BERTRAND RUSSELL ON PERCEPTION AND KNOWLEDGE (1927 – 59)

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PERCEPTION AND KNOWLEDGE

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By

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ABSTRACT

Bertrand Russell is one of the grandmasters of 20th Century Analytic Philosophy. It is surprising, then, that his work fell out of fashion later in his career. As a result, very little has been discussed concerning Russell's work from the period of 1927 – 59. This thesis provides an analysis of Russell's philosophical work from this era. Our attention here is on Russell's theory of perception and the underlying metaphysical structure that is developed as a result of his scientific outlook, as Russell's philosophy during this time focused almost exclusively on perception, knowledge, and the epistemic relationship humans have with the world according to science. And because Russell's system is in many ways prescient with regards to recent advances made in perception, mind and matter, and knowledge more generally, we also apply his theory to developments in the philosophy of perception since that time.

Our initial discussion – Chapters 1 and 2 – is most concerned with an accurate explication of the concepts germane to and conclusions formed from Russell's theory of perception. Included in these considerations are Russell's ontological commitments—most specifically a four-dimensional event ontology facilitated by Neutral Monism. From this ontology we further discuss Russell's distinction of the two types of spaces found in perception: physical and perceptual (psychological). The notion of perceptual space, coupled with a causal story, enables Russell to conclude that all perception is in one's mind; that is, all one ever perceives is one's own brain. Furthermore, we discover that on Russell's view, since perceptions are only of one's own brain, our access to the physical space is limited to structural representations. We cannot infer anything beyond the structure of the external world from the basis of perception.

Following the discussion on the physical and metaphysical components of perception, our focus in Chapter 3 turns to Russell's epistemic conclusions concerning perceptual knowledge. Involved in this section is an analysis of Russell's notion of "knowledge" and its shortcomings. In addition to the conceptual analysis of knowledge, we also discuss two further epistemic wings as developed by Russell: belief formation and justification. In the former, we are presented with the steps that are taken in the development of knowledge from primitive perception to inferential scientific knowledge, all of which are based on animal habits and naturalised belief formation. Concerning justification, Russell approaches this topic from probability logic, ultimately concluding that there is no satisfactory way to get absolute knowledge, but that we can get close by employing a foundational-coherentist model of justification. Here Russell likens knowledge-development to a bridge, wherein the foundations are the piers holding the bridge upright; the strength of the justification, however, is found in the interconnected girders – coherence – connecting the piers. The bridge ultimately rests on non-demonstrative principles of inference. By themselves the piers do not accomplish much, but taken as a whole, the bridge is solid. Following this discussion, we engage in a minor criticism of Russell's notion of knowledge.

In the final two chapters we bring Russell's theory of knowledge and perception into focus using other positions to juxtapose with Russell's. These include the epistemic considerations found in representationalism, phenomenalism, and direct realism. We conclude this part with an interpretation of Russell's external world epistemology, one I label 'Russellian Realism', which, again, suggests a structural and scientific form of realism.

Finally, we discuss some demarcating principles of a theory of perception and the ultimate "problem of perception," giving a Russellian response to the issues found therein. Involved in this project are a number of issues, foremost of which is how a theory perception can deal with the apparent openness to the world we experience in perception, while also admitting the potential for illusions and hallucinations. Furthermore, what is it *like*, or how does it *seem* when

one is having a perceptual experience? These are some of the problems any theory of perception faces. We therefore set out to discover how Russell's theory responds to some of these problems.

Ultimately we must recognize that Russell's perceptual and epistemic projects are philosophically motivated but scientifically driven. It is this latter consideration that we must recognize as providing Russell with a consistent framework from which to begin his project. It is a project that has been virtually ignored, yet is ripe with insights. We will thus find that Russell's theory of perception is relevant to current concerns within the philosophy perception generally and scientific epistemology more specifically.

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Introduction

"Philosophy should be piecemeal and provisional like science;
final truth belongs to heaven, not to this world."
An Outline of Philosophy

It has been suggested that a philosopher's work is to make sense of the apparent dialectics in the universe. If this is indeed the task of philosophy, then Bertrand Russell is our champion.[1] His later philosophical work embraces such a program. This program seeks to understand a number of epistemological questions: What is the relationship between the world of mind and the external world? If physics is derivable from common sense, but then reveals that common sense is false and misleading, how can we possibly know physics? Experience and perception are the strongest access we have to the world and all of our knowledge is, in part, a result of this experience; taken by itself, however, perceptual knowledge is extremely limited. What more is needed in order to admit that we in fact know all of the things we would not deny knowing? Each of these dialectically structured problems constitute Russell's epistemological program. It is this program that we here engage and undertake.

[1] As an adamant anti-Hegelian Russell would most likely dislike this way of introducing his project.

I
The Problem

There are two streams of thought when considering perception: the metaphysical and the epistemological. Within this context, the two areas are difficult to untangle. What does the world consist of so that one can perceive it in the way that one in fact does? And what does that phenomenon tell us about the world? Russell is no exception here—he is concerned with the process of perception, and how, from this process, we can come to know what science tells us we know. The problem, as he explains it, is: "how comes it that human beings, whose contacts with the world are brief and personal and limited, are nevertheless able to know as much as they know? Is the belief in our knowledge partially illusory? And, if not, what must we know otherwise than through our senses?" (HK, xiv). This quotation comes from Russell's final major work in philosophy, although this concern was around much earlier, at least in the middle stages of his philosophical career (1910 – 1921).[2] Our concern here, however, is dedicated to his later works (1927 – 1959), with a special focus on *Human Knowledge: its scope and limits* (HK) as it is Russell's final, and most authoritative, word on the subject of knowledge and perception. We also discuss, however, the evolution of this thought from earlier concerns found in *The Analysis of Matter* (AM), *An Outline of Philosophy* (OP), and other shorter works in epistemology and metaphysics during this time.

Beginning, then, with works from 1927, we find Russell's concerns with the world of physics and the world of perception in full-bloom:

> The problem [of knowledge] arises because the world of physics is, *prima facie*, so different from the world of perception that it is difficult to see how we can afford evidence for the other; moreover, physics and physiology themselves seem to give grounds for supposing that perception cannot give very accurate information as to the external world, and thus weaken the props upon which they are built (AM, 6).

[2] See for example (Russell 1914).

These sentiments are echoed in OP, with the goal of philosophy being "an unusually obstinate attempt to arrive at real knowledge" (2). Russell suggests that "the first steps towards philosophy consists in becoming aware of these defects [in what passes as knowledge], not in order to rest content with a lazy scepticism, but in order to substitute an amended kind of knowledge which shall be tentative, precise, and self-consistent" (OP, 2). We are thus given an account of the goal Russell has in mind when undertaking a theory of knowledge. It is our job to at once abstract Russell's theory as best and clearly as we can, while also engaging with its successes and shortcomings given this goal.

Russell held that perception was imperative to our knowledge and understanding of the world of physics. Perception is what enables us to infer the external world, observe other minds, and acquire knowledge in general. For Russell, we must acknowledge early on that physics is to be taken as correct. While remaining fallabilistic about scientific knowledge, Russell remains steadfast in his assertion that if we are going to claim knowledge regarding anything, science will be most likely to get it right and as such we would be best to accept its conclusions. Given this disclaimer, it becomes more apparent why perception is so important—the truth and power of physics based knowledge is that it can be verified and can predict future events. As Russell writes: "The evidence for the truth of physics is that perceptions occur as the laws of physics would lead us to expect—*e.g.* we see an eclipse when the astronomers say there will be an eclipse" (AM, 7). These events and verifications, if the conclusions of physics are correct, tell us that our perceptions are not at all like the events causing them. If this apparent discrepancy is indeed true, how can we rectify perceptual experiences with physical explanations? Russell presents the "vital problem":

> Although physics can be pursued as pure mathematics, it is not as pure mathematics that physics is important. What is to be said about the logical analysis of physics is therefore only a necessary preliminary to our main theme. The laws of physics are believed to be at least approximately true, although they are not logically necessary; the evidence for them is empirical. All empirical evidence consists, in the last analysis, of perceptions; thus the world of physics must be, in some sense, continuous with the world of our perceptions, since it is the latter which supplies the evidence for the laws of physics. (AM, 6)

Russell must account, then, for how it is we perceive, what it is we perceive, and how the world of physics can be accessed and understood through the *how* and *what* of perception.

II
Outline

In what follows we will discuss the two strands of Russell's theory of perception: metaphysics and epistemology. Russell's philosophy is one of systems. By this I mean that there is no part of his philosophy that is independent of another part – i.e. all parts of his philosophy must be consistent with one another as well as internally. It is with this first point established that Chapter 1 begins. In this chapter we will discuss the underlying metaphysics that Russell develops as a result of both his goals and his acceptance of science. This discussion includes Russell's ontology, as well as his distinction and amalgamation of mind and matter. Involved in this discussion is discovering how Russell enables the sufficient metaphysical conditions for there to be a consistent world and mind relationship, while also a parsimony that has the universe consisting of only one ultimate stuff.

Chapter 2 will consist in addressing Russell's theory of perception and how from this theory we gain a structural understanding of the physical world. As we shall discover, Russell finds the mental world – or perceptual space – to be of the same stuff as the external world – or physical space; however, perceptual space is all we know. That is, the only aspect of the external world that we have access to are the compresent events in our brains – i.e. the world we know is

in our heads. This conclusion is not to accept solipsism, phenomenalism, or idealism, however; rather, it is the suggestion that the physical world is very much different than what it appears as to us, and that what we know of it can only be inferred. If it is the case that the physical world is different than how it appears to us, then how can we possibly access the physical world to make this interpretation? In response to this problem, Russell posits a theory of perception that is causal: in AM and OP he explicitly refers to his theory as the *causal theory of perception*, whereas in HK he maintains the causal relationship between percepts and their physical causes, but does not refer to this explicitly in the above way. For simplicity I will refer to Russell's theory of perception as the causal theory as the earlier theory is consistent with the latter as far as the processes of perception are concerned.

Chapter 3, then, seeks to explicate Russell's theory of knowledge on the basis of perception. There are a number of goals that this chapter attempts to achieve. First, we discuss the distinction, and subsequent stages, of basic commonsense knowledge through to higher-order scientific knowledge in Russell's theory. Following our dissection of Russell's developed epistemology, we uncover the need for non-demonstrative principles to allow even the possibility for scientific knowledge. We will trace the development of Russell's thought concerning these non-demonstrative principles from 1927 – 48, while also assessing the importance of these principles for Russell's program. On the basis of the discussion concerning both the need for non-demonstratives and the stages of knowledge in Russell's theory, we will next engage in the ultimate conclusions Russell's draws with regards to knowledge, both conceptually and in practice. This engagement will lead to our own conclusion concerning Russell's epistemic program and how it can inform future directions in epistemology.

Chapter 4 and 5 are again concerned with our two philosophical branches of perception, the epistemic and the metaphysical. In Chapter 4 we focus on the epistemic problem of perception, which discusses problem of knowledge and the external world. That is, how is it that we can form warranted and justifiable beliefs about the external world on the basis of our senses? In order to clarify where Russell fits into this discussion we engage a number of other theories of perception. I ultimately argue that Russell provides us with the template for a proper epistemic theory of perceptual knowledge. Chapter 5 seeks, then, to discuss Russell's theory of perception in more contemporary metaphysical terms. In this chapter we summarize the conclusions discussed in previous chapters, thus bringing together the entirety of Russell's theory of perception.

I have also included an Appendix that provides an example of Russell's constructive method for the conclusions of science that are facilitated by our perceptions. More specifically, we discuss the construction of *time* as it is explained in relativistic physics, but out of our perceptions of it.

As I hope will become evident, the majority of the topics we discuss in what follows are still relevant to contemporary works being done in these respective fields. What is more, Russell's conclusions, while not being accepted outright, are for the most part well ahead of their time and for this reason are also relevant and applicable to contemporary discussions: his theory of perception and knowledge is at once iconoclastic, relevant, and worthy of our consideration.

1

Events

We begin with a discussion of Russell's later ontology. Crediting Whitehead as his primary influence,[3] Russell comes (post-1918) to accept an event ontology. As our concern here is his later work, we will limit ourselves to Russell's development and usage of events as a metaphysical concept beginning with AM through to his final works HK and *My Philosophical Development* (MPD). It may seem strange to begin a treatise on knowledge and perception with ontological considerations, but as we shall soon discover, getting a firm grasp on exactly how events fit within Russell's grander project is imperative to our own goals—*viz*. an accurate depiction and clear understanding of Russell's theory of perception. This chapter, then, first discusses Russell's thoughts about events beginning in 1927 and subsequently addresses alterations made to this concept throughout his later works. Following the tracing of this

[3] See, for example, Russell's chapter "The External World" in *MPD*, where Russell explains Whitehead's influence: "Whitehead's method of constructing points as classes of event was a great help to me in arriving at the above theory" (108).

development is a discussion on the relevant aspects of how events pertain to the physical and mental.

I
Russell's Ontology

An event for Russell circa 1927 is metaphysically primitive. When considering metaphysically primitive entities, Russell is seeking to answer a question embedded within his greater project: "What are the ultimate existents in terms of which physics is true (assuming that there are such)" (AM, 9)? Foreshadowing his response to this question, Russell writes: "We shall find, if I am not mistaken, that the objects which are mathematically primitive in physics, such as electrons, protons, and points in space-time, are all logically complex structures composed of entities which are metaphysically more primitive, which may be conveniently called 'events'" (AM, 9). Thus Russell employs events in a way both consistent with his understanding and development of space-time, while also using it in a slightly nuanced way – i.e. as a metaphysical concept. And, as we shall discover, events enable Russell to construct or infer all of the entities of physics and psychophysiology.

How exactly are we to understand 'event' within this context? Russell, from OP:

> So long as we continue to think in terms of bodies moving, and try to adjust this way of thinking to the new ideas [of physics] by successive corrections, we shall only get more and more confused. The only way to get clear is to make a fresh start, with *events* instead of bodies. In physics an 'event' is anything which according to the old notions, would be said to have both a date and a place. (121)

If we take the above physical basis for an event, it may appear *prima facie* as if Russell is adapting 'event' from relativity theory and using it as a metaphysical concept. But, although 'event' can be understood, in some ways, the same in both its use in physics and Russell's

metaphysical use, Russell's employment of 'event' serves a greater purpose, namely, the construction of and perceptual basis for the inferred world of physics.[4]

Regarding events at this time, Russell holds that they are ontologically primitive, can be constructions, and can be inferred in places unperceived. What we mean by this tripartite distinction is that events are basic: everything is composed of them. However, there are also non-basic events, which are complexes of other, more primitive, events. Finally, from the consistency of physics, Russell argues that we can conclude that events do not need to be perceived in order for us to infer their existence. The simplest explanation of 'event' in 1927 is found in OP: "Everything in the world is composed of 'events'…. An 'event' as I understand it, is something having a finite duration and a small finite extension in space; or rather…it is something occupying a small finite amount of space-time" (304). Russell suggests that the smell of rotten eggs, a flash of lightning, a clap of thunder, or feeling the coldness of a frog would each serve as examples of events. In addition to these strictly perceptual examples, Russell suggests that we can infer from data, like immediate percepts, to events elsewhere that are not percepts. Furthermore, "percepts afford the logical premisses for all inferences to events that are not percepts, wherever such inferences are logically justifiable" (OP, 305). This last point is most important for our considerations as it points us towards the relevance of 'events' to perceptions and therefore knowledge.

In 1927 Russell sought to take on a more scientifically based ontology. This ontology, then, took events as primitive. Everything could be constructed out of events; no longer was

[4] We should note that Russell's understanding and employment of 'event' in relativity physics is different than that used by the initial proponent of four-dimensional space-time, Hermann Minkowski. Minkowski understood an event as a space-time point—not as primitive, but rather a construction. For Minkowski, worldlines – i.e. the path of a particle as it traverses space-time – are primitive. Thus, Minkowski held that in order to get a space-time point, two worldlines must intercept. Russell, on the other hand, understands an event in physics to be in terms of date (t) and place (x,y,z)

there a world consisting of *stuff*. Again recognizing the importance of relativity in this project, we observe Russell's ontological parsimony: matter is no longer matter, time is no longer universal, and classical realism is false. Introducing the goal of his ontological project, Russell writes in AM:

> We shall seek to construct a metaphysic of matter which shall make the gulf between physics and perception as small, and the inferences involved in...perception as little dubious as possible. We do not want the percept to appear mysteriously at the end of a causal chain composed of events of a totally different nature; if we can construct a theory of the physical world which makes its events continuous with perception, we have improved the metaphysical status of physics, even if we cannot prove more than that our theory is possible. (275)

Much can be gathered from this passage. First, we notice Russell's metaphysics concerned with the overall project regarding physics and perception. Secondly, Russell is, as we shall discover in the subsequent chapters, formulating a theory from which he can improve the epistemological and metaphysical status of physics as well as proposing a form of realism. Finally, there is very much a lack of dogmatism regarding Russell's suggestion—as science advances, so too can our metaphysics.[5] We will discuss each of these points in turn. For now the importance of the above quotation is found in the project Russell is undertaking: an ontology that will facilitate the construction of external objects which are of the same ontological basis as those promoting our perceptions. Events are the primitives Russell employs for the causal lines linking cause to effect, from X at time 0 to X* at time 1, from physical event to mental event.

