite sets that are not equivalent with one another; rather, some infinite sets are bigger than others. To be precise, Cantor shows that while the set of rational numbers is equivalent to the set of natural numbers, and is thus what he terms "enumerable", the set of real numbers is not equivalent to the natural numbers, and hence is "not enumerable"; in fact, Cantor shows that the set of real numbers is a larger infinite set than the set of natural numbers. 381 The importance of this result is twofold. First, as the proof that the set of real numbers is larger than the set of natural numbers can be repeated to show that there are infinite sets that are larger than the set of real numbers, it shows that there is an infinite hierarchy of infinite sets. The smallest infinite cardinal number is the cardinality of any enumerable set such as the rational numbers. Cantor calls this cardinal number "aleph0" (in symbols κ_0). The cardinality of the set of real numbers is greater than \aleph_0 , in fact it is 2^{\aleph_0} . This leads Cantor to the second important idea here, namely – it leads him to postulate that 2^{80} is equal to \aleph_1 ; that is, he postulates that the cardinal number of the set of real numbers is the next cardinal number after the cardinal number of any enumerable set. Cantor thus postulates that for each point on the straight line there corresponds one and only one number on the arithmetical continuum.³⁸²

According to this account the real number system is sufficient for representing all forms of continuous phenomena. Hence, for Cantor, any continuous magnitude is reduced to a collection of separate, discrete points, and infinitesimal magnitudes are superfluous

Michael Hallett, <u>Cantorian Set Theory and the Limitation of Size</u>, (Oxford:Clarendon 1984) Chapter 1-2
 Joseph Warren Dauben, <u>Georg Cantor: His Mathematics and Philosophy of the Infinite</u>, (Cambridge, MA: Harvard University Press 1979); A. W. Moore, <u>The infinite</u>, (London: Routledge 1990)

to any analysis of the real line continuum. But moreover, because Cantor holds that the real numbers obey the Archimedean axiom, he rejects infinitesimal numbers as being inherently inconsistent. Thus, Cantor writes,

The fact of [the existence of] actually-infinitely large numbers is not a reason for the existence of actually-infinitely small quantities; on the contrary, the impossibility of the latter can be proved precisely by means of the former.³⁸³

For Cantor, all continuous lengths are composed of an infinite number of points, and any two terminated lengths have a finite ratio to on another; consequently, there is no such thing as an infinitesimal length: such lengths are redundant in any analysis of the continuum; indeed, for Cantor, their supposition leads to contradictions.

While it is certainly the case that Cantorian set theory has been the mathematical orthodoxy for the past century, it is also clear that since its inception there has been a widespread, if not mathematical mainstream, ambivalence to its implied reduction of the continuous to the discrete. However, so long as this ambivalence was not backed up with a logically rigorous version of the continuum that does not reduce the continuous to the discrete, it appeared that the naturalist was correct to see the contest between the continuous and the discrete as a real debate in mathematics, which had a right and a wrong answer. In the next section, I shall argue that John Lane Bell's "smooth infinitesimal analysis" provides just such an account to justify this ambivalence to Cantor. Employing modern category-theoretic constructions, Bell introduces a rigorous account of infinitesimals, thereby proposes that the continuum has an inherently different mathematical structure than that of Cantor's set theoretic, arithmeticization of the

²⁸³ G. Cantor, Mitteilungen zur Lehre von Transfiniten, 1887-1888, gesammelte Abhandlungen ed. E Zermelo, Berlin 1932, pp. 378-439 (Quoted and translated by A. Robinson, 'The Metaphysics of the Calculus, <u>Selected Papers Volume</u> 2, p. 548)

continuum; essentially, smooth infinitesimal analysis views the continuum as inherently continuous, in the sense that he does not reduce the continuum to a series of discrete points. I shall argue that the fact that smooth infinitesimal analysis is equally successful in accounting for all of contemporary analysis goes towards building a case for the reasonableness of viewing the continuous continuum and the discrete continuum as a genuine branching point in mathematics.

1.4 Smooth infinitesimal analysis and the continuous continuum.

We have seen that once the continuum was put on a set theoretic footing, infinitesimals were banished from mathematical analysis. Though this remained the situation in "mainstream mathematics" for many years, there continued a "minority tradition" of work in non-Archimedean geometry and algebra that attempted to restore infinitesimals to mathematical respectability. A number of mathematicians succeeded in refounding the concept of infinitesimal on a solid basis. Of particular importance, in the 1960s Abraham Robinson achieved a model-theoretic construction of infinitesimals and a theory of "non-standard analysis," which realised Leibniz's conception of infinitesimal as ideal numbers possessing the same properties as ordinary real numbers. However, from our point of view, the most interesting breakthrough came in the 1970s when Bell established that category theory provides a basis for developing rigorous version of the old infinitesimal analysis. Thus, Bell writes,

The startling new developments in the mathematical discipline of category theory have led to the creation of *smooth infinitesimal analysis*, a rigorous axiomatic theory of nilsquare and nonpunctiform

³⁸⁴ Abraham Robinson, Non-Standard Analysis,

infinitesimals...[and that] within smooth infinitesimal analysis the basic calculus and differential geometry can be developed along traditional 'infinitesimal' lines — with full rigour — using straightforward calculations with infinitesimals in place of the limit concept. ³⁸⁵

Bell's insight is of particular significance because, unlike non-standard analysis which is an extensions of classical set theory and therefore is compatible with the reduction of the continuous to the discrete, smooth infinitesimal analysis restores a version of the continuum in which the continuous is an autonomous notion, not explicable in terms of the discrete. Smooth infinitesimal analysis is made possible by new developments in category theory, and I will begin my account of Bell's approach by briefly explaining category theory.

Broadly speaking, category theory is a branch of mathematics focused on investigating "morphological variation," or change of form. It does this by providing a rigorous framework for dealing with mathematical structures and their mutual relations. It is generally accepted that Eilenberg and Mac Lane invented category theory in 1945 in a paper entitled "General Theory of Natural Equivalences" ³⁸⁶ However, this paper was primarily concerned with homological algebra, and the significance of the concept of category introduced here was not immediately evident. Indeed, Eilenberg and Mac Lane themselves believed that categories were auxiliary concepts, wholly dispensable from mathematics, whose only value was as a heuristic device, or convenient language, in which to study already accepted mathematical concepts, such as sets. ³⁸⁷ However, category theory quickly transcended its origins once its remarkable generality was fully appreciated.