Events stay at the core of Russell's metaphysics for the rest of his philosophical career, most notably in HK and again restated in MPD. In HK, however, Russell, while not eliminating his initial appeal to 'event', suggests that there are addenda to be addressed when discussing their role:

[5] This last observation may perhaps lead to a point of contention within the type of metaphysical project Russell sets out for himself. For the time being, however, I reserve criticisms for later discussion as right now we are concerned with a taxonomy of Russell's later ontology.

> If we consider that, in describing the structure of the world, the terms which must be merely named must include "events", which are uniquely defined by their spatio-temporal position, and are logically incapable of recurring, then we must say that the phrase "that occurred" is inaccurate, and should be replaced by "something very like that occurred." If, on the other hand, we hold that an "event" can be defined as a bundle of qualities, each and all of which may recur, then "that occurred" may be completely accurate. (HK, 190-1)

The above passage is somewhat confusing given what we have just discussed concerning the 1927 formulation of 'event'; however, if we consider another definition put forth earlier in HK, we see a consistency in Russell's amended use of 'event': "an 'event' may be defined as a complete bundle of compresent qualities, i.e. a bundle having two properties (a) that all qualities in the bundle are compresent, (b) that nothing outside the bundle is compresent with *every* member of the bundle" (78). Compared with the earlier definition, we notice, then, 'events' are no longer metaphysically primitive. Rather than being merely understood in terms of having a finite period and limited extension in space-time, events are now considered 'bundles' of properties, where a property is to be understood as a universal. Two considerations arise in light of this adjustment. First, with the construal of events as primitive in his earlier depiction compared to their later analysis of events as bundles, do events lose some of their metaphysical importance – i.e. are they still able to provide the perceptual basis for all other inferred and constructed physical entities? Secondly, why the adjustment?

Addressing the second consideration first, if we turn to Russell's concern with individuation within his system,[6] we get a sense as to why he explores and adjusts 'event'. He suggests that when we are concerned with individuation – i.e. of particulars – there have been three influential views: (1) quality constituted particulars—*viz*. bundles, (2) particulars defined by spatio-temporal position, and (3) the empiricist position, which holds that numerical diversity

[6] See especially HK: §II Ch. 3 & 4 and §IV Ch 8.

is ultimate and final.[7] Remarking that (2) is reducible to either (1) or (3), Russell next seeks to formulate a theory of particulars out of events, using either (1) or (3). It is here that some difficulties arise. If we understand that events are finite and have a date and time, then events cannot recur. But, if within a complex, one has the experience of a quality, e.g. blue, then is the blue she next experiences utterly different? If we accept (3), then it is and the position is subject to the same criticism that is mounted against traditional empiricism; we run into the same archaic metaphysical problems of substance – i.e. we cannot *know* a particular P, whatever P may denote: because there is no universal from which to base our understanding of any occurrence of the particular P, there is no basis from which we can come to know what P is. As a result of this problem Russell concludes:

> It is difficult to see how something so unknowable as such a particular would have to be can be required for the interpretation of empirical knowledge. The notion of substance as a peg on which to hang predicates is repugnant, but the theory that we have been considering cannot avoid its objectionable features…. we must, if possible, find some other way of defining space-time order. (HK, 257)

We thus find Russell attempting to create order out of a construction of universals.[8]

We can now get a somewhat better understanding for why Russell was concerned with construing 'event' as 'bundles of qualities', or as he puts it, complexes. A complex is to be understood as the experience of simultaneous qualities in an instance – e.g. while watching the news and drinking a scotch, this particular event would include the visual experience, the smell and taste of scotch, and the auditory emissions coming from the speakers. This *assemblage* of qualities is unique and is very unlikely to recur, although some of the particular qualities may recur often, such as colours, smells, and perhaps certain pitches. Thus events can, logically

[7] See (HK, 256).
[8] The actual details in which Russell performs these constructions and analyzes events as compresent complexes of qualities will be developed in the next chapter.

speaking, potentially recur; this recurrence, however, is highly unlikely. We will discuss these issues in greater detail in subsequent chapters.

To this point we have followed the development of Russell's event ontology from its use in 1927 (AM and OP) through to HK. In the former, Russell took events to be primitive unanalyzable complexes. In the latter, however, events become analyzable in that they are now understood as being composed of qualities that can recur. In an interesting twist, Russell again alters his position regarding complexes and simples in MPD. In HK and *An Inquiry Into Meaning and Truth* (IMT) Russell holds that although we should construct a complex of qualities that are compresent in experience, if we had sufficient knowledge, we would not need to individuate particulars, but rather we could understand them by their simple parts.[9] In MPD, however, Russell alters this view, instead positing that we can never know if we have reached a simple, and that we can be satisfied by labelling complexes, concluding that "the whole question of whether there are simples to be reached by analysis is unnecessary." He goes on: "This has a bearing on the question of proper names. I thought, originally, that if we were omniscient, we should have a proper name for each simple, but no proper names for complexes, since these could be defined by mentioning their simple constituents and their structure. This view I now reject" (MPD, 166). We read, then, that while maintaining his event ontology, Russell denies the need to understand the simples that constitute an event, as we still hold that 'event' will denote a finite period and small extension in space-time, where there is a complex of compresent qualities – i.e. events overlapping in space-time, which appear to be simultaneous (compresent) in experience.

In some sense everything is an event, in that a complete complex of events is itself an event. We take as a *complex* of events those events that are given in one instance; a *complete*

[9] See HK: §IV Ch. 8.

complex of events is those events given together that constitute an individual. Thus, if a complete complex of events is itself an event, then events can include you, me, planets, electrons, that table, etc. None of the aforementioned developments of 'event', aside from their primitiveness in 1927 compared with their constitution by universals later on, is inconsistent; rather, Russell, as he refines his thoughts, extends his theory in subsequent works. One outstanding question remains: What do events have to do with perceptions? Saving the development, processes, and relationship of perceptions to physics for the next chapter, we next address Russell's discussion of physical and mental events.

II
Mind and Matter

Having observed that events are at base the stuff that makes up the world of physics, it is important here for us to address an issue most relevant to perception concerning this ontology—the distinction made by Russell regarding *mental* events and *physical* events. Prior to addressing this issue, we must first recognize that Russell's metaphysics is *monist* in that he takes reality to be made up of only one type of stuff. As we have been here addressing, this one stuff is events. Regarding the distinction between Russell's monism and other monist metaphysics, Russell attempts to split the difference between idealism – reality as fundamentally mental – and materialism – reality as fundamentally matter. Russell therefore accepts a *neutral* monism, which holds that neither matter nor mind is primary; rather, there is something more primitive than each of these distinctions that make up both matter and mind. This primitive stuff is, of course, events.

Historically the distinction between mind and matter has caused metaphysical fits for philosophers attempting to bridge interaction between the external world and the world of the mind.[10] Regarding the problems found for perception due to these distinctions, Russell states:

> The traditional dualism of mind and matter, which I regard as mistaken, is intimately connected with confusions on this point [the problems of perception]. So long as we adhere to the conventional notions of mind and matter, we are condemned to a view of perception which is miraculous. We suppose that a physical process starts from a visible object, travels to the eye, there changes into another physical process, causes yet another physical process in the optic nerve, finally produces some effect in the brain, simultaneously with which we see the object from which the process started, the seeing being something 'mental', totally different in character from the physical processes which precede and accompany it. This view is so queer that metaphysicians have invented all sorts of theories designed to substitute something less incredible. (OP, 152)

Regarding the traditional dualism, Russell attributes this distinction back to Descartes: "Modern philosophy is generally taken as beginning with Descartes…. In metaphysics he emphasised the gulf between mind and matter, or between soul and body" (OP, 262).[11] Russell is discontent with this distinction, writing in *History of Western Philosophy* (HWP): "The distinction of mind and matter came into philosophy from religion, although, for a long time, it seemed to have valid grounds. I think that both mind and matter are merely convenient ways of grouping events" (742).[12] Russell further suggests that Descartes' dualism was in direct tension with his other intellectual endeavours, as Descartes was strictly materialistic in everything other than the human mind: "There is in Descartes an unresolved dualism between what he learnt from contemporary science and the scholasticism that he had been taught" (HWP, 520). Russell's

[10] Recall Descartes' substance dualism in *The Meditations*, Berkeley's idealism, Malebranche's occasionalism, Kant's transcendental idealism, or Hume's scepticism to name but a few of the more influential responses to the ontological problems that can be associated with the problem of the external world.

[11] I am inclined to agree with Russell that the problem of mind and body, or mind and matter is traceable to Descartes' groundbreaking work. I suspect, however, that this distinction, like so much else during the past millennium, echoes from the time when philosophy was dominated by religious thinkers, in which case the different substances would most certainly be a problem. Had history, however, promoted a Hobbesian metaphysics, the difficulties with dualism may never have taken hold in quite the same way as it did because of Descartes.

[12] This way of talking about mind and matter – i.e. ways of grouping events of certain types – is consistently maintained from 1927 – 59.

project can be seen as, in part, rectifying this archaic philosophical problem between the materialistic worldview of science and the idealistic worldview of religious philosophy. Thus, the problems found for mind, body, and physical world beginning with Descartes and subsequently found creating many metaphysical problems with epistemic ramifications, will be addressed here—although not specifically with reference to this original Cartesian issue.

Two theories that attempt to avoid this problem, as Russell described in the above quotation, are materialism and idealism. Although these theories are metaphysically parsimonious in that they are monistic, Russell is dissatisfied with each of them. Materialism is the view that fundamentally everything consists of matter. Idealism, on the other hand, "maintains in general that what is real is in some way confined to or at least related to the contents of our own minds" (Hamlyn, 386). Russell rejects materialism from the basis of relativistic and quantum physics. Matter, from this perspective, loses its traditional qualities – i.e. rigidity, impenetrability, irreducibility, etc. Instead, matter be something other than what we traditionally considered it to be, because, regarding substances and particles, "physics is silent" (OP, 173). Thus, on the view of contemporary physics, "'matter' is a convenient formula for describing what happens where it isn't…. Materialism as a philosophy becomes hardly tenable in view of this evaporation of matter" (173).[13] It is on the basis of rejecting matter, and in its place constructing a logical fiction we label 'matter', that Russell maintains his rejection of materialism.

[13] See also Russell's discussion of the philosophical ramifications of the structure of the atom and relativity theory: "The main point for the philosopher in the modern theory [of physics] is the disappearance of matter as a 'thing'. It has been replaced by emanation from a locality – the sorts of influences that characterise haunted rooms in ghost stories … the theory of relativity leads to a similar destruction of the solidity of matter" (OP, 116–7); these sentiments are echoed in (AM: Chapters I, XIII, XIV, XXIII, XXIV, XXXVII). Further consider "Mass is only a form of energy, and there is no reason why matter should not be dissolved into other forms of energy. It is energy, not matter, that is fundamental in physics" (HK, 254).

Conversely, Russell rejects idealism, but from a different scientific perspective, namely psychology. There are two reasons for the rejection of idealism, both of which rest on our notion of causality. In the first case, the world of physics having a causal effect on one's mind is impossible if there are only minds, or mental events. Secondly, the causal relations in the world that are assumed would be very strange if all events are mental – e.g. that the music I hear and attribute as coming from my stereo did not exist until I heard it, or, *a fortiori*, the sun ceases to exist on a cloudy day. Russell suggests that logically we have no reason to reject this position, but with regards to commonsense and physics, it is unacceptable.[14] Recall that Russell assumes the veracity of physics. On this supposition, then, idealism, phenomenalism, and solipsism are each untenable in Russell's project.

Although he rejects the traditional monistic positions, Russell suggests that his view can seem either idealistic or materialistic: "when I say that my percepts are in my head, I shall be thought materialistic; when I say that my head consists of my percepts and other similar events, I shall be thought idealistic" (AM, 382). Without getting ahead of ourselves, we can say that Russell avoids this problem by employing events as primary. How Russell makes this avoidance possible is through constructing mind and matter out of events.[15] Russell discusses the motivation and methods for such a project:

> Physics, in itself, is exceedingly abstract, and reveals only certain mathematical characteristics of the material with which it deals. It does not tell us anything as to the intrinsic character of this material. Psychology is preferable in this respect, but is not causally autonomous: if we assume that psychical events are subject, completely, to causal laws, we are compelled to postulate apparently extra-psychical causes for some of them. But by bringing physics and perception together, we are able to include psychical events in the material of physics, and

[14] Regarding these epistemological considerations, we will discuss in detail Russell's acceptance of non-mental events in Chapter 2.
[15] We are talking here in terms of metaphysics, and not yet the physical understanding of matter. We will discuss Russell's construction of matter in more detail in the next chapter.

> give to physics the greater concreteness which results from our more intimate acquaintance with the subject-matter of our own experience. (AM, 10)

We thus observe the importance found in developing a metaphysic that enables the strongest possible grounding for our knowledge of the world according to physics. We shall therefore clarify a number of concepts in order to proceed: matter, mind, mental event, and physical event.

Matter, as has already been alluded to, is, on Russell's view, a set of events that are causally related and compresent. Thus, what we traditionally perceive as matter is in fact a logical construction out of more primitive metaphysical entities.[16] Mind is also a set of events. When we discuss the events that make up what we define as matter, these are inferred events from the physical world. However, the experience that we have of matter is a percept, which is a mental event. This distinction leads Russell to distinguish between two types of events: physical and mental. Demarcating these two notions in HK, Russell elaborates:

> I should define [physical event] as an event which, if known to occur, is inferred, and which is not known to be mental. And I define a "mental" event…as one with which someone is acquainted otherwise than by inference. Thus a "physical" event is one which is either totally unknown, or, if known at all, is not known to any one except by inference—or, perhaps we should say, is not known to be known to any one except by inference. (202)

What this distinction amounts to is that any event that we perceive directly is mental; any event that must be inferred is physical.[17] Two considerations follow from this distinction: (a) Exactly how should we understand mental events? (b) Given the multiplicity of events here portrayed, are mental and physical events causally compatible?

A number of terms can be used to illustrate what is meant by mental events—thoughts, percepts, and memories are each mental events. Furthermore, mental events are considered as having a spatio-temporal location in a living brain, which according to Russell is a mind. In

[16] The details of this construction will be presented next chapter, within the context of physics and perception.
[17] As noted above, our concern with physical events and the causal process of perception will be dealt with in detail below. For now our concern is the metaphysical underpinnings of Russell's theory.

short, "a mental event is any event in a living brain" (OP, 313).[18] But what, then, is a mind? We can address this question from two perspectives, the physical and the psychological. In the former, Russell suggests that a mind must be connected to a body – i.e. a chemically based construction of matter (causally connected events). Regarding the psychology of the mind, a mind is unified in one experience – i.e. the connection of mental events in a given experience through memory and mnemic causal chains.[19] Concerning the distinctions between these two interpretations of mind, Russell suggests that a mind is composed of events that are bound to the laws of psychology, but also consists of events that are at once both mental and material, depending of the type of causal relationships the events involved are having. This position is just to say that the mind is made of the same events as a brain, only in a different ordering: "the important point is, that the difference between mind and brain is not a difference of quality, but a difference of arrangement" (Russell 1950, 289). We thus discover a type of epiphenomenalism in Russell's account of the mind.[20] A propos our consideration of mental events and the mind, Russell concludes:

> Thus 'mind' and 'mental' are merely approximate concepts, giving a convenient shorthand for certain approximate causal laws. In a completed science, the word 'mind' and the word 'mental' would both disappear, and would be replaced by causal laws concerning 'events', the only events known to us otherwise than in their mathematical and causal properties being percepts, which are events situated in the same region as the brain and having effects of a peculiar sort called 'knowledge-reactions'. (OP, 310)

We thus read that the mind that results from these events can be construed as a certain arrangement of events – mental – that correspond to physical events arranged in a certain way as

[18] This classification of a mental event being *any* event in a living brain seems too strong. Is the circulation of blood in the brain a 'mental event'? If we read Russell charitably, we recognize that he means mental events such as thoughts, images, memories, and so on, but this definition taken unqualified cannot be what Russell has in mind when using 'mental event'.
[19] For these two distinctions see (OP, 315–17). It should be noted that Russell gives up the notion of mnemic causation after 1927 due to criticisms against the idea of 'causes at a temporal distance'.
[20] We discuss this point and more in Chapter 5 below.

to make up a brain, and thus at base both matter, brain, and mind are made up of the same stuff, just differently arranged.