³⁸⁵ John L. Bel!, <u>A Primer of Infinitesimal Analysis</u>, (Cambridge: Cambridge University Press 1998) p. 4

Eilenberg and Mac Lane, 'General Theory of Natural Equivalences' 1945
 Eilenberg and Mac Lane, 'General Theory of Natural Equivalences' 1945, p. 247

Category theory can be understood as extending the generality of abstract algebra, in much the same way as abstract algebra is an extension of the generality of elementary algebra. Elementary algebra achieves a level of generality by replacing constants, such as numbers, with variables, while insisting that the operations on these variables remain fixed; abstract algebra goes beyond this by allowing the operations themselves to vary, but it keeps fixed the form of the containing mathematical structure, such as groups or rings; in category theory, in contrast, even the mathematical structure itself is variable, thereby producing an important new understanding of mathematical form that raises the level of generality of the description of the structures in question.³⁸⁸ Thus, in category theory. what is important is not what the elements of mathematical systems in question are made of, but the shared structural features of these systems. This is because in category theory mathematical structures are not characterised in terms of their similarity to other structures, but in terms of the similarity of their relations among themselves; for example, instead of characterising A as 'like' B, in category theory one characterises the way A's relate to each other as being 'like' the way B's relate to each other, that is, in terms of the shared structural features of the constitutive systems without having to characterise the objects generating these features.

The basic constituents of a category are mathematical structures, such as sets, groups, or topological spaces, which are called "objects", and functions or transformations between these structures, called "maps" between these objects. ³⁸⁹ Taking

This explanation comes from Bell 'Lectures on the Foundations of Mathematics', p. 24, URL = http://publish.uwo.ca/~jbell/

Bell, "Category Theory and the Foundations of Mathematics", *British Journal of the Philosophy of Science*, vol.32 1981; p. 350

these constituents in turn, it is clear that category theory is strikingly different than set theory.

First, in category theory the relevant properties of a mathematical object are the properties that can be specified in terms of their abstract structure, not those stated in terms of the elements that the objects are made of. For example, if the objects of a category are sets, these will exhibit set theoretic relations such as membership, inclusion, and so on, that are central to how these objects are constructed, however, in category theory these relations are imperceptible and irrelevant; rather, in category theory mathematical objects are seen as instances of a certain form, and maps as transformations between these instances that preserve this form.

Second, in category theory, each map is associated with a specific pair of objects called its "domain" and "codomain"; a map goes from its domain to its codomain, or is defined on its domain and takes values in its codomain; this is written as $f: A \to B$, where f is a map, A is its domain, and B its codomain. In addition, pairs of maps can be composed to generate new maps; where the codomain of f is the domain of g, i.e., $f: A \to B$ and $g: B \to C$, then these maps are composite and generate the map $f \circ g: A \to C$. Finally, each object A is associated with an "identity map" on A, written as $1_A: A \to A$; it is assumed that for any pair of maps $f: B \to A$ and $g: A \to C$ there is $1_A \circ f = f$ and $g \circ 1_A = g$. One key point of difference between category theory and set theory is that in category theory maps are not definable in terms of objects; that is, unlike set theory where functions between sets are reducible to the set of ordered pairs, in category theory a map between structures is an autonomous notion that is not further analysable. Because

³⁹⁰ Bell, <u>Primer</u>, p. 12, Bell says that possession of these three properties is definitive of the notion of category.

a map is an irreducible basic datum, this means that a map embodies the notion of variation or correlation; for this reason Bell calls a map a "variable quantity". Thus, in category theory, pure variation is an intrinsic and irreducible constituent of any category.

These two constituents together give category theory its startling generality, which allows it to provide a rigorous framework for dealing with mathematical structures and their mutual relations. Like set theory, category theory achieves generality by rising above the particularity of individual structures, however set theory and category theory do this in radically different ways. Bell explains this as follows:

Both set theory and category theory transcends the particularity of mathematical structures. Set theory strips away structure from the ontology of mathematics leaving pluralities of structureless individuals open to the imposition of new structure. Category theory, by contrast, transcends particular structure not by doing away with it, but by taking it as given and generalizing it. It may be said that since the success of category theory as a unifying language for mathematics is due to the fact that it, and it alone, gives direct expression to the centrality of form and structure in mathematics.³⁹¹

Bell argues here that set theory gives an ontology whose basic objects are sets, and rises above particularity by eradicating the structure of an object, taking it as a structureless individual, and as an instance of pure discreteness; ³⁹² in contrast, category theory rises above particularity by generalising structure, not by stripping it away but by generalising it. This means that the set concept itself can be generalised to produce the category *Set* whose "objects" are all entities with the structural features of sets, and whose maps are transformations between these "objects". The classical universe of sets is now viewed as one of a plurality of categories, each of which is a local framework that possesses a

³⁹¹ J. L. Bell, Toposes and Local Set Theory, (Oxford: Clarendon, 1988) p. 236-7

³⁹² Presumably Bell means to exclude Frege's notion of a set from this characterization.

sufficiently rich internal structure to facilitate the interpretation of mathematical concepts within them.³⁹³ Thus, Bell writes,

The topos-theoretical viewpoint suggests that the absolute universe of sets be replaced by a plurality of "toposes of discourse", each of which may be regarded as a possible "world" in which mathematical activity may (figuratively) take place. The mathematical activity that takes place within such "worlds" is codified within local set theories; it seems appropriate, therefore, to call this codification local mathematics, to contrast it with the absolute (i.e., classical) mathematics associated with the absolute universe of sets. Constructive provability of a mathematical assertion now means that it is invariant, i.e., valid in every local mathematics. 394

It follows that in category theory, set theory is just one objective mathematical structure among others; it is used to view the world in terms of pure cardinality, but there are others categories that are suited to viewing the world according to a different purpose, such as the category *Eff*, which views functions as procedures and requires them to have algorithms.

In set theory all mathematical concepts are regarded as belonging to a single, fixed, and absolute universe of sets; however, category theory challenges this picture as it implies that mathematical concepts have meaning only in relation to a series of local categories. In category theory, any mathematical concept within a category must be interpreted through the form associated with that category. For example, the concept of a group is interpreted differently depending on which category it is in: within the category of topological spaces it is a topological group; within the category of manifolds it is a lie group; within the category of sheaves it is a sheaf of groups; and so on. ³⁹⁵ Hence, the reference of this mathematical concept is ambiguous, relative to the local category it is

³⁹³ Categories that have an internal structure rich enough to facilitate all the usual constructions of mathematics are called "toposes". Bell, <u>Primer</u>, p. 12 , ³⁹⁴ Bell, Toposes and Local Set Theory, p. 245

³⁹⁵ Bell, "Category Theory and the Foundations of Mathematics", p. 350ff.

interpreted in. This means that category theory is pluralistic in contrast to set theory's absolutism: in contrast to the classical universe of sets which was assumed to provide a universal framework within which all mathematical concepts are to be interpreted, categories portray features of the world, but no single category portrays the world in its totality.

Category theory provided the impetus for the emergence in the nineteen seventies for the development of "synthetic differential geometry", or "smooth infinitesimal analysis". Beli establishes that there is a specific category that possesses a sufficiently rich internal structure to facilitate the usual constructions of mathematics to be carried out, but in which the continuous is an autonomous notion, not explicable in terms of the discrete. This category provides a rigorous framework for mathematical analysis where the use of limits in defining the basic concepts of the analysis is replaced by the use of the concept of a "nilsquare infinitesimal", that is, a quantity not equal to zero but small enough that its square and higher powers can be disregarded. In this framework all functions or correlations between mathematical objects are "smooth" – in that they can be divided indefinitely – and so are continuous. Accordingly, since in smooth infinitesimal analysis all functions are continuous, Bell holds that it represents a return to Leibniz's doctrine that "nature makes no jump". ³⁹⁶

This account of smooth infinitesimal analysis gives a very different structure of the continuum to that of set theory. In set theory, the arithmetical continuum is thought to give an adequate representation of the geometric continuum: every point on the continuum corresponds to a real number on the real number line. Thus, the continuum is

³⁹⁶ Rell. <u>Primer</u>, p. 5, footnote 4

reduced to a set of discrete points, it satisfied the Archimedean axiom, and the order relation < on the real line satisfies the trichotomy law

$$x < y \lor x > y \lor x = y$$

Accordingly, < is a total ordering on the real line. In addition, the fundamental properties on the real line are first, that between any two points there is another, and second, that for any two nonempty subsets of the continuum one will contain the limit point of the other.

In smooth infinitesimal analysis, in contrast, the continuum is not reduced to a set of discrete points. Rather, the ultimate parts of the continuum are nilsquare, nonpunctiform infinitesimals; that is, continuous magnitudes (not points) that are so small (but not actually zero) their powers can be disregarded. On this version of the continuum, two locations on the line a, b are said to be "distinguishable" when they are not identical, i.e., when not a = b; in contrast, a, b are "indistinguishable" when the opposite is the case, i.e., when not not a = b. However, as was noted above, the internal logic of smooth infinitesimal analysis is intuitionistic logic, which means that the law of excluded middle, and its logical equivalent the law of double negation, do not hold universally in smooth infinitesimal analysis. It follows therefore, that the fact that two locations are indistinguishable, i.e., not not a = b, does not imply that they are identical, i.e., a = b. ³⁹⁷ This means that, in contrast to the discrete continuum where the ultimate points are arranged in an ordered series correlating with the natural numbers, in the continuous continuum, infinitesimals are arranged into "infinitesimal neighbourhoods" that are indistinguishable from one another, but are not identical to one another. Consequently, in contrast to the discrete, "connected" continuum implied by set theory, the continuous

³⁹⁷ Bell, Primer p. 17

continuum is characterised by the property of "indecomposability": the continuous continuum cannot be split into two disjoint nonempty subsets.

In addition, because the law of excluded middle fails, the order structure on the real line in smooth infinitesimal analysis differs significantly from that of the real line in set theory. In particular, the order structure here does not satisfy the trichotomy law, therefore, < is a partial not a total ordering on the real line in smooth infinitesimal analysis. In contrast, the order structure on any infinitesimal ϵ is the relation \leq ("not less than") x < y, as

$$0 \le 3 \land 0 \ge 3$$

This order relation produces three distinct infinitesimal neighbourhoods of 0 on the real line, each of which is contained in its successor; these are – the set Δ of infinitesimal, the set I of elements indistinguishable from 0, and finally, J the set of elements neither greater nor less than 0.398 Therefore, there are infinitesimal quantities that do not coincide with 0, but we cannot infer from this that there exists an infinitesimal which is $\neq 0$: any such entity would possess the property of being both distinguishable and indistinguishable from 0, which would violate the law of non-contradiction, and would be inconsistent with smooth infinitesimal analysis. 399

Bell's analysis needs only a few axioms for the smooth line. He states these as follows,

Axioms for the continuum, or smooth real line R. There are the usual axioms for a(n) (intuitionistic) field expressed in terms of two operators + and \bullet , and two distinguished elements 0, 1.

Axioms for the strict order relation < on R. These are:

1. a < b and b < c implies a < c.

³⁹⁹ Bell Primer, p 6-7

³⁹⁸ Bell 'An Invitation to Smooth Infinitesimal Analysis', URL = http://publish.uwo.ca/~jbell/

- 2. $2 \neg (a < a)$.
- 3. a < b implies a + c < b + c for any c.
- 4. a < b and 0 < c implies a.c < b.c.
- 5. either 0 < a or a < 1.
- 6. $a \neq b$ implies a < b or b < a.⁴⁰⁰

In addition, define infinitesimals as the set of all x in R for which $x^2 = 0$. That is, writing Δ for the set of infinitesimals, $\Delta = \{x \in \mathbf{R}: x^2 = 0\}$, and the letter ε for any arbitrary infinitesimal, then the basic axioms of smooth infinitesimal analysis are, first the "principle of microaffineness":

(SIA₁)
$$\forall f \in \mathbf{R}^{\triangle} \exists ! a \in \mathbf{R} \exists ! b \in \mathbf{R} \forall \varepsilon \in \triangle . f(\varepsilon) = a + b. \varepsilon$$