At this point it will be valuable to discuss two further concepts relating to mental events: *percepts* and *mnemic causation*. Beginning with the latter, Russell in *Analysis of Mind* borrows the concept from the psychologist Richard Semon: "we will give the name of 'mnemic phenomena' to those responses of an organism which, so far as hitherto observed facts are concerned, can only be brought under causal laws by including past occurrences in the history of the organism as part of the causes of the present response" (1921, 45). An example of mnemic causation could be the nauseous feeling one gets when smelling tequila after over indulging at some earlier time in one's life.[21] Had not the person had the experience of nausea earlier, she would not get the feeling present when encountering tequila in the future. Many of our mental events are causally related to mnemic phenomena when we associate a past experience with a present encounter.[22]

Percepts factor into this discussion. Percepts are not merely data we receive through our senses, although this phenomenon is certainly part of the percept. Also potentially included in a percept are expectations or responses to a stimulus. Consider seeing a coin from an angle that makes it appear elliptical. Do we think that we are seeing an elliptical coin, or do we recognize that it is only from the unique perspective that the appearance of the coin makes it seem elliptical? Based on previous experience, we expect and recognize that the coin is circular, not elliptical, even though our basic sensation would lead us to conclude otherwise.

[21] I unfortunately write from experience concerning this example.

[22] The appeal to mnemic phenomena is made from 1921–27. Russell comes to alter this position, however. In response to John Laird's criticisms regarding the temporal distance between cause and effect required for mnemic causes, Russell highlights that he alters this position in IMT and subsequently in HK with the notion of habit. Thus, the role of mnemic causation with regards to percepts and our knowledge is amended: "As regards 'mnemic' causation, I agree with Mr. Laird that the hypothesis of causes acting at a distance is too violent and I should therefore now explain habits by means of modifications of brain structure" (PBR, 700).

That the compatibility between mental and physical events apparently rids the discussion of unwanted metaphysical baggage, it is important that they are indeed causally compatible. Addressing this concern directly, Russell suggests that since what we perceive as external to us are just constructions of events via percepts, which are mental events, percepts and physical events can be causally related. Furthermore, physical events can be compresent with percepts, which means that not only are mental and physical events causally compatible, but also that they can overlap in space-time. Thus, we notice that physical and mental events are compatible on two levels, compresence and causality. As this compatibility forms the basis for the entirety of Russell's epistemological project, he summarizes this conclusion on the final page of AM:

> Percepts are the only part of the physical world that we know otherwise than abstractly. As regards the world in general, both physical and mental, everything that we know of its intrinsic character is derived from the mental side, and almost everything that we know of its causal laws is derived from the physical side. But from the standpoint of philosophy the distinction between physical and mental is superficial and unreal. (402)

This conclusion, while a strong one, enables Russell to construct a theory of perception that he believes is adequate to justify our knowledge of physics, while simultaneously remaining consistent with the physical worldview. This is as good as any theory can hope for given the project at hand.

III
Review

We have thus traced the development of Russell's ontological basis of the universe as it is found in a world of relativity and the sub-atomic. Physics makes a world of material stuff untenable; it makes a world consisting solely of the mind equally untenable. What is needed, then, is a neutral stuff that avoids the difficulties associated with matter and is yet compatible with the mind. Events do this work.

Let us review this chapter. An event is an occurrence that takes up a finite amount of time and has a limited extension in space. When considered physically, events occupy any region of space-time. In 1927, the most logically primitive and ontologically basic stuff is events. These are not analyzable. Larger constructed entities are also events, but can be analyzed into more basic events. Since events have a date, time, and location, they cannot recur. After 1940, however, Russell alters this view. Thus, while everything remains an event in this later formulation, what an event is changes. Events become compresent complexes of qualities, which while recurrence of qualities is possible because of a quality's universality, the recurrence of the complex is empirically nearly impossible—Russell suggests that logically a complex could recur, but the probability of such a recurrence is astronomically high and thus not potentially realistic.

Events enable us to construct the world of physics out of perceptual space, a point that will be elaborated in Chapter 2.[23] For now, what is more important is that events are what the mind consists of. This consideration reveals that there are two types of events: physical and mental. Russell distinguishes between these two types in a number of ways. First, a mental event is an event that is directly accessible to the person whose brain houses it, whereas a physical event can only ever be inferred. Physical events have structure, but do not themselves have qualities that are knowable; their qualities, rather, are only inferred as they are a result of the effects of compresent events resulting in percepts – i.e. mental events. Chains of physical events that traverse space-time and affect or cause mental events are therefore events that are coupled around a central source. Mental events understood in terms of physical space are located in a living brain.

An outstanding question remains: Is this ontology tenable and does it suffice for the work Russell seeks to accomplish? *Prima facie* I hold that it does. Arguably, the remainder of this

[23] A more in depth analysis of the specifics of this construction is provided in the Appendix also.

work will reveal the justification for Russell's employment of 'event' and his development of a four-dimensional ontology. For now, it will be enough to say that, with events, Russell can formulate a realist metaphysics regarding the world of physics, can avoid the problems associated with phenomenalism and idealism, and from this avoid the dualist mind/body dichotomy that has beset philosophy since Descartes. Regarding these points, the most laudable justification for an event ontology is that events enable percepts occurring in one's mind to be of the same ontological type as the causal source of the percept. If there are no good reasons, as Russell maintains and contemporary physics supports, to accept material substances as a part of the universe, then we need some way to access the world sensibly.[24] Events facilitate this access; we needn't concern ourselves with all the confusion of phenomenalism, mind versus matter, and idealism; rather, we can maintain a realist metaphysics and justify the veracity of physics. I have not here mounted any critiques of this ontology. My criticisms will emerge in subsequent chapters, since events play a central role in the entirety of Russell's theory of perception.

[24] Here 'substance' should be read in the traditional metaphysical usage. We will discuss this point in detail in the following chapter.

2

Perception and Physics

In this chapter we are concerned with two strands of Russell's epistemic program. First, we are concerned with how the causal process of perception is developed. Facilitating our concern with the process of perception, we will revisit physics, and how, from counterintuitive conclusions as to the nature of the physical world, we can come to have perceptual knowledge. This discussion requires an analysis of the role causal lines have in the persistence of matter and the relations of physical space, the distinction between perceptual space and physical space, and how causal lines can accommodate a correlation between these two spaces. From this process we discuss perception as it is explained via physics and via psychology within Russell's system. Following our work on how this process of perception occurs, we next discuss how it is that Russell constructs the inferred physical world from the perceptual world. In order to aid our understanding of this method we must understand how Russell employs the notion of structure and how, from this notion, our knowledge of physical space and constructions are possible. Our

essential concern in this chapter is how perception is possible within a world according to physics, and how from perception we can acquire the knowledge that we do.

I
Conceptual Components for Russell's "Perception"

It is important for us to note that Russell takes perception to be causally relatable to the space of physics – i.e. there can be, and is, a causal relationship between mental and physical events. Thus, if there is an event that is objectively perceivable to a number of subjective perceivers, then there must result percepts in each of the perceivers that are similar and have similar anteceding events causing their respective percepts:

> Whenever there is throughout a certain neighbourhood and ranged about a centre a group of complex events all identical in structure, as, for example, what different people and cameras see or what different people and gramophone discs hear in a given theatre, we unhesitatingly assume a common causal ancestor for all the different complex events. (HK, 408)

Seemingly, there is a big problem with this account of perception, however: If physics teaches us that the world is not composed of persisting entities and that relational space is relative to a reference frame, how do we explain the world as we perceive it?[25] We thus proceed in such a way as to explain what it is that we must accept from the conclusions of relativistic and sub-atomic physics, and how, given these considerations, perception is possible—and, more importantly, how it is that from these perceptions we can come to understand the conclusions of physics. What, then, must we accept regarding reality and the conclusions of physics?

Russell argues that the traditional notion of 'matter' is no longer a tenable concept. Matter, as with most things putatively perceived for Russell, is a logical fiction. Science tells us

[25] Russell was concerned with this question, for both knowledge and the sake of physics itself. Consider for example: (AM): "*if* modern physics invalidates perception as a source of knowledge about the external world, and yet depends upon perception, that is a valid argument against modern physics" (137); also (PBR): "Common sense says: 'I see a brown table.' It will agree with both the statements 'I see a table' and 'I see something brown.' Since, according to physics, tables have no colour, we must either (a) deny physics, or (b) deny that I see a table, or (c) deny that I see something brown. It is a painful choice; I have chosen (b), but (a) or (c) would lead to at least equal paradoxes" (705).

that the atomic theory from antiquity i.e. – that there are small indivisible parts (atoms) that make up the whole of the macro-level – is false. With the discovery of the quantum realm and the advent of relativity theory, we discover that matter loses its status on two fronts: in the atomic theory, where there was substance, we now find *energy*; in relativity, the persistence of a substance in one place at one time is nonsensical—spatial and temporal relations are not absolute, but rather are dependent on one's inertial frame of reference**.** In accepting the truth of physics and events as our ontology, then, we must give up our commonsense notions of space, time, and substance. How is it that we can experience these categories as we do, if they are of such a different intrinsic make-up than we experience? In order to understand how our experience of the physical world works, we must clarify two ways that causal lines and causal laws factor into perceptions and what we perceive as 'stuff'. In the case of the counterintuitive conclusions of physics, we have causal lines creating structure and the appearance of persisting entities.[26] In the case of causal lines and our perceptions, the resulting percepts are causally related to the events in physical space. We thus proceed with discussing how these causal lines allow for the appearance of individuals, matter, and substance, as well as facilitate perception. Prior to our analysis of the causal relationships between physical events and between physical events with mental events, we must make a brief excursion into Russell's distinction between two types of space: physical and perceptual.

Space(s)

Physical space for Russell is the space that consists of physical events, and is thus only known inferentially. Perceptual space, on the other hand, is made up of mental events and is thus in the mind of the perceiver. Russell describes the latter as "a common-sense construction,

[26] The notion of time and experience in physics is a somewhat different construction as time in physics is already assumed to be personal and thus the experience of it requires a much less complicated construction. We will discuss in detail the experience of time in the Appendix.

composed of diverse raw materials" (HK, 279), where the raw materials can result from the different senses and their correlations.

The most important aspect of this distinction between physical and perceptual space is that the whole of physical space, while causally relatable to and in many cases responsible for our percepts, is only known in perceptual space—*a fortiori*, "everything that we can directly observe of the physical world happens inside our heads" (OP, 153).[27] In fact, Russell goes so far as to suggest agnosticism regarding physical space: "the knowledge we derive from physics is so abstract that we are not warranted in saying what goes on in the physical world is, or is not, intrinsically very different from the events that we know through experience" (OP, 155). The importance of this point is twofold: on the one hand, "the notion that what we see is 'out there' in physical space is one which cannot survive while we are grasping the difference between what physics supposes to be really happening, and what our senses show us as happening" (OP, 153), and also that what we perceive in our heads leads to naïve realism, and is therefore misleading.[28]

Although our experiences are misleading in that we perceive something we think is 'out there' when our perceptions are actually of our own minds, Russell ultimately concludes that it is through our experience of space and time that we can understand the space-time of physics: "physical space-time…is an inference from perceptual space and time" (HK, 284).[29]

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[27] Russell maintains this position throughout his later works. It is this position that leads Russell to conclude what many have found paradoxical: "let us suppose that a physiologist is observing a living brain…. It is natural to suppose that what the physiologist sees is in the brain he is observing. But if we are speaking of physical space, what the physiologist sees is in his own brain" (OP, 151). See also, (Russell 1936b) "it is thought that what a physiologist sees when he examines another man's brain through a microscope is in the man's brain, whereas, if we are talking of physical space, it is in the physiologist's brain" (76); (PBR, 705); (HK): The physiologist's "percept when he looks at a brain is an event in his own mind, and only has a causal connection with the brain that he fancies he is seeing" (202); (MPD, 25-6).

[28] To be clear regarding the above point, Russell is not a sceptic. When I suggest that he would promote agnosticism regarding physical space, it is to say that what we can know perceptually is quite limited. This issue will be discussed in detail in Chapter 3.

[29] In MPD, Russell likens his distinction between the two spaces to that of Leibniz's two spaces in the *Monadology*:

> There are for Leibniz…two kinds of space. There is the space in the private world of each monad, which is the space that the monad can come to know by analyzing and arranging data without

Understanding how common sense perceptions come about *and* how physical space can correlate with those perceptions as we experience it requires a discussion of causal lines and causal laws.

Causal Lines

As we discussed at length above, the world consists of events. Essential to our understanding of how perception of the physical world—as we perceive it—is possible, we must understand how events relate through causal lines. The acceptance of causal laws and their relation to knowledge in Russell's later work cannot be overstated: "everything we believe ourselves to know about the physical world depends entirely on the assumption that there are causal laws" (HK, 272). As we will discuss shortly, causal chains are what enable events to relate in both physical and perceptual space. Furthermore, causal lines *must* be assumed when considering knowledge as it is according to physics. Here, however, we merely discuss the role of these causal lines in perception and physics.

According to Russell, there are two important types of causal chains: "first, those which constitute the history of a given piece of matter; second, those which connect an object with the perception of it" (HK, 282). Or, put another way, "[t]he conception of 'causal lines' is involved, not only in the quasi-permanence of things and persons, but also in the definition of perception" (HK, 403). Thus, regarding perception, our mental events have a causal relationship with physical ones: events in physical space can and do causally affect events in one's body resulting in mental events. Furthermore, causal lines accommodate our notion of objects in the physical

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> assuming anything beyond data. But there is also another kind of space. The monads, Leibniz tells us, reflect the world each from its own point of view, the differences of points of view being analogous to the differences of perspective. The arrangement of the whole assemblage of points of view gives us another kind of space, different from that in the private world of each monad…. We may call the space in each monad's world of data 'private' space, and the space consisting of the diverse points of view of diverse monads 'physical' space. In so far as monads correctly mirror the world, the geometrical properties of private space will be analogous to those of physical space. Most of this can be applied with little change to exemplify the theory that I wish to advocate. (25)

This passage, then, can help to clarify exactly how perceptions and their relationship to the physical world result in knowledge. We will discuss the role of structure, alluded to in the above quotation, below.

world:[30] "a 'causal line'…is a temporal series of events so related that, given some of them, something can be inferred about the others whatever may be happening elsewhere. A causal line may always be regarded as the persistence of something—a person, a table, a photon, or what not" (404).[31] We thus have a twofold application of the notion of causal lines: persistence and perception.

A second related point to the above discussion is the location of mental events and perceptual space according to physics. As we discussed in the previous chapter, mental events are in the brain. Thus, percepts occur wherever the brain of the observer is located in physical space. This point is worth noting because, although Russell discusses two spaces, these spaces do not exist in different spatio-temporal realms. On the contrary, each occurs within physical space; the difference lies in relationships between events—perceptual space is made up of mental events, which in turn cause percepts and the experience of non-mental events from which we infer physical space. Having considered, then, the two notions of space, Russell contends that "our problem is, therefore: taking percepts as we know them in experience, and physical occurrences as asserted by physics, what laws do we know that inter-connect the two and therefore allow inference from one to the other" (HK, 283). It is to this problem that we now turn.

Perception

Beginning with the causal process of perception, Russell holds throughout his later years that when we have a percept of something that we infer is of the physical world, there are events centered around a causal source that traverse space-time hitting the eye of the perceiver, which

[30] It is, of course, misleading to say "object," as Russell would argue that objects as we traditionally understand them cease in our current understanding of physics. Admitting this point, what is being stressed here is how the causal lines produced by a series of events can produce the percept.

[31] It is interesting, and perhaps even ironic that in the above list Russell mentions a quanta – *viz.* a photon – as an example of a causal line as there is no need for contiguity at the quantum level.

in turn result in the nerves between the eyes and the brain to be affected, ultimately resulting in events in the brain – *viz*. percepts. There are a number of important reasons that Russell holds and maintains this theory of perception. Foremost is that it enables a method for inferring events that no one is perceiving or experiencing—a conclusion that Russell takes as required for physics and obvious in commonsense. In 1927 Russell first formulates the importance of this point, while acknowledging the most important aspects of his causal theory of perception:

> The essential points are (I) the arrangement about a centre, (2) the continuity between percepts and correlated events in other parts of the space derived from percepts and locomotion. The first is a matter of observation; the second is a hypothesis designed to secure simplicity and continuity in the laws of correlation suggested by the grouping of percepts. (AM, 217)

Concerning the first point, the importance of events being grouped from a centre is to provide objectivity concerning the source of the percepts – i.e. the object being perceived is the source of the physical events causing the mental events. The importance of the latter point is twofold: first, events that are emitted from a causal source are contiguous with the events that constitute one's percepts; secondly, this condition enables events to exist in places where no one is perceiving them. Due to the continuity of events and causal laws, Russell suggests that the occurrence of physical events where there is no brain to perceive them must be possible on these bases and for the maintenance of simplicity concerning the physical world.[32]

The justification for the conclusion that the world consists of physical events that no one has observed is not merely that one can infer that when others perceive an object, they perceive the same object that I now perceive; rather, "the justification of *our* inferences from perceptions

[32] One laudable aspect of Russell's points concerning the essential assumptions of his causal theory of perception is that it enables us to recognize two intuitive aspects of perception: the realist position that there is indeed an external cause of the perception, although that cause may not be exactly, or indeed anything at all, as the percept portrays it. The second element is that we can maintain, against the idealist, that events—the causes of our percepts—exist whether we experience them or not. If we can perceive something, the conditions necessary to enable said perception require that there are events where no one is perceiving them.

to physical objects depends on the consistency of the whole system" (HK, 283). Thus the causal laws governing perception *require* that physical events occur independently of observations.[33] What these events are, as we discussed above, can only ever be inferred, but if we can observe events taking place in our brain that are at the end of a causal chain that began with physical events, then the system, according to Russell, must be such that events occur in the same way whether being observed or not. A further defence of this position is given by Russell when considering the causal laws that are needed for the correlation between space and time and space-time, which we discuss below.

Whereas Russell in 1927 is concerned with how perception is possible in a world of events and, from perception, how a construction of the physical world becomes possible, in HK Russell provides a more thorough physical account of the process of experiencing the physical world:[34]

> When energy emitted by matter as a result of quantum transitions travels, without further quantum transitions, to a given part of a human body, it sets up a train of quantum transitions which ultimately reach the brain. Assuming the maxim "same cause, same effect", with its consequence, "different effect, different cause", it follows that if two trains of radiant energy, falling on the same point of the body, cause different percepts, there must be differences in the two trains, and therefore in the quantum transitions that gave rise to them. Assuming the existence of causal laws, this argument seems unobjectionable, and gives a basis for the inference from perceptions to the material source of the process by which they are caused. (288–9)[35]

With this later summary of how perceptions work in the physical world, we again observe the importance of the role that causal laws play in Russell's system. Further, the above summary

[33] This point is reiterated throughout HK; here is an explicit example: "A percept…comes at the end of a causal chain which starts at the object…. If the percept is to be a source of knowledge of the object, it must be possible to infer the cause from the effect, or at least to infer some characteristics of the cause" (183).

[34] This point is not to be taken as a change to Russell's theory of perception; rather, just further developments in his later work. Indeed Russell remained very consistent with his causal account of perception from 1927 through to MPD.

[35] The use of the term "material source" here, I think is loosely used by Russell as he goes to pains to show that there cannot be any 'material stuff' or matter. Perhaps a better way to make this point would be to say "physical source." I only add this point so that we are not confused—Russell vehemently rejects materialism.

again gives rise to the notion that percepts take place in the head—mind—of the one experiencing the event. Although there is an inferred external cause of the percept, the percept itself takes place, in terms of physical space, at the location of the brain of the observer. Russell uses the example of hearing a noise:

> If we are going to fit 'hearing a noise' into a physical causal chain, we must therefore connect it with the same region of space-time as that of the accompanying cerebral events. And this applies also to the noise as something perceived. The only region of space-time with which this noise has any direct connection is the present state of the hearer's brain; the connection with the physical source of the sound is indirect (HK, 181).

This point reiterates that there is a physical correlation and location of the events that occur in one's mind – *viz*. mental events – and physical events.

There is one final consideration as to a central causal source and perception. Russell frequently uses the example of cameras set at different locations in a theatre. Although each camera will have a different perspective on what is taking place on the stage, if we view the recordings of each one, we can infer that very similar events are being emitted from the same central causal source. If we grant Russell this conclusion, then we again have reasons to infer the existence of percepts that have never been experienced. Thus Russell seems to have eliminated phenomenalism, idealism, and solipsism with this account of the perceptual process.[36]

According to Russell, his causal account of perception was obvious to scientists but was met with hostility by philosophers: "My view on [perception], although to scientific people it seems a mere collection of truisms, is rejected as a wild paradox by philosophers of all schools" (A3, 130). This lack of acceptance vexes Russell. For him, that perceptions are contingent on causes of those perceptions is unquestionable: "Philosophers still speak of the 'causal theory' of perception as if it were open to question…. Even philosophers must have noticed that when their

[36] This point is discussed in detail in Chapter 4.

eyes are shut they do not see what they saw when they were open. This simple fact, by itself, suffices to demonstrate the causal theory of perception" (Russell 1957, 305). One point that Russell is making here is in opposition to the phenomenalist suggestion that the events causing one's perceptions are dependent on one's perceptual conditions. Russell is, of course, willing to admit that the condition of an observer may affect her perceptions – e.g. sunglasses – but that is no reason to conclude anything whatever regarding the state of the physical world. The one thing we can infer concerning the physical world is that physical events will continue whether or not an observer is present – e.g. photographs and other non-mental perceptual analogues.[37]

Another point Russell has to contend with on this account is, given that physical space can only ever be inferred, what possible reason do we have to accept the reality of anything in the world whatsoever? A. J. Ayer puts the problem in this way: "The great difficulty with any theory of this kind is to see how we can be justified in inferring that any such external objects exist at all" (1972, 85). I think Russell would admit that *logically* he does not have any reason to accept this conclusion. Ayer, here, seems to miss Russell's point, however—we do know that there are external physical objects, that is not up for debate. What is at issue is how we know about these objects, and what we *can be said* to know about them. Taking physics as the starting point of knowledge, we recognize that perception plays an essential role in justification; thus, if physics is true, then the reality of 'external' phenomena *must* be true and we proceed as such. I am sympathetic with Russell's approach to the historical problems of philosophy: he takes seriously real problems – e.g. induction – whilst deeming too improbable other hackneyed problems – e.g. external world scepticism and solipsism – and therefore treats them as untenable.[38]

[37] Russell discusses this point at length, see: AM, Ch. XXVI and HK: §VI Ch. 4.
[38] The epistemic issues surrounding Russell's theory of perception are addressed next chapter.

Difficulties still remain on two fronts for Russell's account of perception, however. First is the justification of the causal laws themselves, which the entirety of the system hinges on. This is an epistemic problem, and thus will be discussed in the next chapter. And although we do not engage with this issue here, there is a second problem: the physical justification for physical causal chains in light of quantum mechanical considerations. We first discuss the role of causal lines concerning the physical world for the remainder of the chapter.

Persistence, Substance, and Individuation

Apropos of perceptual space, the appearance of the persistence of matter, like perception, relies on earlier events causing later ones. Regarding our current concerns, the persistence of matter and space-time relations are derivable from percepts if we consider the events contained at the causal source of our perception as causing further events. This consideration gives rise to the appearance of persistence in perceptual space. Consider the example of an electron: in Minkowski terms, we understand the persistence of a particle as a worldline. Russell holds that a worldline is nothing more than a series of events in the *biography* of an individual aa given time, but that individuals cannot be considered as substances or matter; rather, an individual is a complex of compresent events. By way of reminder, we understand compresence as overlapping events in space-time – e.g. if one perceives the light of numerous stars in one instance, the causal chain of events from the individual stars to the surface of one's retina will form a compresence at the retina. A complex is a numerically diverse set of events in one percept or inferred entity. Thus, what may appear as sustained matter, or an object, according to Russell, is actually a causally related series of events that form a complex and have neighbouring events that are very similar to their preceding causes. These events are compresent so that in perception we perceive all the events in the complex simultaneously – i.e. as one unified event.

We can also derive individuals from compresence; anything that can be given a *proper name* is an individual – e.g. a person, a table, a proton, the sun, and so on. Individuals are a series of compresent events that make up a complex and are complete; events are complex and complete when all the things in the complex are compresent with each other, and nothing outside of the complex is compresent with every member of the complex. If there are two complete complexes of compresence belonging to the same biography (worldline), then we should consider that complete complex as an earlier-than/later-than relationship between the two complexes. This is an important point to note as a complete complex is also defined as an event, and, although a great number of the properties included in the complex may recur, the actual event's recurrence is so highly improbable that the complete complex will, in the highest of probabilities, not recur.[39] Russell concludes his discussion on individuation: "A complex of compresence which does not recur takes the place traditionally occupied by 'particulars'; a single such complex, or a string of such complexes causally connected in a certain way, is the kind of object to which it is conventionally appropriate to give a proper name" (HK, 268–9).

The type of reasoning that Russell uses to develop his account of the persistence of matter is also used for spatial relations. As briefly discussed above, in perceptual space the appearance of spatial relations is a result of events from different objects traversing through space-time and hitting the eye of the observer simultaneously, creating a compresence of events in perception. Thus, the street light that is reflecting off of the hood of my car, the street light itself, and the light of the moon that I can observe behind my vehicle are each a causal source of events that reach my eye at the same time. What appears simultaneous in perception and provides the tools to construct spatial relations, is made possible through the causal lines

[39] This discussion on individuation is derived mainly from HK: §II Ch. 3 and §IV Ch. 8.

beginning from external sources. Repeating a point stressed earlier, the properties and qualities we observe in perceptual space tell us nothing about physical space; what appear as qualities in perceptual space are not inferred, but any claim about the actual nature of physical space can *only* be inferred. *A fortiori*, the whole of non-inferred entities occurs exclusively in perceptual space.[40] Regardless of the concern that we must remain agnostic with regard to the qualities of physical space, common sense and perceptual space still directly result from physical space. Thus, for perception, we recognize the need for a non-mental causal source and that from numerous causal sources we can construct a spatial order, which, when combined with a temporal order, can be constructed into space-time and thus provide the first steps towards bridging perceptual space with physical space.

Another way to engage our current problem is in juxtaposition with the traditional metaphysical notion of *substance*. Traditionally substance was understood as permanent and basic. That is, whatever matter consisted of, at base, it was indestructible. In the context of space and time, substances, if in motion, moved through three dimensions in time, but remained intrinsically unchanging. Furthermore, substances were logically understood as those things "upon which predicates hang" – i.e. individual subjects that can have proper names. Concerning this logical point, Russell called this relationship between subject and predicate into question. The structure of the sentences "the station-wagon is yellow" and "that is yellow" are *prima facie* of the same structure $(F)x$, but in fact are different types of sentences. Furthermore, with regards to 'substance,' "the traditional view that all propositions ascribe a predicate to a subject collapsed, and with it the metaphysical systems which were based upon it" (AM, 242). Thus, the logical basis for holding the traditional view of substance loses its basis.

[40]Russell is clear on this point: "A certain collection of facts is known to me by perception and recollection; what else I believe about the physical world is either the effect of unreasoning habit or the conclusion of an inference" (AM, 199).

If we do maintain that substances are the subjects upon which we place predicates, baptizing them with proper names, however, then what is the physical referent of the substance in question? More so than the logical problem, what physics tells us about substances is of greater concern regarding the metaphysical basis of the objects of our perception.[41] As we have already discussed, the conclusions of physics provide evidence for the loss of permanence and rigidity in substances; instead these notions are supplanted by space-time, events, and fields. Concerning perception and the problem of the external world, it is the conclusions of physics that must inform the metaphysics. There must be coherence between the two. But coherence between metaphysics and physics does not mean that the metaphysics will be entirely obvious, especially given our perceptual limitations. Consider the component parts of an atom: we have discovered that the atom consists of electrons, protons, and neutrons. Are these components basic? What about quarks, fermions, and bosons? Once we get to the sub-atomic, the notion of substance, as traditionally understood, is untenable; rather than rigidity and permanence, as Russell suggests, matter is more like a ghost than a rock; when we talk of events and fields, we must think in terms of energy, not matter – i.e. "substance" in the philosophical tradition is a misnomer or logical fiction.

Even in accepting what physics tells us about the world, however, we still recognize that matter seems to be hard and to persist, and the relationships between objects in the world remain somewhat static when not influenced by something else—even though we must recognize that this static appearance is perceptual only. In both cases, events that cause further events in

[41] For the remainder of this section it will be unclear where Russell's theory ends, and mine begins. Thus, while I proceed in the Russellian vein—and I believe Russell would support my portrayal of "substance" according to physics—there may be slight discrepancies between what is written here and what Russell says on the issue; although, again, I do not think that there are any substantial differences between his theory and my own. The more important issue at stake here is how the theory of perception is affected given the conclusions concerning matter/substances.

physical space are what provide the appearance of substance and space in perceptual space. This same method is used in determining individuals: an event that seemingly persists through time is causally related to events in the past that are closely related and many of which overlap with the mental event, or perceptual experience. The complete complex of events that make up an individual cause a neighbouring complete complex of events that appears to be the same individual. Thus there is a line of causally connected events that traverse time to produce the perception of the persistence of matter; there are also causally connected events traversing space-time that effect the events making up a perceiver's nervous system, which in turn results in mental events – *viz*. percepts.

II
Physics and Perception

We now come to what physics can tell us about how it is from perception that we can form a consistent system between physics and our experiences. That is, how can we develop an understanding of space-time perceptually, when physics informs us that the notions of space and time are not physically what they seem in experience? Russell holds that we can infer space-time out of our experiences of space and time. Having discussed the role of causation in both physical and perceptual space, we now come to how, through the structural relationship between these two spaces, perception results in our knowledge of space-time.

The physical world is constructed from commonsense experiences. Consider sitting by a fire: one observes a patch of colour, hears a specific sound, and feels heat. As one gets closer to this patch of colour the sound gets louder, the colours more sharp, and the heat more hot. What this tells us, says Russell, is not the intrinsic quality of the object with these characteristics; rather, we can infer that there are a number events grouped around a centre that produce compresent events, which result in the types of perceptions one experiences. According to

Russell, the qualities – i.e. temperature, colour, and sounds – are not part of the structure of the object, although the events that produce these perceptions enable us to infer something about physical space:

> If physical events are to suffice as a basis for physics, and, indeed, if we are to have any reason for believing in them, they must not be *totally* unknown, like Kant's things-in-themselves. In fact, on the principle which we are assuming, they are known, though perhaps incompletely, so far as their space-time structure is concerned, for this must be similar to the space-time structure of their effects upon percipients. E.g. from the fact that the sun looks round in perceptual space, we have a right to infer that it is round in physical space. We have no right to make a similar inference as regards brightness, because brightness is not a structural property. (HK, 202–3)

We gather, then, that the structure of physical space will have a close correlation with the structure of perceptual space. How, then are we to understand *structure*?

Structure for Russell is a logical concept, showing how different parts of a construct are related. There are numerous examples of structure relations. Take the sentence "Adam loves Steve," for example. This sentence has a relational structure of the type *aRs*. Another example of structure could be a song. Consider the introductory chords to "Smoke on the Water:" {G5, A#5, C5} {G5, A#5, C#5, C5}, and so on. Further, the chords can be analyzed as individual notes: {[G,D][A#,F][C,G]}, {[G, D][A#,F][C#,G#][C,G]}. We are thus given a relation between the notes in a song, which are constructed into chords, and are related through time-signatures, points of emphasis, duration, etc. What Russell suggests regarding this type of structure is that the song must have analogous structures coming from one's stereo speakers. There are several relations at work here: the notes on the sheet of music, the notes as they are played by the instrument while being recorded, the imprints on the compact disc, the readings from the laser-reader, and the sounds emitting from the speakers will all correlate structurally. The relations of the song will correlate from any one of these events to the other.

As the correlation between the structure of the notes on a song-sheet and the sounds emitted from one's stereo seem much different, so too does the mathematical structure of physics differ from our perceptions of the world. Even so, there is still a correlation between the physical structure and the perceptual structure. From this conclusion Russell acknowledges that "[c]onsiderations derived from the importance of structure show that our knowledge, especially in physics, is much more abstract and much more infected with logic than it used to seem" (HK, 225). Given this admission, Russell also recognizes that what is constructed from physics is at best inferred because of our personal limitations as individual observers: "There is however a very definite limit to the process of turning physics into logic and mathematics; it is set by the fact that physics is an empirical science, depending for its credibility upon relations to our perceptive experiences" (HK, 225). This latter recognition of the limitation we have in structuring the physical world is an epistemological limitation, and thus we will return to it below. We can elaborate on this limitation as it pertains to our understanding of perception, however.

Russell argues that all we can know about this physical world is its structure. Thus qualities and the intrinsic nature of the objects of our perceptions remain completely unknown outside of perceptual space:

> While mental events and their qualities can be known without inference, physical events are known only as regards their space-time structure. The qualities that compose such events are unknown—so completely unknown that we cannot say either that they are, or that they are not, different from the qualities that we know as belonging to mental events. (HK, 204)

We find, then, that structure plays an important role in Russell's system, as the structure that we infer from perception is all that is observationally quasi-knowable about the entirety of the physical world as it is independent of a perceiver. This consideration supports the above

admission of the limit to what we can be said to know according to physics. More important to our immediate considerations is that all we can know without inference takes place within our perceptual space. However, as we stated earlier, perceptual space and perceptual time facilitates our understanding of space-time, and our development of the causal laws of physics. Thus the realization of the mathematics and underlying logic of physics are made possible through our perceptions.