Taking " \exists !" as the unique existential quantifier, this principle says that any function on Δ will be affine, in that it cannot be bent or broken; it can be subject only to translations and rotations Second, the "constancy principle":

$$(\mathbf{SIA}_2) \ \forall f \in \mathbf{R}^{\mathbf{R}} \ [\forall x \in \mathbf{R} \ \forall \varepsilon \in \Delta. f(x + \varepsilon) = f(x) \rightarrow \forall x \in \mathbf{R} \ \forall y \in \mathbf{R}. f(x) = f(y)]$$

The constancy principle states that any process that occurs continuously is assumed to be taking place at a constant rate of change over an infinitesimal period of time. For example, in the constant motion of a particle, the particle experiences no acceleration over an infinitesimal period of time. ⁴⁰¹ Beli states that these four axioms, together with intuitionistic logic, constitute basic smooth infinitesimal analysis. ⁴⁰²

The two principles of constancy and microaffineness give a precise characterisation of the continuum in smooth infinitesimal analysis. In classical set theoretic analysis, the continuum has the property of being "connected"; this means that if the continuum is divided into two, disjoint non-empty subsets then one of these will

⁴⁰⁰ Bell, "The Continuum in Smooth Infinitesimal Analysis": p. 1 URL = http://publish.uwo.ca/~jbell/

⁴⁰¹ Bell, Primer, p. 9

⁴⁰² These axioms are presented by Bell in <u>Primer p. 102-103</u>

contain the limit point of the other. In contrast, in smooth infinitesimal analysis the continuum possesses the very much stronger property of being "indecomposable". The property of indecomposability means that the smooth continuum cannot be divided into two disjoint nonempty subsets; rather, the only detachable parts of the continuum are the continuum itself and its empty part. 403 It follows that in smooth infinitesimal analysis that an infinitesimals may be regarded as (by analogy) what remains after the continuum has been subjected to an indefinite differentiation; in other words, an infinitesimal is a continuum "viewed in the small". 404

These principles give the precise sense in which infinitesimals exist in smooth categories; infinitesimal quantities are quantities so small that their square and all higher powers can be neglected, i.e., they are 'nilsquare', and are also 'nonpunctiform,' i.e., it cannot be a point. 405 Consequently, in smooth infinitesimal analysis the differential calculus can be reduced to simple algebra, in which nilsquare, nonpunctiform infinitesimals replace of the classical limit concept. This means that in smooth infinitesimal analysis, differentiation or integration on a curve will be determined in terms of infinitesimal, non-degenerate triangles whose hypotenuse is an infinitesimal tangent vector to the curve in question. The hypotenuse of this triangle touches the curve at a single point, but this point is conceived as an infinitesimal line segment; consequently, the curve as a whole is conceived as composed of multiple infinitesimal straight lines. This yields an account of motion, for example, that is significantly different than that provided by classical set theory. In particular, motion is accepted as a state in itself and is not simply identified with the result of motion, i.e., the successive occupation

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¹⁰³ Bell, <u>Primer</u> 31-32

⁴⁰⁴ Bell, <u>Primer p. 2</u>

⁴⁰⁵ Bell, Primer, p. 3

of a series of distinct points in which no motion is detectable. The infinitesimal parts of a motion are not discrete points but are continuous line segments that are just large enough to allow motion across them. This state of motion is represented as a "smoothly varying straight microsegment of its associated curve" Similarly, smooth infinitesimal analysis also provides an account of time, which Bell explains as follows,

Classically, time is represented as a succession of discrete instants, isolated 'nows', where time has, as it were, stopped. The principle of Microstraightness, however, suggests rather that time be regarded as a plurality of smoothly overlapping timelets each of which may be held to represent a 'now' (or 'specious present') and over which time is, so to speak, still passing. This conception of the nature of time is similar to that proposed by Aristotle (*Physics*, Book 6, Chapter ix) to refute Zeno's paradox of the arrow. 407

Furthermore, Bell argues that because it is possible to give a purely category-theoretic account of all mathematical notions expressible in axiomatic set theory, it follows that category theory can serve as a foundation for mathematics in the sense that set theory does. Therefore, all of the mathematical theorems of classical and modern analysis can be developed in an elegant and simple manner within smooth infinitesimal analysis.

Moreover, smooth infinitesimal analysis is essentially consistent, but is incompatible with classical set theory as it views the continuum as irreducible to a set of discrete points.

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⁴⁰⁶ Bell Primer p. 10

⁴⁰⁷ Bell Primer p. 10

⁴⁰⁸ Bell, "Category Theory and the Foundations of Mathematics"; p. 355. Bell does not suggest that category theory can or should replace set theory as "the" foundation for mathematics; rather he means that in category theory it is possible to construct a formal interpretation of a first-order version of set theory, in such a way that the interpretation of any theorem of set theory is provable in this category

1.5 Real choice or branching point?

It is obvious, I think, that category theory affords a natural approach to the age-old problem of providing a coherent version of the continuous continuum. As was discussed briefly above, the use of infinitesimals as put forward by Leibniz and its corresponding continuous version of the continuum fell into disrepute with the introduction of Weierstrass' approach, which led to the analysis being founded on a rigorous, discrete foundation in set theory. However, the development of smooth infinitesimal analysis has put the classical and modern analysis on a logically rigorous foundation that returns to Leibniz's original conception of infinitesimal quantities as 'ideal' or 'potential' entities. It seems clear that this development reopens the issue of whether the dispute between continuous and discrete as a real debate in on-going science, generating in a right result, and suggests that there is a profound branching point in mathematics, originating at the very origins of western science in ancient Greek mathematics and metaphysics.

The question that faces us here, then, is whether it is more reasonable to view the debate between the discrete and continuous versions of the continuum as a real debate on a single branch, or as a genuine branching point in mathematics.

To begin, I will make the case for the reasonableness of viewing this debate as a real theory choice arising on a single branch. The case for seeing this as a real choice between two proposals immanent to the same branch amounts to the case for saying one is better than the other; by showing that one is right and the other wrong it becomes reasonable to hold that they both arise on the same branch, whereas if they belong to separate branches the choice between them is indeterminate. Thus, the case for viewing

this debate as a real theory choice turns on either showing that one alternative here *is* true right now, or *is likely* to be established as true in the future.

We have already seen that both of the alternative versions of the continuum are sufficient to account for all applications in modern and contemporary analysis. Therefore, there is no empirical basis for choosing between them: the discrete and the continuous are, in terms of the indispensability argument, empirically equivalent. Ultimately, then, the case for seeing this as a real debate immanent to the same branch comes down to identifying the non-empirical factors that would make it more reasonable to reject one or other version of the continuum, than to accept both as equally legitimate. Here Quine must determine that there is a real choice between the discrete and continuous versions of the continuum in terms of the five virtues that he and Ullian listed in The Web of Belief, namely – conservatism, generality, simplicity, refutability, and modesty.