As we have just developed the theme, structure plays an important role in how we can come to understand physics. We must also apply here some of what has been discussed above – namely, the subject of individuals. Russell suggests that when employing our perceptual space as grounds for understanding structure, like the grounds we have for giving complete complexes of events proper names, we are assuming logical fictions for convenience. Physics deals with points, instants, and particles; even if the advent of relativity theory has made these concepts obsolete, they are still employed in the interpretation of physical space, and this is because when discussing the world of physics, at base, empirical verification is necessary. Thus, we can develop the tools necessary for knowing the distance to the sun from the earth, the structure of the sun, and the conditions necessary for physical space to produce the geometrical and qualitative relations that we have in experience with the sun. Without being able to predict or show results in the empirical world, however, the conclusions derived from physics lose their importance. This consideration implies, then, that complexes can have structure; we're building the objects of perception back into the account of physics. Regarding this consideration, Russell suggests:

> When two complexes have the same structure, every statement about the one, in so far as it depends only on structure, has a corresponding statement about the other, true if the first was true, and false if the first was false. Hence arises the possibility of a dictionary, by means of which statements about the one complex

> can be translated into statements about the other. Or, instead of a dictionary, we may continue to use the same words, but attach different meanings to them according to the complex to which they are referred…. In physics, assuming that our knowledge of the physical world is only as to the structure resulting from the empirically known relation of "neighbourhood" in the topological sense, we have immense latitude in the interpretation of our symbols. Every interpretation that preserves the equations and the connection with our perceptive experiences has an equal claim to being regarded as *possibly* the true one, and may be used with equal right by the physicist to clothe the bare bones of his mathematics. (HK, 224–5)

Thus there is an application as to how the structures as developed in technical physics can correspond with the structures of space and time in experience. Russell, as always, leaves room for adjustment in our interpretation; as physics advances, new interpretations may become possible. As it stands, however, Russell concludes that structure enables us to build a complex physics out of perceptual structures, as they correlate with physical structures.[42]

III
Review

As this chapter has been quite dense, and attempts to cover a lot of ground, let us review what has been discussed. First, the purpose of this chapter is to describe Russell's account of perception and its processes. From these processes we can then attempt to construct the world of physics. We observe that Russell holds throughout his later works a causal theory of perception. This theory posits that there must be a distinction between two spaces: physical and perceptual. Physical space is the location of events that, because of the causal laws constituting the universe, initiate a causal line, thus producing a series of events that provide the experience of matter and persistence. This experience of persistence and matter occurs in perceptual space. Again as a result of causal chains from physical events traversing through space-time, events form a complex compresence at the retina of an observer, ultimately resulting in a mental event – *viz.* a

[42] In the Appendix we go into the details of the construction of time as an example of the type of construction Russell uses in explaining the structure of physics coupled with our perceptions.

percept. Due to causal lines we infer the logically fictitious world of matter, points, and instants, each of which plays an important role in how we come to understand the physical world.

The role that structure plays in perception proves to be important also: structure is what we can experience in perceptions of the physical world. While different qualities of events are non-inferential, they also tell us nothing about the intrinsic nature of the object we seemingly perceive. Structure between physical and visual space, however, corresponds and, as such, we can construct similar structures corresponding to physical and perceptual space. Using the example of a song's different structures – i.e. sheet music, sounds from an instrument, and the recorded sounds of that instrument – we can understand how structures can correspond while taking different exemplifications. Thus, although perceptual space is potentially much different than what physics tells us about physical space, we can still develop a structure between these two spaces.

A number of considerations remain. First, Russell's theory of perception and the perceptual basis of physics seems question begging. Can Russell avoid this conclusion? And, as regards his theory of perception itself, with the convenience of hindsight, is Russell correct? These considerations will be taken up in subsequent chapters.

3

Human Knowledge: More Limits, Less Scope

Having accounted for the processes and metaphysical underpinnings of perception, we come to Russell's epistemological conclusions from this discussion. As the title suggests, Russell finds that our empirically based knowledge is severely limited. Recalling our discussion in the introduction as to the nature of Russell's problem, we know that Russell is concerned with the role perception plays in what is deemed as our strongest source of knowledge – i.e. scientific knowledge. Our concern with Russell's epistemological considerations in this chapter amounts to asking, how far will empiricism take us in what we say we know, and what more is needed?

In what follows we discuss how Russell's thoughts developed regarding this concern. We proceed in sections, respectively engaging with the following considerations. First, while restating the role perception plays in Russell's epistemology, we seek to discover what is meant by the expression 'scientific knowledge'. Although there are some significant metaphysical differences in Russell's theory between OP/AM and HK, his epistemological considerations regarding how knowledge is gained are consistent, although HK is certainly a more overtly and

more developed epistemological program on the whole. Because of this consistency throughout his later works, we will not be drawing a hard line between AM, OP, and HK with regards to the knowledge acquisition process.[43] We will begin this section, then, by considering Russell's discussions concerning knowledge acquisition – i.e. the process from which we develop our initial experiences of the world through to the knowledge of abstract physics. Building from this process, we conclude with Russell explicitly defining what he means by 'knowledge' and the foundations that scientific knowledge rests on.

Following the discussion on the processes leading to scientific knowledge, we next engage Russell's thoughts concerning inferences that he holds as sufficient for, but not included in, perceptual – i.e. empirical – knowledge. These non-demonstrative inferences can be understood as what is required for scientific inference to provide us with knowledge. We will thus discuss induction and how Russell's thoughts develop regarding the issues surrounding it. Relating to principles similar to induction, in that they are hypothesized but non-demonstrative, Russell's epistemological considerations include additional principles sufficient for scientific knowledge. The recognition that *some* non-demonstrative principles are necessary for scientific knowledge is evident in 1927, but not fully developed until HK. We will therefore discuss the development of these principles in conjunction with induction as a premise for empirical knowledge.

On the basis of these non-demonstrative principles, we reach Russell's ultimate conclusions regarding the capacity for human knowledge in §III. Obviously we are unable to provide every nuance in Russell's later epistemology; we will, however, present the most

[43] Although I interpret Russell's work on knowledge acquisition to be consistent throughout the later works, there is most certainly a development regarding the importance of the non-experiential assumptions of empirical knowledge – i.e. induction, causal laws, and the continuity of 'objects'. These discrepancies between works are addressed in §II of the current chapter.

important aspects of how knowledge is acquired; and from this acquisition we judge how confident we can be in what we claim to know. Finally, in section IV, we address Russell's use of 'knowledge' and how, because of its complications, we should adopt an epistemic agenda that focuses of belief-formation and justification, rather than knowledge.

I
Russell and the Development of Knowledge

To ask what scientific knowledge is, for Russell, equivalent to asking what knowledge is full-stop; scientific knowledge is just a later more developed stage in knowledge acquisition. We can ask, then, what does Russell mean by 'knowledge'? In 1927 Russell began to adapt behaviourist methods for understanding knowledge. Rather than attempting to discern what is meant by 'knowledge' in the traditional philosophical way – i.e. through first-person introspection *á la* Descartes – we should instead observe a person's reactions to given external stimuli. Thus, as we discussed in the previous chapter, there is a complicated physical explanation of external events that affect the events making up the physiological and neurobiological parts of a perceiver. It is this process that causes perceptions; it is from these perceptions that one derives commonsense knowledge regarding her world. Whereas the metaphysical and physical process from perception to physics was the consideration of last chapter, it is the way in which those processes become knowledge that we will consider currently.

Russell develops knowledge in stages: first we perceive the world, then through learning and inference we begin to form habits and associations on the basis of perceptions, which eventually result in commonsense. From commonsense we can then begin to infer general facts about the world and from these inferred facts we further infer general laws governing the world on the basis of our experience. These general laws, then, lead to scientific knowledge. The initial

process, however, begins with sensation, which eventually results in our perceptions. Let us discuss these steps in more detail.

When discussing the beginnings of what he terms primitive perception, Russell suggests that infants do not have commonsense. That is to say, prior to the experiences that enable object recognition and not mere sensation, infants lack the association necessary to understand space, objects, and their relationship to these objects. Russell suggests that we can observe this fact when watching young children develop their hand-eye coordination. It is only after there is a sense of "I have seen this before" that one can begin to develop commonsense. Further, commonsense becomes even more developed when one begins to correlate different percepts as resulting from one causal source. For example, a child may observe a candle and reach for the flame; it will not take very many experiences of burning herself for the child to associate the burning sensation and the visual sensation as being caused by the same source. Thus, primitive perception, on the basis of initial sensual stimuli like colour patches, shape, rigidity, temperature and so on, becomes commonsense when one has formed mental habits of association and correlations between the sensation and the objects being perceived.[44] This initial process of developing one's perceptual skills is not limited to infants, although it is most obvious in these cases. Consider a connoisseur of scotch: the perceptual associations between different scotches will enable such a person to know different brands, different distilling regions, and different ages of scotch merely based on taste; whereas a non-connoisseur will at best have a generic understanding of what the experience of scotch should include. This type of perceptual

[44] This above discussion is derived from OP: Ch.3 and AM: Ch. II–XV.

development is analogous to what Russell has in mind when discussing how perceptions lead to knowledge and can be developed in advanced ways.[45]

Perceptions become possible only after one gains some familiarity with one's surroundings and can properly associate anticipated effects given some antecedent stimuli – e.g. if one mistakes salt for sugar when scooping white powder into one's coffee, the anticipated effect will be much different than the actual one. Another example can be given in behaviourist terms: when my cat hears the rattling of his food bag, he comes running because he anticipates food being put into his dish. It is this type of process that leads Russell to argue:

> if we wish to give a definition of 'knowing', we ought to define it as a manner of reacting to the environment, not as involving something (a 'state of mind') which only the person who has the knowledge can observe.... Knowing, as I view it, is a characteristic which may be displayed in our reactions to our environment. (OP, 21)

On the basis of this account of knowing, then, Russell further suggests that "all knowledge, certainly nearly all, is dependent on learned reactions" (OP, 25), where learning is merely "acquired habits, not reflexes" (OP, 30). What is most important to take from this preliminary discussion of the development of knowledge is that, at base, "all our knowledge of the external world must be of the nature of percepts" (OP, 294). Russell concludes, therefore, that there is a four step process from which we can claim to have knowledge: (1) what has happened in the outside world, (2) what happened to one's body as a result of the external stimulus, (3) what happened in one's brain, and (4) how one's brain responds to the stimulus outwardly. According to Russell, on the basis of these four stages, "we are led to the view that knowledge is a characteristic of a complete process from stimulus to reaction" (OP, 95). One has knowledge, then, when one reacts in a way that indicates a correct response to the situation.

[45] Or, returning to my previous example of the astronomer and the perception of a nebula, to the untrained eye the difference between a planet, a distant star, and a nebula will be indiscernible; whereas a trained astronomer will be able to readily point out the distinction.

There is an interesting tension in the above account of knowledge. We have thus far been discussing knowledge in terms of objective reactions to external stimuli – *viz*. behaviourism. However, the entirety of this knowledge is based on a perceptual foundation, in which case, knowledge for Russell must begin first with the individual: introspection becomes a necessary source of knowledge as our percepts are of our own brains and therefore only known introspectively. Thus, the above statement that understanding knowledge should not be undertaken in the way Descartes did is somewhat misleading—we are forced to begin with first-person consideration regarding knowledge and cannot do otherwise. In HK, Russell admits this point: "Individual percepts are the basis of all our knowledge, and no method exists by which we can begin with data which are public to many observers" (13). It is because of this conclusion that external reactions – e.g. language – become so important for scientific knowledge. And it is with these external causes that we can begin our analysis of what qualifies as knowledge, which, for Russell, must include animal habits and inferences as part of the knowledge acquisition process.

Animal habit is closely related to inference: "I give the name 'animal inference' to the process of spontaneous interpretation of sensations" (HK, 150). Consider a dog that catches the scent of a cat. The dog will infer from the smell that a cat is in the vicinity and act as such. Russell suggests that the dog will not go through a mental check-list consisting of (a) in the past, scents like the one I am presently having were associated with cats, (b) on the basis of my present percept of the scent of a cat there must be a cat present, (c) I will track the cat. Although the dog may act as if he is taking these mental steps, he is not. Rather, the dog will have formed a habit on the basis of previous experiences of cats; that is, his body will uncritically associate

the percept with the external object.[46] Tying these types of responses to higher-order animals like ourselves, Russell suggests that all our beliefs are based on mental habits. These mental habits, in turn, result in a commonsense navigation of the world.[47]

With the establishment of how perceptions lead to a commonsense understanding of the world – i.e. mental habits of association and expectation – we next come to how exactly we are to understand 'knowledge' in light of these considerations. With an initial analysis of this concept in HK, Russell suggests that "it is clear that knowledge is a sub-class of true belief: every case of knowledge is a case of true belief, but not vice versa" (HK, 139). A belief is "a collection of states of an organism bound together by all having, in whole or in part, the same external reference" (HK, 132) and is associated with a feeling of "quite so" in the believer when there is a proposition mentioned that the believer believes. There are also behaviours that can indicate beliefs: one's flicking a light switch while claiming "It's too dark" will reveal the person's belief that doing so will illuminate the room.

Turning to truth, a proposition is true if it has a corresponding fact. A fact is "something which is there, whether anybody thinks so or not" (HK, 131). Thus when one is said to have knowledge, one must have a state of mind that correctly asserts a "quite so" feeling regarding a proposition about a fact. Regarding this initial assessment of 'knowledge', Russell concludes that "there are various unsatisfactory features in this traditional doctrine, though I am not sure, in the

[46] For reasoning of this type see HK: §III Ch. 3, especially pp. 163-4.

[47] Russell holds that the development of commonsense is done in such a way as *prima facie* leads to naïve realism, while also enabling scientific knowledge and thus physics. Naïve realism and physics are, of course, incompatible. Although these two notions are incompatible with the discovery of the more advanced conclusions of physics, there is an important way in which commonsense leads to physics. In order to understand this we must revisit Russell's suggestion that there are two spaces to be considered when discussing perception: physical and perceptual. Recall that according to Russell all of our perceptions are in our heads. However, it is on the basis of these perceptions that we structure our percepts and thus represent the structure of physical space. Russell argues that it is because our percepts of the world are mathematical that we develop the techniques of mathematical physics and, as such, are able to develop the techniques of physics that we do have. Having discussed this issue at length in the preceding chapter it will suffice to highlight its importance for Russell's epistemological project here.

end, we can substitute anything very much better" (HK, 140). It is a result of this pessimistic conclusion that Russell asserts:

> The conclusion to which we seem to be driven is that knowledge is a matter of degree. The highest degree is found in facts of perception, and in the cogency of very simple arguments. The next highest degree is in vivid memories. When a number of beliefs are each severally in some degree credible, they become more so if they are found to cohere as a logical whole. General principles of inference, whether deductive or inductive, are usually less obvious than many of their instances… (HK, 142)

As this is Russell's initial attempt at defining knowledge, we will revisit this issue again below. For now, however, it is important for us to discuss how the differing degrees of knowledge can lead us to the knowledge of science.

Russell distinguishes between two types of knowledge that result from the above discussed process of habit formation or learning: "first, knowledge of facts; second, knowledge of the general connections between facts. Very closely related with this distinction is another: there is knowledge which may be described as 'mirroring', and knowledge which consists in capacity to handle" (HK, 371).[48] Knowledge of facts, then, is most immediate in "mirror-knowledge," where 'mirror-knowledge' is understood as 'knowing-that' about the external world and analytic propositions. This type of knowledge is built on what we might call basic propositions in Russell's theory of knowledge.[49] One's access to fact-knowledge is attained through sensations and memories—which although quite fallible, will provide the highest degree of certainty we can attain in any knowledge claim. But what is needed further to get genuine knowledge is an understanding of the connections between facts, which require perceptions and

[48] Russell discusses earlier, both in HK and in AM, the notions of knowledge of facts and knowledge of general laws; the latter having the same connotation as knowledge of general connection between facts. See, for example, AM: Ch. XVIII, and HK: §III Ch. 1. Also, this distinction, while nothing is made of it other than a few mentions, anticipates the know-how versus knowing-that distinction.

[49] Russell discusses 'basic propositions', suggesting that they are epistemic premisses "which are caused, as immediately as possible, by perceptive experiences" (IMT, 137). He cites Ayer as the one who first uses this concept.

in turn facilitates one's expectations. Russell writes: "That knowledge of particular facts must depend upon perception is one of the most essential tenets of empiricism, and it is one which I have no inclination to dispute…. Most philosophers now admit that knowledge of particular facts is only possible if the facts are perceived or remembered" (HK, 439). Again, perception and memory are mirror-knowledge, preverbal (animal inferences), and non-inferential.

Fact based knowledge is the beginning of scientific knowledge. Russell suggests that the proposition "dogs bark" is such an example: we perceive dogs barking numerous times, and from the experience and memories of the dogs' sounds, we make the generalization that dogs bark. We thus begin to form commonsense when associations between facts create expectations – e.g. one sees a dog and expects that if the dog does make a noise, it will be a bark or growl, not a chirp or meow.[50] It should be recalled that this type of expectation, after the experience of dogs has produced a high degree of credibility for the expectation, is an animal inference – i.e. it is not a conscious process of the logical steps and the recollections of dogs barking; rather, it is the observance of the dog and the expectation 'bark'. Russell suggests that the process of animal inferences like this are most readily noticed when one has a mistaken expectation. For example, yesterday I heard what sounded like yelping and thus had the expectation that I would see a puppy when I looked into the office from where the sound was coming. Instead of a puppy, I found a professor cleaning his office; what I thought was yelping was in fact the sound of a wet sponge rubbing against a desk. Upon discovering my faulty expectation I then became aware of the inference I was making and the reasons why when I heard the sponge I thought unreflectively *puppy*. While animal inferences can be mistaken, it is only in anomalous circumstances that the mistakes occur and thus inferences can, for practical purposes, be used as a basis for knowledge:

[50] Other signs of knowledge would be language responses – e.g. when the starting gun fires at a race and the runners begin, one could be said to *know* if one exclaimed "They're off!"