However, taking any one of these, for example simplicity, we begin to see that this approach is beset with problems. To begin, it is certainly not the case that the simpler theory is right. For, as Quine himself pointed out earlier in his career, simplicity is not a clear and unambiguous notion when applied to competing theories, and is unlikely to presents a consistent standard; rather, it is likely that each theory will be the simpler from different perspectives. 409 Without some formalized algorithm for determining what counts as simpler in all contexts, it is not obvious that it makes sense to say that either one or the other is *the* more simple theory. Without this it seems just as reasonable to argue that each theory is simpler in its own way. This point extends to the other virtues listed above, as none of them appear to offer a precise standard to apply in all contexts.

⁴⁰⁹ Quine 'On What There Is' From a Logical Point of View., p. 17

A deeper problem, however, is that here we are comparing theories in terms of not just simplicity or conservatism, but in terms of a number of non-empirical virtues that must be traded off against one another. Indeed, a gain in simplicity may translate to losses in conservatism and fecundity; that is, even if we could agree on what to take as the simpler theory, it may turn out that the simpler theory is the least fruitful, or that the more general theory is the least conservative, and so on. What is needed here is to have in hand some algorithm for weighing the competing non-empirical virtues sought in scientific theories against one another; we require a more substantive account of the virtues sought in successful theories than the list offered by Quine and Ullian. But as has already been pointed out, Quine cannot devise a formalized algorithm for deciding the outcome of this comparison, as any such formalized algorithm would constitute an unrevisable sentence about the nature of scientific method.

It seems that the type of trade off between competing virtues required here means that comparing the discrete and continuous versions of the continuum in terms of theoretical virtues is not clear-cut; and, consequently, this approach does not give an obvious answer to whether the space-time continuum is discrete or continuous. And, because it is not obvious that there *is a best theory* here, it is not obvious that there *must be a best theory* here – that is, this is not obviously a real theory choice arising on a single branch. At most, we can say that there is still a possibility that this is a real debate, and to that extent it is reasonable to argue that it is not a branching point.

Let us turn now to the case for viewing this debate as a genuine branching point in mathematics. Ultimately, the case for seeing the debate between the discrete and the continuous versions of the continuum as a genuine branching point in mathematics comes

down to the case for taking on-going scientific inquiry seriously. Given that there is no basis for choosing the uniquely correct version of the continuum, the working scientist is likely to see the choice between them as indeterminate and hold that each should be developed to their fullest. On-going scientific inquiry will view these not as competing theories, much less contradictory: they are alternative versions each suited to a further purpose that the others are not. Hence, a scientist will switch opportunistically between Cantor's version, or Bell's version, or yet another version, depending on the task at hand – for the working mathematician, "the situation is unlike matrimony". 410

Moreover, the scientist will operate with the analysis without caring which continuum she is employing from among the various alternatives; she will be just content that in asserting the analysis they are operating somewhere in the ontology of physics, any further questioning is a gratuitous decision among different alternatives. In contrast, viewing this debate as a real theory choice between competitors on the same branch, requires one to rejecting either the discrete or the continuous version of the continuum as false, which in turn means that either the set theoretic hierarchy or the category SIA is not a legitimate part of mathematics. But, it is difficult to see any *scientific* benefit to restricting on-going inquiry in this manner.

In any honest and principled inquiry in physics the issue of which version of the continuum is "best" simply does not arise; indeed, I feel that a scientist would be struck by both the artificiality and abstractness of the question 'Which of these accounts of the continuum is right?' It is hard to imagine a working scientist being convinced that either Weierstrass's limit approach or smooth infinitesimal analysis is false solely on the grounds that philosophical naturalism depends on there always being one "best" theory.

⁴¹⁰ Quine, word and Object., p. 263

Furthermore, to demand a choice between competitors where there is no basis for choice would lends an air of paradox to scientific inquiry, that alone suffices to rule it out as a genuine issue in honest on-going scientific inquiry.

We have seen that from Quine's perspective, preserving his compromise position motivates him to view this as a real theory choice; but from the perspective of on-going inquiry in science there is no such motivation. Simply pointing out to Quine that this issue does not arise for any philosophy pursuing unrestricted naturalism, should bring sufficient pressure on him to accept that the question of which version of the continuum is the "best" is not a genuine question. From a scientific perspective, the rational position is to allow both versions to develop, allow both a secure place in mathematics, simply accept that they are each geared to doing further jobs, and switch between them as is pragmatic. This would mean accepting that theory choice here is indeterminate. It seems to me that anyone fully committed to taking scientific inquiry sericusly should be open to developments within science, whatever they turn out to be.

Consequently, it seems to me that the only reason for Quine to insist on a real theory choice, and a single best theory here is that the compromise position demands it. That is, it is only Quine's dogmatic rejection of Carnapian aloofness from inquiry that saves the compromise: both Carnap and Quine can allow all versions of the continuum to be developed, the only difference between Quine's view here and Carnap's is that Quine dogmatically insists that these are real competitors, such that only one is true. However, if Quine were truly open to on-going scientific inquiry he would not rule out the possibility that the discrete and continuous versions of the continuum constitute a genuine branching point in on-going mathematics. Hence, Quine's compromise approach is

dogmatic resisting recent developments in on-going inquiry in order to satisfy the naturalist's "single best theory" model.

CONCLUSION.

To conclude this chapter, it is clear that the recent development of smooth infinitesimal analysis has provided a foundation for the continuous continuum that is equally rigorous but incompatible with the discrete account of the continuum provided by set theory.

It seems to me that, as a consequence, there is good reason to see the debate between the continuous and the discrete as a potential branching point in on-going scientific inquiry. Furthermore, I argued that the only reason to hold that there is a real choice here is to preserve Quine's compromise position by insisting that there is a true and false version of the continuum. But when we actually look closely at the history of this issue we see that this picture is too simplistic. When we actually do analysis we see that the choice between the discrete and continuous versions of the continuum is not a real choice with a true and false outcome; rather, it seems clear that working scientists see the choice between versions of the continuum as a gratuitous choice with no right or wrong outcome, determined entirely by the pragmatic purposes they are each best suited to, and consequently switch opportunistically between them. That is, for the working scientist the choice here is an indeterminate theory choice between equally good versions of the continuum.