"Thus reflection upon animal inference gives us an initial store of scientific laws, such as 'dogs bark'. These initial laws are usually somewhat unreliable, but they can help us to take the first steps towards science" (HK, 150). What then are the remaining steps?

Russell holds that the beginning of all science starts with individual percepts and generalizations between these percepts, and is therefore empirical: "I shall therefore assume that, at any rate in every department relevant to physics, all knowledge is either [tautologous]…or is, at least in part, derived from perception. And all knowledge which is in any degree necessarily dependent upon perception I shall call 'empirical'" (AM, 175–6). Recalling that the foundations for scientific knowledge are found in matters of fact and those generalizations produced from the facts, Russell suggests that "empirical laws not only depend upon particular matters of fact, but are inferred from these by a process which falls short of logical demonstration" (AM, 176). What is more, concerning theoretical physics, the generalizations from facts are what becomes central and most interesting, not the mere facts themselves: "the fact that the sun and moon exist is chiefly interesting as affording evidence of the law of gravitation and the laws of the transmission of light" (AM, 177). We notice, then, that while we can gain commonsense knowledge exclusively on the basis of perception, advanced scientific knowledge requires a significant amount of inference.

When discussing the advance from early perceptual knowledge to advanced physics, Russell discusses different hierarchical inferences:

> First we have physiological inference: this is exemplified when a bird flies so as not to bump into solid objects, and fails when it bumps into a window-pane. Then there is the transition from the belief expressing the premises of the physiological inference to that expressing its conclusion, without any consciousness of how the transition is effected. Then there is belief in a causal law which is the intellectualized expression of the habit embodied in the physiological inference. And last of all there is the search for the criteria by which to distinguish between true and false causal laws, these criteria being intellectual, not mere habits of the body. This last stage is only reached when we come to science. (AM, 191)

Russell adds further that "the most important inference which science takes over from common sense is inference to unperceived entities" (AM, 191). This conclusion reveals two things: first, all of our knowledge of the external world, *viz.* our knowledge of facts, is based on inferences from non-inferential knowledge – i.e. percepts and memories; secondly, from these facts we can draw the conclusions that science justifies. For example, in commonsense we believe that the sun still exists at night and that the moon still exists during the day—science tells us there are laws that give us the highest degree of probability that the sun and moon exist, even when we cannot observe them. Noticing, then, that even the advanced sciences, which are necessarily empirical, rest on the same types of inferences, only in a more reflective way, as commonsense beliefs and even primitive perceptions, we can return to Russell's definition of knowledge.

Russell holds that whether we are discussing knowledge of general propositions or knowledge of scientific laws, the role of expectation remains central: "The practical utility of science depends upon its ability to foretell the future" (HK, 270).[51] With this consideration, then, we find Russell defining scientific knowledge:

> I shall say that an animal 'knows' the general proposition 'A is usually followed by B' if the following conditions are fulfilled:
>
> 1. The animal has had repeated experience of A being followed by B.
> 2. This experience has caused the animal to behave in the presence of A more or less as it previously behaved in the presence of B.
> 3. A is in fact usually followed by B.
> 4. A and B are of such a character, or are so related, that, in most cases where this character or relation exists, the frequency of the observed sequences is evidence of the probability of a general if not invariable law of sequence. (HK, 380)

It is thus on the basis of this process of knowing general proposition that we can ultimately reach the abstract knowledge of science.

[51] We will discuss below that although scientific knowledge requires that there is some uniformity in nature and some causal laws, for perception and empirical knowledge in general, there are going to be difficulties on this basis.

Before discussing the next step in what Russell finds necessary for this type of knowledge to be possible, let us succinctly review the process that is taken in developing knowledge. Beginning with how animals and infants learn we realize that sensation is a prerequisite for perception, but is not in itself perception. After one has begun to associate objects with different percepts and different effects, one will begin to develop primitive perceptions and ultimately commonsense. Commonsense provides us with ways to navigate the world and interpret it; however, commonsense can also lead to numerous mistaken inferences. Upon reflection one will find that one holds many beliefs caused by experience in the past, but which were held uncritically; these beliefs can be understood as animal inferences when they lead to a habitual unreflective reaction given a certain percept or proposition. Upon further reflection we discover that certain assumptions must be made as regards our knowledge of the physical world, that these assumptions in turn lead to a scientific understanding of the world, from which we infer the mathematical relationships amongst physical events, and further infer events that are beyond experience—Russell suggests that included here are unperceived events, events constructed into logical fictions, and future events. This latter process of knowledge acquisition, unlike the preceding steps, is critical, self-reflective, and not based on habit; rather, it is based on a critical interpretation as to the general uniformity and assumptions about the physical world and its relations. Although this latter stage leads to science, we observe that each step in the process builds on the previous one and no one step is wholly independent of the preceding step. Thus, as was stated at the beginning of the chapter, scientific knowledge for Russell is just knowledge at a different stage. Given this assessment, we discover the utterly empirical nature of how we know. Problems arise, however; it is to these we now turn. [52]

[52] I would like to add an aside as to whether or not Russell is an externalist or in internalist with regards to epistemic justification. Advocates of epistemic internalism hold that "epistemic justification derives from the subjects (1)

II

The Necessity for Non-Demonstratives in Empirical Knowledge: Developing the Postulates

As all of our knowledge seems to be empirically based, which Russell concedes, problems arise in that, for the knowledge that we claim to indeed possess, much more than what we can experience is needed to justify said knowledge. These justifying principles are now known as the postulates of non-demonstrative inference. Although the final and most well known analysis of non-demonstrative inferences for knowledge is found in HK, and supported in MPD, Russell acknowledged the need, as noted earlier, for some postulates to get empirical knowledge "off the ground" as early as 1927. In this section we will discuss the developments of the non-empirical necessities for knowledge, beginning with Russell's concerns as to why we seem to require non-demonstratives for knowledge.

Discussing Russell's exact concern regarding what is needed beyond immediate experience for our knowledge of physics to be justified is, in fact, the central concern of the entirety of Russell's philosophical works from 1927 on: accepting physics as true, what can we be said know, and what must be inferred beyond that? According to the above definition of knowledge, there is much we can claim to know as a result of physics; however, the base on which this knowledge rests is at best, in Russell's words, "uncertain, inexact, and partial" (HK, 446). Why are we forced to this type of conclusion? Recalling the structure of Russell's

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taking what is given to his conscious awareness, and (2) accepting claims and or steps of reasoning on an a priori basis" (BonJour and Sosa, 1), as opposed to the externalist positions, advocates of which argue that "there is no way to delineate what a cognitive virtue is in general, if we prescind from all contingent relations that…belief formation might bear to our external environment. In understanding rationality, having a reason, being reasonable, and the like, as these notions apply to empirical beliefs, we must make proper allowance for such external factors" (Ibid, 2). On the one hand, Russell adheres to a form of externalism concerning the early stages of knowledge. Take a dog that forms the belief it is going for a walk because its master takes its leash out of the closet. Russell admits that the dog has knowledge just in case it meets the conditions found on p. 55 above. With this type of naturalizing of epistemology, we can make the case for Russell holding to externalist justifications. On the other hand, a higher order of knowledge, like that found in science, is only possible inferentially. If this is the case, then all knowledge is reliant its being cognitively accessible to the knower. I will maintain this higher order of knowledge as paradigmatic human knowledge when discussing Russell's theory of knowledge below and in the next chapter. I will thus read him as an internalist with regards to high-order knowledge.

epistemic order, we begin with beliefs formed from non-inferred events – i.e. percepts and memories. From these non-inferential events we can then begin to organize our inferentially based beliefs into a coherent structure representing the world, which is closely analogous to naïve realism. As we discover more – i.e. as we make fewer mistakes in our inferences – the closer we get to scientific knowledge and the farther away we get from naïve realism. The problem arises, however, that if we are accepting non-inferential perceptions as the basis of our scientific knowledge, yet the world that science describes is much different than what we experience, then what, in addition to perception, is needed for validating knowledge?

As I stated above, this problem concerned Russell for the majority of his later work. We read in AM, for example:

> Unless we are going to say that all laws of nature must be demonstrable by pure logic, which is hardly conceivable nowadays, we must admit that there are co-existences and sequences which we expect on a basis of past experience, in spite of the fact that their failure would not be logically impossible. (146)

This is clearly an argument for the veracity of induction—or something like it—and as a result of Russell's system, causal laws. Although the postulates he considered as needed for knowledge altered after 1927, the problem remained central to Russell's concerns. In 1936's "The Limits of Empiricism" Russell discusses the conclusions that we are forced to take from empiricism that no pure-empiricist would be able to admit. Specifically regarding what physics requires for knowledge, Russell claims:

> We are all firmly persuaded that the laws of nature will not change, and that scientific apparatus will work in the future as in the past. Nevertheless this assumption that the future will resemble the past is one for which it is logically impossible that we should have evidence deducible by logic alone from past events. We may argue as to the precise form which our axiom is to take, but some axiom we must have if we are to be able to infer anything about the future. (1936a, 326)

Again in1940 we find Russell suggesting that some axioms are needed for empirical knowledge: "epistemology cannot say: 'knowledge is wholly derivable from perceptive premisses together with the principles of demonstrative and probable inference'" (IMT, 136). Due to these preliminary epistemological works, Russell, in 1943, decided to focus his attention on the problems of non-demonstrative inferences.[53] As a culmination of this focus, HK was produced, in which Russell believed he had sufficient grounds in setting forth a hypothesis justifying the non-demonstrative scientific inferences. It is to the details of this development that we now turn.

Beginning in 1927, Russell has a somewhat optimistic tone regarding perceptual knowledge and the discoveries of science: "Science cannot dispense wholly with postulates, but as science advances their number decreases" (AM, 167).[54] It seems, then, that at this point Russell believes we can potentially reduce, although not entirely, the number of scientific postulates upon further discovery. In AM Russell suggests that what are needed as postulates are induction and, only possibly, spatio-temporal continuity and causal laws. The most important postulate of science, according to Russell at this time, is induction. He writes: "I propose to assume the validity of induction, not because I know of any conclusive ground in its favour, but because it seems, in some form, essential to science and not deducible from anything very different from itself" (AM, 167). Regarding spatio-temporal continuity, Russell states that it "was, until lately, a postulate of science, but the quantum theory has called it in question without

[53] In 1943, we have the first recorded occurrence of Russell explicitly addressing the Postulates, in a lecture series at Bryn Mawr College (Slater 1997, xxxv). In 1944 Russell returned to Cambridge for a five year lectureship. The topic of his annual lectures concerned the work he deemed necessary for the completion of his work in epistemology – *viz.* non-demonstrative inference. Having been concerned with this topic for a number of years prior to this course, Russell went to work on this problem and in 1948 produced his epistemic *magnum opus* HK. He reiterates this progress in (MPD, 190).

[54] It is important to add here how Russell understands 'postulate', as some, especially concerning the later postulates in HK, associate the postulates with Kantian synthetic *a priori* conditions for knowledge. Russell, however, does not view the postulates in this way: "I mean by postulate something not very different from a working hypothesis, except that it is more general: it is something which we assume without sufficient evidence, in the hope that, by its help, we shall be able to construct a theory which the facts will confirm" (AM, 167). This point is restated in a footnote to Allen Wood's incomplete paper at the end of MPD: "the principles of non-demonstrative inference which I advocate are not put forward as certain or *a priori*, but as scientific hypothesis" (262n).

intellectual disaster. It *may* be true, but we cannot say that it *must* be true" (AM, 168). And finally regarding causal laws, Russell writes that their existence "perhaps deserves to rank as a postulate, or may perhaps be proved probable, on the existing evidence, if induction is assumed" (AM, 168).[55]

With the group of postulates from 1927, Russell admits to their ad hoc nature. He suggests, however, that pragmatically, "all science rests upon induction and causality" and that "when properly employed, [induction and causality] can give at least probability. In the present work, I have made this assumption baldly, without attempting to justify it" (AM, 398–9). Even with the admission of the pragmatic justification for these assumed hypotheses, Russell recognizes a tension:

> …I shall allow myself to accept what seems necessary on pragmatic grounds, being content, as science is, if the results obtained are often verifiably true and never verifiably false. But wherever a principle is accepted on such grounds as these, the fact should be noted, and we should realize that there remains an intellectual problem, whether soluble or not. (AM, 194)

Although he is not completely satisfied regarding his dealings with the assumptions needed for science to work, he does hold that there *are* some assumptions and that they are justifiable. For his purposes in AM, then, induction and causality do the work for what Russell hoped to accomplish – *viz.* provide a bridge between perceptions and the physical world. But as we discuss below, as Russell's thoughts become more focused on exactly what is needed by way of these postulates for knowledge, the more problematic the project becomes.

HK can be understood as a response to the problems Russell finds himself in when considering scientific knowledge: what is needed beyond perception to get knowledge off the

[55] It should be noted that, as we developed in the previous chapter, spatio-temporal continuity will also rest on causal lines, as the events that make up the structure of an object are the causes of what we perceive as a continuing entity. Spatio-temporal continuity is different than causal laws, however, as causal laws are assumed not just for what we perceive as interaction between physical objects, but also for perception to be possible. And, more fundamentally, there may be causal laws without spatio-temporal continuity – i.e. laws involving non-continuous functions.

ground? Recall in Russell's discussion on physics and empiricism that he alludes to a need for an axiom that can justify inductive reasoning.[56] It is from concerns much like this one that Russell turns to probability logic. It is evident that, unlike his 1927 reflections concerning postulates for scientific inference, in HK Russell has lost his confidence in induction:

> It has been customary to regard all inference as deductive or inductive, and to regard probable inference as synonymous with inductive inference. I believe that, if ordinarily accepted scientific inferences are to be accepted as valid, we shall have need of other principles in addition to induction if not in place of it. (HK, 146–7)

Tied closely to this disenchantment with induction, Russell also concludes that the purely mathematical aspects of probability theory are less applicable to the concerns surrounding scientific inferences. The premises Russell holds as necessary for scientific knowledge are oft times themselves uncertain, and, as such, frequency theories of probability cannot accommodate what we would classify as knowledge. Instead, Russell holds that where mathematical probability models do not apply to knowledge, the best probability theories can provide us with are 'degrees of certainty' or 'degrees of doubtfulness'.[57] Thus, where premises for knowledge are in some degree doubtful because of induction, we need other, more primitive, premises of knowledge to justify induction. That is, we need conditions that will not employ induction as a premise, but rather conditions that can validate it.

Russell's concern with induction is rooted in the fact that, if used by itself, it will more often than not lead to false inferences.[58] Something more must be assumed in order for experience to justifiably provide knowledge. Thus, where in AM induction coupled with causal lines was assumed sufficient for this justification, Russell, anticipating Goodman's "new riddle

[56] Cf. p. 57 above.
[57] I think that the best way to understand Russell's general malcontent with probability theories for knowledge can be summed up as follows: with mathematical probability, our conclusions are tautologies; with induction, our conclusions are uncertain—probability either gives us no new knowledge or no knowledge at all.
[58] See MPD, pp. 190–1, and HK, pp. 120, 140–1, and especially 274 were Russell highlights this point.

of induction," considers probability models employed in epistemology, and concludes in HK that non-demonstratives of some sort must be employed to even start the process of knowledge acquisition.[59] Russell considers Humean scepticism when considering 'knowledge': "Hume's scepticism with regard to the world of science resulted from (a) the doctrine that all my data are private to me, together with (b) the discovery that matters of fact, however numerous and well-selected, never logically imply any other matter of fact. I do not see any way of escaping from either of these theses" (HK, 155). Russell continues:

> If we are not to deduce Hume's scepticism from the above two premisses, there seems to be only one possible way of escape, and that is to maintain that, among the premisses of our knowledge, there are some general propositions, or there is at least one general proposition, which is not analytically necessary, i.e. the hypothesis of its falsehood is not self-contradictory. A principle justifying the scientific use of induction would have this character. What is needed is some way of giving probability (not certainty) to the inferences from known matters of fact to occurrences which have not yet been, and perhaps never will be, part of the experience of the persons making the inference. If an individual is to know anything beyond his own experience up to the present moment, his stock of uninferred knowledge must consist not only of matters or fact, but also general laws, or at least a general law, allowing him to make inferences from matters of fact; and such law or laws must, unlike the principles of deductive logic, be synthetic, i.e. not proved true by their falsehood being self-contradictory. The only alternative to this hypothesis is complete scepticism as to all the inferences of science and common sense, including those which I have called animal inferences. (HK, 156)

A lot rests on what we can discover as synthetic premises for empirical knowledge. Russell concludes: "That scientific inference requires, for its validity, principles which experience cannot render even probable, is, I believe, an inescapable conclusion from the logic of probability" (HK, 4). What is more, we discover from lecture notes, most likely from 1945, that Russell's disenchantment with induction as an epistemic premise is due to his notion of what an epistemic premise should be: "It should be noted that the postulate or postulates required to validate

[59] For Russell's discussion on these probability models and the problems see (HK: §V Ch. 8, pp. 352–8). Goodman's new riddle of induction can be found in (Goodman 1953).

scientific inference do not state probabilities, but facts – if they are true. They give rise to probable inferences, but only if they are themselves not merely probable, but true" (1945?, 15). We thus note that not only does induction become insufficient as a non-demonstrative validating principle for science, but also that *any* principle that is only probable cannot be a validating principle for science.