Quine's compromise position demands that there be a real decision between alternative versions of the continuum, but this view is based on a philosophical bias,

dogmatically held in the face of on-going scientific inquiry. I argued that, in contrast, the correct attitude for a philosopher who is genuinely open to developments in on-going science is to accept that if he is open to doing science one way, he should be open to doing it another way, and also be open to simultaneously having multiple equally adequate ways of doing science. Furthermore, it is clear Carnap would accept that the choice here is indeterminate: he would view these alternative versions of the continuum as different frameworks, and adopt a tolerant attitude towards developing both. The only difference between Quine and Carnap in this context, therefore, is Quine's dogmatic insistence that only one of these versions of the continuum can be true, whereas Carnap is open to the developments of on-going inquiry, what ever they may be. Hence, it is Carnap, not Quine, who appears to be genuinely open to on-going inquiry, and Quine rather than Carnap who dogmatic imposes a philosophical bias on on-going scientific inquiry.

My conclusion, therefore, is that it is rational to view Cantor's discrete continuum and Bell's continuous continuum as a genuine branching point, i.e., as genuinely alternative proto-idealised conceptual schemes rather than as one theory going wrong, it follows that theory choice here is indeterminate. Quine's compromise is attractive because, unlike the extreme positions, Quine is open-minded about developments in ongoing inquiry and does not impede scientific progress on the basis of a dogmatically held philosophical position, but it is only by being dogmatically anti-Carnap that Quine can insist that there is a real debate here.

CHAPTER 7

CONCLUSION

At this stage it is time to stand back and try to get an overview of the position now reached, and to consider possible avenues of further inquiry suggested by this position.

Part 1 of this thesis examined Quine's philosophical position as a compromise between the polarities of extreme realism and extreme relativism. In chapter 1 it was argued that Quine rejects Russell's version of extreme realism. I argued that from the start Quine holds that there is no such thing as the ultimate furniture of the world, or reality as it is in itself that is in some way not relative to our conceptual scheme. The key, for Quine, is that inquiry inevitably proceeds immanent to some conceptual scheme or other, and there is no possibility of justifying our conceptual schemes from some more secure, transcendental perspective. From this immanent perspective theory is an extrapolation from the empirical checkpoints that count as evidence for or against it, but even simple theories go far beyond what can be supported by the evidence. It follows, for Quine, that our conceptual scheme is strong-globally under-determined; that is, there is no possibility, even unto eternity, of formulating one systematisation of our surface irritations that is better than all possible others. On the basis of the strong-global underdetermination thesis Quine rebuts Russell's epistemological notion of acquaintance, which holds that in knowledge the mind comes into direct and immediate contact with reality as it is in itself; rather, Quine holds that in knowledge we do not break through our conceptual scheme to reality as it is in itself. Furthermore, Quine holds that we must take seriously the account of reality that we develop immanent to our on-going conceptual scheme. This implies that Quine rejects the extreme realist metaphysical notion of reality

as it is in itself that is somehow more "real" than scientific reality. For Quine, this idea of reality above or beyond scientific account of reality would lead to transcendental scepticism and is a fundamentally unscientific concept. Finally, I show that Quine also rejects Russell's extreme realist account of meaning by showing that the mere meaningfulness of language does not commit us to the existence of any entities whatsoever.

I believe Quine's philosophical position is properly understood only as a rejection of both extreme realism and extreme relativism, so in chapter 2 I charted Quine's rejection of Carnap's extreme relativism. I emphasises that, as with Russell, the origin of Quine's dispute with Carnap arises from his insistence that all inquiry proceeds immanent to some on-going conceptual scheme, such that there is no possibility of stepping back to survey on-going inquiry from some neutral, transcendental perspective. In this case, however. Quine's argument centred on reputting Carnap's claim that it is possible to distinguish purely pragmatic sentences from purely theoretical sentences within on-going inquiry. Carnap bases this view on the notion of a "linguistic framework" and the subsequent distinction between statements made internal to a framework and those made external to all frameworks. Because Carnap holds that for different reasons neither type of statement is ontologically committing, he denies that there is such a thing as reality as it is in itself; rather, he holds that reality is always relative to a framework. It is possible to construct frameworks about the world in numerous ways, and the choice between these frameworks, and hence ontologies, is a purely practical decision that can be neither true nor false. Because he deflates ontological questions to the pragmatic issue of choosing a framework Carnap advocates a tolerant or extreme relativistic attitude to alternative

frameworks; these are not competitors vying for the truth, but are tools to be evaluated in pragmatic terms. The locus of Quine's argument against Carnap centres on Carnap's internal-external distinction, and the plethora of distinctions related to this one. Quine targets the internal-external distinction by arguing that a scientific account of language will be incompatible with the distinction between analytic and synthetic statements. Moreover, this holistic account of language shows that all sentences are epistemologically on a par, and there is no sharp distinction between purely pragmatic and purely theoretical sentences as Carnap assumes; in contrast, Quine holds that pragmatic and theoretical factors are instrumental in the acceptance or rejection of all sentences. By ruling out the internal-external distinction, Quine argues that philosophy cannot stand back from on-going scientific inquiry, and view it from an aloof, neutral perspective. For Quine, philosophy is whole heartedly immersed in on-going inquiry, and takes theory choices in ontology, epistemology, meaning, and so on, as genuine realdebates, not pragmatic framework choices as Carnap assumes. Consequently, Quine holds that we must take our on-going conceptual scheme seriously, judging as earnestly as we can from this immanent perspective.

In espousing these views, Quine is at once less-realist than Russell and less-relativist than Carnap. In chapter 3, I attempted to show how Quine builds these realistic and relativistic strands into a coherent compromise between these extremes. Many philosophers have questioned whether these competing realist and relativist tendencies undermine Quine's position. In contrast, I have tried to show that rather than a source of tension it is precisely this attempt to combine opposing dimensions that is attractive about Quine's philosophical position. For by combining aspects of each Quine avoids the

problems associated with either extreme position, and presents a new, compromise picture, that attempts to supersede the old dichotomy of extreme realism verses extreme relativism.

In addition, I have explained how Quine proposes to reconcile these apparently opposing tendencies in a coherent unified position. I argued that the key here is to distinguish between "good" and "bad" relativism; that is, types of relativism that will and will not undermine the proposed compromise position. I have argued that much of what motivates the acceptance of relativism can be accommodated by Quine in the notions of under-determination, inscrutability of reference, ontological relativity, and so on. While at the same time, Quine's so-called "robust realism" prevents these relativistic doctrines from sliding into "bad" relativism.

The aim of Part 1 of this thesis has been to emphasise that the attractive quality about Quine's compromise position is its epenness to on-going developments in inquiry, and a refusal to confine inquiry to dogmatically held preconceptions. The key, for Quine, is that once he disabuses us of the notion of a transcendent vantage point, it becomes clear that both extreme positions are dependent on dogmatically held philosophical assumptions: extreme realism is based on Russell's brute assumption that in knowledge we are acquainted with reality *as it is in itself*; while Carnap's extreme relativism is dependent on his assumption that the philosopher can stand aloof from on-going inquiry. In contrast to these dogmatic positions, Quine presents an open-minded view of developments in on-going inquiry, that is willing to take seriously the commitments of our best inquiry, whatever they turn out to be.

In Part 2, I adopt a more critical stance towards Quine's compromise position. In chapter 4, I try to show the connection between a number of coincident distinctions at play in Quine's philosophy. In particular, I concentrated on the relationship between real and indeterminate theory choices and the distinction between different versions of the under determination thesis. I argue that, for Ouine, a theory choice is a real decision if it is only under-determined in the immanent, i.e., non-strong-global, sense; while, in contrast, any theory choice that is strong-globally under-determined is also indeterminate. I argued that because Quine's compromise position is based on his assertion, against Russell, that theory choice at end-of-inquiry is strong-globally under-determined, coupled with his assertion, against Carnap, that theory choices in on-going inquiry are real decisions, it follows that Quine's compromise position is based on the assumption that while strong-global under-determination infects end-of-inquiry and illegitimate, i.e., nonphysical science, modes of on-going inquiry, genuine on-going inquiry is insulated from strong-global under-determination. This assumption is the basis for Quine's assertion that all theory choices in on-going scientific inquiry are real decisions. The closing section of this chapter set out Quine's explanation of this in terms of the notions of full-coverage, facts-of-the-matter and the reciprocal containment of epistemology and ontology.

In chapter 5, I argued that this analysis alerts us to a significant blind spot in Quine's position. Quine's commitment to strong-global under-determination at end-of-inquiry commits him to the possibility of branching points in on-going inquiry; these are theory choices between proto-ideal conceptual schemes. I argued that the presence of a branching point reintroduces the internal-external distinction into on-going inquiry: where there is a branching point choices on either branch are internal, real decisions, but

the choice between alternative branches is indeterminate. This creates a number of problems for Quine. In the first instance, even having to accept that certain on-going scientific theory choices are not real decisions suggests that the differences between his position and Carnap's is a matter of degree rather than a difference in kind. However, the real problem for Quine lies in explaining how to draw the line between theory choices that are real from those that are indeterminate branching points. Because it means acknowledging that some decisions that we accept in on-going inquiry are neither true nor false, any attempt to draw the line between real and indeterminate theory choices will mean reintroducing a distinction between purely pragmatic and purely theoretical sentences. What this shows is that the locus of the disagreement between Carnap and Quine cannot be an epistemological dispute, as Quine likes to present it; rather, the logical core of the dispute centres on the question of the nature and role of philosophy. For, while Carnap holds that philosophy is distinct from science and so can appeal to it in order to distinguishes between real and indeterminate theory choices, because Quine rejects this view of philosophy as distinct from science Quine must hold that this distinction can be made immanent to on-going scientific inquiry. But it is here that Quine's compromise comes up short, as it is not clear how on-going scientific inquiry could do this.

Finally, I set out the case for viewing the age-old dispute between continuous and discrete versions of the continuum as a genuine branching point in on-going scientific inquiry. I briefly presented the mathematical theories behind each of these versions of the space-time continuum, and noted that as these are taken as being equally rigorous mathematical theories, they must be considered to be empirically equivalent. However, it

is clear that they are logically incompatible. I argued here that because there is no basis to choose between these alternative versions of the continuum, in any philosophy that is genuinely open to progress in on-going inquiry these alternatives should be viewed as a genuine branching point in on-going scientific inquiry.

As I stated at the outset, the task of this thesis was to determine whether Quine can offer us an alternative to the polarities of Russell's extreme realism and Carnap's extreme relativism; that is, a compromise between them that balances important aspects of both positions in a coherent middle position. It seems clear now that Quine has failed to do this. Quine's position fails because, when we take both sides of his compromise position seriously, giving equal weight to both his anti-Russellian and his anti-Carnapian arguments, he is faced with a problem that it is unclear if his position has the resources to deal with. The problem for Quine is that his anti-Russellian, anti-extreme realist side leaves him with the problem of having to account for strong-global under-determination in on-going scientific inquiry. While at the same time, his anti-Carnapian, anti-extreme relativist side means that he does not have the tools to cope with this problem. Therefore, as a compromise between these extreme polarities, Quine's position is incomplete.

So where do we go from here? I think the discussion of Quine in this thesis points us towards a deeper issue that has not been touched upon here, and suggests where this interpretation of Quine might lead us. I will finish by briefly setting out this idea.

In chapter 2 I discussed Quine's criticism of Carnap's extreme relativism, but I noted there that many contemporary Carnap scholars have argued that Quine's reading of

Carnap, and consequently the generally received reading of Carnap, is mistaken. According to scholars such as Creath, 411 Friedman, 412 and O'Grady, 413 the received reading understands Carnap's as primarily an empirical foundationalist, who employs radical verificationism to account for the justification and meaning of empirical truths, and analyticity to account for the traditional realm of non-empirical a priori knowledge. It is clear that this received view of Carnap was relevant to my account of Quine's position because this is the reading of Carnap that Quine responds to. But, in contrast to this view, the more sophisticated interpretation that they offer argues that while Carnap tries to underpin natural science from an empiricist epistemological perspective, he has a much more "deflationist" attitude to epistemology and semantics than is acknowledged by Quine. On this view, Carnap holds that philosophy aftempts to underpin science by simply clarifying the underlying structure presupposed by science, but it does not attempt to articulate any truths about the structure of knowledge. This is a "deflationary" view of epistemology and semantics because it makes no claims to truths about reality, knowledge or meaning; rather, it investigates the various possible frameworks within which science can be carried out, and in this way aims to avoid meaningless debates by showing that an apparently genuine debate in epistemology or semantics is in fact a matter of practical choice.