At the end of HK, Russell unveils the principles he believes are sufficient for scientific knowledge.[60] Although he has concluded that these principles are non-experiential, he does not hold that they are known *a priori*: "I do not think that there are any wholly *a priori* methods of proving the existence of anything, but I do think there are forms of probable inference which must be accepted although they cannot be *proved* by experience" (MPD, 135). Thus, I again stress that this is not a Kantian attempt for the conditions for knowledge;[61] rather, Russell holds the following postulates as being like scientific hypotheses, none of which are necessary, but together are sufficient for the justification of scientific knowledge. These postulates are:

1. The postulate of quasi-permanence.
2. The postulate of separable causal lines.
3. The postulate of spatio-temporal continuity in causal lines.
4. The structural postulate.
5. The postulate of analogy.

Russell suggests that together each of these postulates can validate scientific knowledge and that "collectively [they] are intended to provide the antecedent probabilities required to justify induction;" each in turn "justifies, in a particular case, a rational expectation that falls short of certainty" (HK, 429). Thus, we find Russell addressing the previous problems he had with the implications of empiricism, attempting to alleviate some of these problems, while justifying the

[60] See HK: §VI Ch. 3 – 9, especially Chapter 9.
[61] Cf. note 54 on p. 58 above.

knowledge of physics. The key here is not certainty; rather, we can have 'rational expectations' – i.e. knowledge in Russell's qualified sense. Let us develop each of the postulates in more detail.

The first postulate – quasi-permanence – is "given any event A, it happens very frequently that, at any neighbouring time, there is at some neighbouring place an event very similar to A" (HK, 430). This postulate seeks to explain *things* and their continuation. Recall that for Russell *things* are events in a causal series, and that the change from one event to the next is virtually unnoticeable. These small changes can accumulate over longer periods of time, however, potentially producing a more dramatic change. Consider a one month old baby and that same person 25 years later. Russell suggests the changes from infancy to adulthood are a series of inter-connected events resulting in a transition over time. We can never experience these events directly, yet we can infer them as a causal process from one event to the next.[62]

The second postulate – separable causal lines – acknowledges that "it is frequently possible to form a series of events such that, from one or two members of the series, something can be inferred as to all the other members" (HK, 430). The second postulate continues where the first one finishes; events can also be used to understand the maintenance of something's identity when it changes position or while it is in motion. Russell uses the example of a billiard ball: the ball changes position during the course of the game, yet we believe that the ball remains the same ball throughout. So, although the ball moves and changes location throughout the game, it is merely a causally linked set of events that have affected it—its identity remains even if its position changes.

Further, this postulate also shows that in perception, what one sees is in fact caused by the object of perception: "perhaps the most important use [of this postulate] is in connection with perception, for example in attributing the multiplicity of our visual sensation in looking at the

[62] Cf. our discussion on 'Substance' and 'Matter' above, pp. 34–8.

night sky to a multitude of stars as their causes" (HK, 430).[63] Thus we find the causal line postulate enabling one to infer the causal connection between the stages of a *thing*, as well as the causal relation between the objects of our perception and the resulting sensations: "What this postulate asserts may be restated as follows: A given event is very frequently one of a series of events…which has throughout an approximate law of persistence or change…the billiard ball preserves its shape and colour, a foetus develops into an animal, and so on" (HK, 432).

> Russell's third postulate is the postulate of spatio-temporal continuity. This postulate is concerned to deny 'action at a distance', and to assert that, when there is a causal connection between two events that are not contiguous, there must be intermediate links in the causal chain such that each is contiguous to the next, or (alternatively) such that there is a process that is continuous in the mathematical sense. (HK, 432)

This postulate, then, enables us to make inferences about unobserved events and objects that have had a time lapse between our experiences of them. Russell suggests that "a great many of our inferences to unobserved occurrences, both in science and common sense, depend on this postulate" (HK, 433). Therefore, when I believe that my scotch collection exists even when I am not immediately experiencing it, this postulate is being employed.

We now come to the structural postulate. This postulate is understood as follows: "When a number of structurally similar complex events are ranged about a centre in regions not widely separated, it is usually the case that all belong to causal lines having their origin in an event of the same structure at the centre" (HK, 433). What this postulate amounts to is, that if multiple people each experience an event from the same causal source, then they each experience the same thing. For example, a friend and I watch the Super Bowl and although we cannot know if we observed the same event, we can discuss it in detail, and therefore conclude that we were observing the same event. In cases like the "Super Bowl" example, Russell suggests that the

[63] Cf. our discussion on perception above, pp. 29–34.

probability of the game itself being at the causal center would be extremely high since there would be multiple examples of those who could describe the event in similar detail. However, this high probability is not required—there can be a causal connection between an event and only two observers, although this would decrease the probability of the given event.

The structural postulate has further importance. Given that in perception the most we can infer about the physical world independent of perception is its structure, we learn from the structural postulate how the physical world is put together. Recalling our discussion about structure,[64] we recognize its importance when associating events and their causal origins. Russell maintains the significance of this view and the importance of space-time structure: "It explains how one complex event can be causally connected with another complex event, although they are not in any way qualitatively similar. They need only resemble each other in the abstract properties of their space-time structure" (MPD, 203–4). He continues: "It is because of the importance of structure that theoretical physics is able to content itself with the formulae that are about unexperienced occurrences, which need not, except in structure, resemble any of the occurrences that we experience" (MPD, 204). Thus, the importance of the fourth postulate is evident.

Finally we reach the postulate of analogy:

> Given two classes of events A and B, and given that, whenever both A and B can be observed, there is reason to believe that A causes B, then if, in a given case, A is observed, but there is no way of observing whether B occurs or not, it is probable that B occurs; and similarly, if B is observed, but the presence or absence of A cannot be observed. (HK, 434)

This postulate enables us to infer unobserved occurrences, but not those occurrences we discussed in the spatio-temporal causal postulate, however. Rather, the unobserved occurrences here are those that are inferred to be correlated with events that are observed. In some cases this

[64] Cf. pp. 39–42 above.

postulate enables us to conclude that previously observed events are the cause of events that are no longer observable; we accept that the unobserved event's occurrence has the same causal correlation to a separate event. For example, I observe a dog chasing a cat into the woods. After the animals enter the woods, I can still hear the commotion – a dog barking, a cat hissing, etc. – but I can no longer see the actual event. I can infer, however, that my hearing the commotion has the cat and dog as its source.

The most important aspect of the fifth postulate is not the inference to unobserved occurrences, however. The most important aspect of this postulate concerns events that we can never observe, but we can yet maintain their occurrences. Most notable among these inferences is the inferences to other minds: "the most important function of [the fifth postulate] is to justify the belief in other minds" (MPD, 204). Thus, this postulate can accommodate testimony and therefore indirectly hold the percepts of others as knowledge—*a fortiori* we can use other peoples' percepts as premisses for our own knowledge and belief claims. That this procedure is essential for science is obvious.

Russell admits that the aforementioned postulates may potentially be reduced further, but that he himself cannot produce a more parsimonious list. Regardless, Russell suggests that these postulates satisfy the criteria for scientific knowledge:

> We may be said to 'know' what is necessary for scientific inference, given that it fulfils the following conditions: (1) it is true, (2) we believe it, (3) it leads to no conclusions which experience confutes, (4) it is logically necessary if any occurrence or set of occurrences is ever to afford evidence in favour of any other occurrence. (HK, 436)

From these postulates, then, Russell believes that he has provided the axioms sufficient to avoid the problem of induction while also providing a justificatory foundation for empirically based knowledge. This is not to say that Russell believes he has *solved* the problem of induction; rather, he holds that, assuming the postulates, one can avoid the difficulties that are associated with it.

III
Human Knowledge: Its Scope and Limits

We come now to the question, what are Russell's ultimate conclusions concerning knowledge? Given that our premises for knowledge have been shown to rely on non-demonstrative inferences and further, that all perceptual knowledge is at most probable, not certain, what are the scope and limits of human knowledge? Russell is consistently suspicious of 'knowledge' as a concept. Recall his statement from OP: "what passes for knowledge in ordinary life suffers from three defects: it is cocksure, vague, and self-contradictory" (2). At this time, however, Russell was convinced that with careful reflection and philosophical analysis knowledge can be made more "tentative, precise, and self-consistent" (OP, 2). After considering the problems in more detail, however, Russell, circa 1948, retains his initial pessimism: knowledge can only ever come in degrees. There is no aspect of knowledge which this conclusion is not applicable: "all human knowledge is in a greater or less degree doubtful" (HK, 335). And, on the basis of this conclusion concerning knowledge, 'knowledge' is a vague, ambiguous, and vexed concept, which is incapable of precision.

One of the most notable conclusions that Russell makes regarding knowledge is that it must be understood in terms of degrees, not as an all-or-nothing concept. Russell likens 'knowledge' to 'baldness':

> "knowledge" is a vague concept for two reasons. First, because the meaning of a word is always more or less vague except in logic and pure mathematics; and second, because all that we count as knowledge is in a greater or less degree uncertain, and there is no way of deciding how much uncertainty makes a belief unworthy to be called "knowledge", any more than how much loss of hair makes a man bald. (HK, 91)

Just as it is unclear at specifically what point one who suffers hair loss becomes bald, so too does the degree of doubtfulness in one's belief reveal an vagueness as to when one can be said to have knowledge or not. Understanding exactly how Russell comes to this conclusion takes us to the

degrees of credibility we can give to certain premises for knowledge, and how from uncertain basic-beliefs we can develop more certainty in what is commonly accepted as knowledge.[65]

In using 'basic-belief', a term that Russell does not employ, I am purposefully using it in the intensional sense associated with foundationalist epistemologies.[66] Russell clearly has an epistemic order consisting of beliefs that are more certain, which enable less certain beliefs to be formed. It is important to note, however, that Russell's foundationalism never achieves certainty. That is, although what I am calling basic-beliefs in Russell's system are the foundations for knowledge, Russell argues that they can never be certain. Due to this uncertainty, Russell also develops a form of coherentism.[67] Again, Russell does not do so in a way that fits neatly with other coherence theories; rather, his theory uses coherence as a way to increase the degrees of credibility of the beliefs within one's doxastic framework.

As should be anticipated from our previous discussion of knowledge, Russell holds that 'data' is epistemically primitive. Consider the claim that "the relation between data and inference…remains important, since the reason for believing no matter what must be found, after sufficient analysis, in data, and in data alone" (HK, 338). A datum is defined as "a proposition which has some degree of rational credibility on its own account, independently of any argument derived from other properties" (HK, 344).[68] Within this sphere we can include propositions

[65] When I use the term 'basic-belief(s)', I mean beliefs in propositions that have, what Russell would call, 'intrinsic or inherent degrees of credibility'. Furthermore, these basic-beliefs are formed on the basis of 'data'. This point is discussed in detail below.

[66] Foundationalism in epistemology is theory of justification. Advocates of this theory hold that there are beliefs that are self justifying – basic – and thus can allow for other non-basic or inferential beliefs to be built on and justified by the foundational beliefs. For a classic defence of this theory see (Chisholm, 1977), for a variation on classic foundationalism see (Audi, 2003). Russell uses the notion of "basic-propositions." These can be understood in a foundationalist sense.

[67] Coherentism as used here is a theory of justification (there are also coherence theories of truth). Unlike foundationalists, however, coherence theorists argue that one's belief is justified iff it is supported by all the other propositions that make up one's epistemic system, what Russell would call the 'edifice of knowledge'. Defences of coherentism can be found in (BonJour, 1976) and (Dancy, 1985).

[68] Compare the definition of a datum with how Russell understands an epistemological premise: "an epistemological premiss may be defined as a proposition which has some degree of rational credibility on its own account,

derived from sensations, percepts, memories, and an awareness of logical connections. We must remain wary, however, because Russell holds that *all* data are to some degree uncertain, and thus the foundation for all our beliefs is itself fallible. Using faint perceptions, distant memories, and dim awareness of logical connection as examples of how data can be uncertain, Russell proposes that we cannot accept traditional foundationalism, although we do require some foundation for our beliefs.[69] This leads Russell to conclude:

> It is obvious that the conclusion of an argument cannot derive from the argument a higher degree of credibility than that belonging to the premisses; consequently, if there is such a thing as rational belief, there must be rational beliefs not wholly based on argument. It does not follow that there are beliefs which owe *none* of their credibility to argument, for a proposition may be both inherently credible and also a conclusion from other propositions that are inherently credible. But it does follow that every proposition which is rationally credible in any degree must be so either (a) solely in its own right, or (b) solely as the conclusion from premisses which are rationally credible in their own right, or (c) because it has some degree of credibility in its own right, and also follows, by a demonstrative or probable inference, from premisses which have some degree of credibility in their own right. If all propositions which have any credibility in their own right are certain, case (c) has no importance, since no argument can make such propositions more certain. But on the view which I advocate, case (c) is of the greatest importance. (HK, 344–5)

It is on the basis of accepting that some basic-beliefs become more credible when they follow from other arguments that have basic beliefs as premises that Russell reveals some sympathy for coherentism. It must be stressed that Russell does not accept a coherence theory of truth; rather he sees coherence as adding to the strength of one's epistemic system. Russell writes: "I do not accept the coherence theory of *truth*, but there is a coherence theory of *probability* which is

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independently of its relations to other propositions" (HK, 338). It should be obvious that Russell holds data as being epistemological premises. We will discover below, however, that data are both premises and conclusion, as they do not require any other arguments to increase their degree of credibility, while they can also be derived from other beliefs. See the block quotation immediately below.

[69] See, for example, IMT: "I am prepared to concede that all data have *some* uncertainty, and should therefore, if possible, be confirmed by other data. But unless these other data have some degree of independent credibility, they would not confirm the original data" (125).

important and I think valid" (MPD, 204).[70] We are now in a position to discuss Russell's quasi-foundationalist credibility theory of justification for perceptual based beliefs and scientific knowledge.

As we have just discussed, on the one hand, Russell is a foundationalist, on the other, he is a coherentist, and we can thus conclude that he is neither. How, then, are we to understand this theory? Russell likens his system to a bridge built on piers, and, as such, we will develop that metaphor. The inherently probable beliefs are the foundations of a bridge. The beliefs that follow from these foundations are interconnected with other basic-beliefs, thus providing support for each other: the more interconnection between each of the foundational beliefs, the more credibility one gains in support of the veracity for each of the other beliefs. Russell puts it in this way:

> The edifice of knowledge may be compared to a bridge resting on many piers, each of which not only supports the roadway but helps the other piers to stand firm owing to interconnecting girders. The piers are the analogues of the propositions having some intrinsic credibility, while the upper portions of the bridge are analogues of what is only inferred. But although each pier may be strengthened by the other piers, it is the solid ground that supports the whole, and in like manner it is intrinsic credibility that supports the edifice of human knowledge. (HK, 347–8)[71]

In some ways this conclusion is uplifting in that we have a method by which we can derive a much higher degree of credibility in our beliefs, rather than just accepting scepticism regarding what can be known. In other ways, however, we must remain somewhat pessimistic regarding what we can be said to know, as the intrinsic credibility of even our most certain beliefs is

[70] Recall that Russell maintains a *correspondence* theory of truth, in which something is true if it corresponds to a fact. Also, we should clarify here a potential confusion regarding Russell's use of probability. When Russell refers to "probability" in the sense used in our current context he means "degrees of credibility," not the mathematically closed system found in traditional probability theories.

[71] In using the analogy of a bridge on the support of piers, I cannot help but associate Sosa's (1980) analogies of a pyramid and a raft for foundationalism and coherentism respectively. I admit I am more sympathetic to Russell's analogy as it reflects what is, in my opinion, a better theory of justification.

always questionable, and thus we must remain epistemically fallibilistic.[72] Further, we must also remind ourselves that the piers from which our knowledge is based are ultimately non-demonstrable; and thus the coherence of the entire system rests on principles that cannot be experienced, only justified by the consistency of our experiences. As Russell claims about our knowledge of these foundations, "to ask, therefore, whether we 'know' the postulates of scientific inference, is not so definite a question as it seems. The answer must be: in one sense, yes, in another, no; but in the sense in which 'no' is the right answer we know nothing whatever, and 'knowledge' in this sense is a delusive vision" (HK, 5).