As we saw in chapter 2, Carnap rejects the notion of reality as it is in itself, and holds that reality is always relative to a framework. He then argues that different

⁴¹¹ Richard Creath, "Every Dogma has its Day", Erkenntnis, 35 (1991); 347-89

59(4); (1999): 1015-27

Michael Friedman, "Carnap's Aufbau Reconsidered", Nous 21(1987); 521-45; "Logical Truth and Analyticity in Camap's Logical Syntax of Language", in History and Philosophy of Modern Mathematics, W. Aspray & P. Kitcher, eds. (Minneapolis: University of Minnesota Press 1988); p. 82-94; "The Reevaluation of Logical Positivism" Journal of Philosophy 88(10) (1991); 505-19 ⁴¹³ Paul O'Grady, "Carnap and Two Dogmas of Empiricism", *Philosophy and Phenomenological Research*

frameworks – and different ontologies – are compared purely in terms of their usefulness in performing certain tasks: the phenomenalistic ontology takes sense data as primitive and is useful for discussing the relation of evidence to theory; the realistic ontology takes objects and properties as basic, and is useful for explaining how objects in science are related; and so on. 414 Carnap consistently held this deflationary view of ontology, but his deflationary view of epistemology and semantics evolved over a period of time inresponse to problems that emerged within his position. In particular, Carnap develops this deflationary view in response to problems with his strong verificationist doctrine of justification and meaning. Carnap's strong verificationsim demands a criterion that allows only scientific philosophy and rules out non-empirical inquiry. His original criterion, the well-known "principle of verification", held that to be meaningful a statement must in principle be supported by experience; without this a statement didn't have any factual content and is a just a series of meaningless marks or noises. The primary problem with this is that, by its own standards, the principle appeared to undermine itself. Carnap's eventual response to this was to deflate both semantics and epistemology. And as in deflating ontological questions, Carnap came to reject the view that there is one true account of knowledge or meaning, and now holds that accounts of confirmation are proposals to be evaluated on practical grounds, rather than assertions to be judged as true or false; that is, alternative theories of epistemology and semantics are tools that are more and less useful for different purposes. This fulfils Carnap's aim of showing how to avoid merely verbal disputes in which disputants talk at cross purposes to each other, and to show, in contrast, how discussion can move forward in a useful way.

⁴¹⁴ Rudolf Carnap, <u>The Logical Syntax of the World</u> (Aufbau), R. Georg (trans.) (Berkeley, CA; University of California Press, 1967); #59-60

It is clear that Carnap still needs analytic statements to play the role of clarifying and setting out the rules or preconditions of a proposed framework. However, because Carnap is not now to be understood as presenting a substantive theory of a priori knowledge, but as attempting to motivate his deflationist view of ontology, epistemology and semantics, he only needs analyticity to distinguish changes in meaning (i.e., changes in framework rules) from changes in belief (i.e., changes internal to a framework). And, to do this Carnap does not require a principled criterion for distinguishing analytic and synthetic sentences; rather, Carnap holds that opponents in any dispute can arbitrarily agree upon this distinction, and can draw this distinction any way they see fit. The point is that once they have this distinction, disputants can set out their views in terms of sentences agreed upon as analytic, thereby enabling them to distinguish framework issues from empirically answerable problems. Thus, for Carnap's deflationist approach, an arbitrarily distinction between analytic and synthetic sentences is sufficient to prevent opponents talking at cross-purposes and from prolonging fruitless verbal debate. It follows that analytic sentences are do not serve as an epistemological justification for scientific inquiry; rather, they are simply constructed to clarify specific aspects of inquiry and do not themselves make substantive claims.

The upshot of this more sophisticated interpretation of Carnap is that, from Carnap's point of view, the debate between Quine and Carnap has been wrongly located. To be precise, the core of the dispute between them is not situated in a disagreement over the epistemological issue of analyticity, as Quine would like to portray it, but is really a dispute over the role of philosophy; specifically, whether philosophy offers a separate

methodology to natural science. On this reading of Carnap, the debate centres on Carnap's view is that philosophy allows us to stand back from on-going scientific inquiry to distinguish real empirical decisions from pragmatic questions about the nature of a framework, verses Quine's whole hearted immersion in on-going science, his willingness to get involved and take a stand on all theory choices, and his denial that it is possible to stand back from on-going inquiry and distinguish internal scientific questions from external pragmatic questions.

However, while this is a more sensitive interpretation of Carnap's philosophy, it should now be clear from what has been said above that this is an inadequate reading of Quine. In particular, this view of Quine places insufficient emphasis on the anti-Russell, anti-extreme realist of Quine's position. When this dimension of Quine's position is fully appreciated, in particular his commitment to strong-global under-determination, it is clear that Quine is also committed to the external-internal distinction in on-going inquiry. Thus, on my reading of Quine, which I believe takes on board not just Quine's anti-Carnapian stance, but also his equally important anti-Russellian stance, the question arises as to whether there is any real issue between Carnap and Quine at ail.

In particular, on this reading of Carnap, Carnap shares Quine's naturalistic mentra that there is no philosophical *knowledge* above or superior to science. The only difference between them is that, for Carnap, philosophy still has the distinctive role that he always claimed for it of clarifying analytic frameworks in order to separate real debates from practical framework choices. However, Carnap claims that philosophy does this from an immanent perspective, arbitrarily deciding from within on-going inquiry those sentences to accept as analytic for the moment; for Carnap, philosophy has a distinct methodology,

⁴¹⁵ Paul O'Grady, "Carnap and Two Dogmas of Empiricism", p. 1025

but is still immanent to on-going inquiry. But since we now know that Quine also accepts that we must distinguish between internal and external questions in on-going inquiry, Carnap's view here at least suggests a way to move forward that is compatible with Quine's overall naturalism.

If this is indeed the case, then not only has the dispute between them been wrongly located, but there does not appear to be any substantive dispute between them at all. Rather, they just draw the distinction between real and indeterminate theory choices in different places.

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