We find, then, Russell ultimately concluding that 'knowledge' can gain high degrees of credibility – indeed almost to the point of certainty – while maintaining an epistemic fallibilism. Even when considering the most basic propositions, propositions that no one would deny, we must maintain that the foundations for these propositions have a certain degree of doubtfulness. In MPD, Russell discusses this point:

> The method of Cartesian doubt, which appealed to me when I was young and may still serve as a tool in the work of logical dissection, no longer seems to me to have fundamental validity. Universal scepticism cannot be refuted, but also cannot be accepted. I have come to accept the facts of sense and the broad truth of science as things which the philosopher should take as data, since, though their truth is not quite certain, it has a higher degree of probability than anything likely to be achieved in philosophical speculation. (207)[73]

Given that we have good reason to accept certain epistemic premises, for Russell 'knowledge' in its traditional form remains a chimera. Ultimately, he concludes that "there is no such claim to certainty as has, too often and too uselessly, been made by rash philosophers" (MPD, 207). And while I suggest we are forced to agree with Russell that certainty about almost all propositions is

[72] Feldman (1981) defines epistemic fallibilism: "It is possible for *S* to know that *p* even if *S* does not have logically conclusive evidence to justify believing that *p*" (266). Or, more simply, one could justifiably know that p, but could be wrong.
[73] Where Russell uses "degree of probability" here, he is meaning "degree of credibility" as we have been using it.

unattainable, a division of epistemic labour enabling some certainty is possible—where the role of self-evidence can provide nearly certain beliefs. That is, Russell's conclusions, while justifiably pessimistic towards the limits of human knowledge, may actually present a system that can give us near degrees of certainty, especially when employing his bridge model.

IV

'Knowledge?' → (Epistemology → (Belief-formation ∩ Justification) ∩ ¬ 'Knowledge')

In what follows, we will discuss 'knowledge'.[74] Russell's discussion of 'knowledge' at once seems right and yet is quite vexed. He suggests that through primitive perception on the basis of sensation we develop an awareness of certain relationships between a stimulus and what is perceived. From the basis of our commonsense we can then begin to form animal inferences and mental habits of association. When we make a correct anticipation or association – i.e. are not mistaken or surprised by the outcome – we are said to *know* on Russell's view. However, Russell argues that *all* scientific, non-tautological, knowledge must be understood in terms of degrees.[75] But where are the degrees in the above assessment? If truth must correspond with fact, and knowledge must consist in holding a justified true belief, then, again, how can we take 'knowledge' as a gradation?[76] Arguably Russell is maintaining that since the degrees of credibility, or justification, we have in holding a certain belief that p corresponds to the degree that we 'know' that p. If this assessment is indeed correct, however, then we seem to be discussing a 'threshold' model of knowledge. That is, we acquire knowledge as soon as our

[74] A full analysis of Russell's theory of knowledge would require far too much discussion for our present concerns. Indeed, it could fill an entire volume of its own: Russell's account of epistemic justification, in HK alone, can relevantly address the causal theory of knowledge, reliabilism (376–8), coherentism, foundationalism, truth, belief, JTB, the 'Gettier Problem', naturalized epistemology, the problem of induction, probability theory, rationality, and even virtue epistemology (349–51) (I leave out the pagination for topics explicitly discussed in this work). I will therefore limit myself to a discussion on a difficulty I have with Russell's version of fallibilism.

[75] Recall Russell's definition of "data,"cf. p. 68 above, in light of the following quotation: "I shall henceforth assume that a datum . . . may be uncertain in a greater or less degree" (HK, 347).

[76] For the record, Russell does not accept the JTB theory of knowledge, although he admits that it will be difficult to find an alternative. I merely employ JTB as a standard understanding of 'knowledge', and use it against Russell's theory.

degrees of credibility or certainty in a belief surpass a point on an epistemic gradient. Russell is somewhat unclear on this point, however. I suggest here we try to work our way out of this muddle by doing two things. First, we work with two notions of knowledge, and thus, rather than working with one completely confused notion, we get two concepts that are much less so; secondly, we recognize that a conclusion strongly supported by Russell's work in this area is that the important epistemic focus should not be on 'knowledge' at all, but rather on justification and belief-formation.

I should like to argue that Russell's assessment of learning is more or less correct, and that what passes for knowledge in normal conversation is as Russell describes. But if we are discussing in strictly conceptual terms, 'knowledge' as defined by Russell is not vague and ambiguous, but rather vacuous and idle. If knowledge *en act*e is understood as pertaining to a proposition in graded terms, but it is impossible to 'nail down' a gradient for discovering when a belief becomes knowledge, then are we justified in maintaining the concept? The tension that I see forming here is that on the one hand, Russell is willing to entertain sceptical counterarguments to our traditional philosophical understanding of 'knowledge', while also supporting a somewhat commonsense notion of this concept. In this latter sense of 'knowledge', we get a weakened form of the term, one that we can employ, but that may be willing to accept too many beliefs as knowledge; in the former sense, we get a notion that is not vague, but is also rarely, if ever, possible to achieve.

As I recognize that the majority of Russell's concerns regarding degrees of credibility and doubtfulness are valid, I suggest that there are two conflicting options we can take in response to his portrayal of 'knowledge': we could (a) rid ourselves of the problem altogether by rejecting 'knowledge' in the traditional sense and accept some form of fallibilism, thereby allowing for many things to be known with potentially insufficient justification, or (b) produce a more robust

notion of 'knowledge' to avoid the vagueness and ambiguities hitherto discussed, but, in so doing, limit knowledge to such an extent that, again, very few things qualify as knowledge—things we would most certainly want to accept as known. Neither of these options seems satisfactory, but at the same time one or both seem inevitable. This conclusion suggests that either we admit that there is only one notion of knowledge, either a strong infallibilist position where very few of our beliefs satisfy this notion (call this S-knowledge), or a weakened fallibilist thesis where all cases of knowledge are defensible (call this W-knowledge), or we accept both options and maintain two notions of 'knowledge', S-knowledge and W-knowledge. And while I suggest that Russell's theory lends itself to something like the latter option, the conclusion I want to ultimately defend, and suggest that Russell's work intrinsically supports, is that what is important in our epistemological considerations is not 'knowledge', but belief-formation and justification.[77] Prior to addressing these points further, however, let us contextualize our discussion with where the tensions lie in Russell's 'knowledge'.

We observe that in HK Russell rejects the traditional justified true belief (JTB) theory of knowledge, as he provides, anticipating Gettier,[78] the now well known clock example: you see a clock tower, which to this point has reliably provided the correct time, but unbeknownst to you the clock shut down exactly twelve hours ago so that when you observe the time, it is indeed correct. Since the clock is not working, however, it is merely luck that you happen to look at it at exactly the time that the clock reads correctly, and, as such, we would hesitate to call this

[77] I recognize that justification comes in degrees and that this is also my problem with Russell's take on knowledge. But as I would have it, there is a high threshold of justification, which if passed will qualify as knowledge. To repeat: Knowledge does not come in degree, justification does.

[78] Perhaps a better way of putting this would be, "as Gettier most certainly lifted and made into his own." I am becoming increasingly aware of, in some cases blatant, un-cited uses of Russell's examples and arguments being made in contemporary philosophy. For the Gettier examples see (Gettier 1967).

knowledge.[79] Russell suggests that even if we give an account of 'evidence' that is sufficiently robust for the justification criterion, we still find ourselves in a difficult situation:

> "Evidence" consists, on the one hand, of certain matters of fact that are accepted as indubitable, and, on the other hand, of certain principles by means of which inferences are drawn from the matters of fact. It is obvious that this process is unsatisfactory unless we know the matters of fact and the principles of inference not merely by means of evidence, for otherwise we become involved in a vicious circle or an endless regress. (HK, 140)[80]

Because of this difficulty, Russell, I suggest rightly, argues that the emphasis for understanding matters of fact should be on justified inferences. This emphasis provides us with a justifying foundation from which to base our beliefs. He suggests that "traditionally, the matters of fact are those given in perception and memory while the principles of inference are those of deductive and inductive logic" (HK, 140). As we discussed above, Russell is dissatisfied with this traditional doctrine, but realizes that we most likely have to accept something much like it if we want to understand 'knowledge'.

Attempting to discover what must be accepted for 'knowledge', Russell addresses three doctrines: self-evidence, coherence, and pragmatism.[81] Russell rejects the latter two theories, as he maintains that neither of them sufficiently addresses matters of fact, as some justifying proposition could be coherent or could 'work' while having no real world correlate; although, as we discussed above, coherence does have a role to play in justification. He does reveal sympathy for the notion of self-evidence, however: "I do not think we can entirely dispense with self-evidence. If you slip…and hit your head with a bump on the pavement, you have little sympathy

[79] See (HK, 139–40) for this and more examples against the true belief and JTB theories of knowledge; also, examples like this one were first used in Chapter 13 of *(*Russell 1912).
[80] This is, of course, the problem of the criterion.
[81] A brief characterization of each of these theories would be as follows: if a belief is self-evident, then it is known without need of other beliefs from which to know the veracity of the belief in question; in the coherence tradition, a belief counts as knowledge just in case it is coherent with a broader set of beliefs; and finally, in the pragmatist tradition, a belief counts as knowledge just in case the belief works within the context of one's situation, where 'works' is understood as promoting a successful undertaking of whatever goals one has at the time.

for the philosopher who tries to persuade you that it is uncertain."[82] If something is self-evident, "we cannot help believing it" (HK, 141). Concerning self-evidence as a basis for knowledge itself, however, Russell, remains unconvinced:

> [A] difficulty about self-evidence is that it is a matter of degree. A clap of thunder is indubitable, but a very faint noise is not; that you are seeing the sun on a bright day is self-evident, but a vague blur in a fog may be imaginary; a syllogism in *Barbara* is obvious, but a difficult step in a mathematical argument may be very hard to "see". It is only for the highest degree of self-evidence that we should claim the highest degree of certainty. (HK, 141)

It is for this reason, as well as the epistemic wheel problem discussed above, that Russell is convinced that knowledge is a matter of degree. I argue, however, that the examples purported to show the degrees of self-evidence do not in fact present a drastic problem and, as such, we can form fully justified beliefs that would pass as knowledge in any non-philosophical context. Let us turn to self-evidence as I suggest it should be understood.

I agree with Russell that if something is self-evident, we cannot help but to believe it. Furthermore, using Russell's own words, "it is only for the highest degree of self-evidence that we should claim the highest degree of certainty." It is with these highest degrees of self-evidence that we can gain S-knowledge. Further, this type of self-evident belief is indeed a justifying principle sufficient for enabling further justified beliefs. The step where we may hesitate, however, is in classifying the distant or subtle noises that sound like thunder as S-knowledge. It may be self-evident that one has heard something, but what that something is is far from self-evident. I would even make the stronger claim that the actual clap of thunder one hears, that self-evidently seems to be thunder, is not actually S-knowledge of thunder; rather, it is W-knowledge of thunder. The perceptual experience 'boom' would be S-knowledge, however, and inferring from the boom one may think, or believe, *thunder*. If one sees a flash prior to the boom, then one

[82] This also applies to conceptual truths, such as "All men are mortal; Socrates is a man; therefore, Socrates is mortal."

can more justifiably infer *thunder*, although this is still an inference. But as each individual percept[83] is self-evident – i.e. experiencing a flash, followed by a boom, coupled with the sensation of wetness on one's skin – taken together, these self-evident experiences can lead to a conclusive true belief, *thunder*. Here the self-evidence is found in the non-inferred phenomenological perceptual experiences—I am suggesting that these are cases of S-knowledge. The beliefs based on these perceptual experiences, however, do not provide incorrigibility; rather, they can always present a degree of doubtfulness, and as such, are only W-knowledge.[84] Nevertheless, as the number of instances of S-knowledge experiences cohere with one another and become propositional W-knowledge, the latter become more S-knowledge-like to the degree that they support the other propositions. Similar arguments can be made for Russell's other examples.[85]

It will be observed that in the above example, I have employed Russell's model of justification—the foundational coherentist 'bridge'. I suggest that this model is correct also. Again, the problem is Russell's notion of 'knowledge'. Consider another example consistent with this epistemic structure. Jones, who is now 30 years old, recalls her tenth birthday party as being rained out. This memory, by itself, is clearly quite fallible: she could be mistaken

[83] As we know from previous discussions, percepts occur later on in one's epistemic development, thus the highest degree of self-evidence may be better understood in terms of sensations rather than percepts. I will maintain my use of percepts, however, as these remain non-inferential and offer high degrees of credibility, although the inference as to the veracity of the percept remains, to some extent, uncertain.

[84] I think with this notion of self-evident experiential foundations we are onto an important focal point that often gets bypassed in our attempts to refute the sceptic, a point that I think G. E. Moore was making in his (1925 and 1939). We can know that we are having the perceptual experience 'hand'. That experience is indubitable. Whether or not the hand is as we perceive it in experience, or if there is even an external world hand at all, is debatable. However, as the coherence between my self-evident perceptual experiences and the fallible testimony of others' similar experiences inform my fallible belief concerning an external world object, the belief becomes knowledge-like to such an extent that it nears indubitability in all but the most extreme types of sceptical argument.

[85] It has to be noted that when I am discussing self-evidence here, I am assuming a complicated process by which we learn and reach a certain level of recognition and association in what we perceive and the beliefs derived from these perceptions. On this point I think that Russell is more or less spot on—the processes by which we develop our beliefs, and build a scientific understanding of the world on these beliefs is a more advanced and self-reflective process, but still analogous to what occurs in non-human animals. Further, I support Russell's conclusion that we should proceed as though we do have knowledge, even if we disagree on exactly how 'knowledge' is to be understood.

regarding which birthday it actually was—maybe it was her ninth or eleventh birthday, not her tenth; it may have been her sister's party and not her own that was rained out; or perhaps it was not a birthday party at all, but rather a confirmation party. In any case, we can quickly recognize that doubt can be raised for memories like the one Jones has. Suppose, however, that she discovers her old diary and on the date that was her tenth birthday she receives confirmation that indeed her birthday party had been rained out. She now has a stronger reason to hold that her tenth birthday was as she remembers. Thus her initial datum is strengthened by its coherence with other seemingly reliable information. Granted, the inferences necessary to accept the old diary entry as true are also great: is this indeed her handwriting? Is the testimony of the written words reliable in this case? Is her percept of the page a correct representation of what is written? And so on. Consider further that Jones discovers a picture, again dated the same day as her tenth birthday, which further supports her initial memory *and* the entry in her diary. While the inferences made on the basis of each individual datum do not enable a high degree of credibility for the belief in question, taken together, the degree of credibility becomes much higher and the degree of doubtfulness drops by the same ratio.

In the above scenario Russell asks: "At what point does Jones's memory of the events of her tenth birthday become knowledge?" If we accept Russell's analyses, then our response should be that each piece of evidence on its own would be W-knowledge, and that when they are taken together get us closer to S-knowledge. What is most important here, however, is how justified Jones is in her resulting beliefs on the basis of her evidence, which is supported by its coherence with her diary and the picture. Recall that for Russell our non-inferential sources of fact-knowledge are sensation and memory. From these we come to learn facts about the world. But we have also learned that our sensations and memories are quite fallible. As a result of this fallibility, Russell concludes that knowledge must be understood in terms of graded credibility. I

am arguing that Russell's *analysis* is here correct; indeed any justification we can provide for our beliefs is on a gradient—Russell's analogy with baldness is apt. Moreover, the further that our justification moves away from the propositions that make up S-knowledge, the more fallible our W-knowledge gets.

There is a problematic implication for the way I am reading Russell's construal of knowledge by degrees here. If it is indeed the case that knowledge must be understood in terms of graded credibility, then does it follow that Einstein knows that $e=mc^2$ more than I do? Another way of putting this is that we both know $e=mc^2$, however, Einstein not only knows more about it than me, he knows it more than me: there is no threshold for Russell; there are only degrees of certainty. Now it is ambiguous in Russell's position as to whether or not he thinks there is a threshold for knowledge. The closest we get to demarcating the knowledge-threshold is the "quite so" feeling when encountering a proposition, which can hardly be a clear indicator of where belief becomes knowledge. If he does think that there is a knowledge threshold, then it is unclear at what point one can be said to know. Take for example the following statement from MPD: "'Knowledge'…as commonly used is a very imprecise term covering a number of different things and a number of stages from certainty to slight probability" (133). But when we attempt to become more precise with our understanding of 'knowledge', we are forced, on Russell's view, to conclude that "knowledge is a matter of degree" (HK, 142). Consider further Russell's discussion concerning degrees of credibility: "Knowledge, I maintain, is a matter of degree. We may not know 'Certainly A is followed by B', but we know 'Probably A is usually followed by B', *where 'probably' is to be taken in the sense of 'degree of credibility'*" (HK, 376, my italics). Building from this conclusion, Russell, when discussing beliefs in general propositions, such as 'energy is equivalent to mass traveling the speed of light multiplied by itself', again employs the notion of expectation. When one has a belief in this proposition, upon

hearing it being stated, one would have the 'quite so' feeling on Russell's view. This 'quite so' feeling can be measured in degrees of credibility, which are just those beliefs built on the basis of data that gain their strength with coherence with other data – i.e. the bridge. So, for Russell it does seem possible to conclude that Einstein may know that probably $e=mc^2$ more than I do, if the degrees of credibility in Einstein's expectation of $e=mc^2$ are higher than mine. Thus, we seem to be left with the weird result from above – i.e. that two people can know that p, but one knows it *more* than the other.

Having argued that we can get out of Russell's muddled notion of knowledge, and that this confusion calls for a new epistemic program, let us summarize the model I am endorsing for epistemological practices. Consider an example from science. Whatever we consider 'knowledge' in the scientific sense must be inferred and therefore is subject to revision upon further discovery. This would imply that science for the most part produces W-knowledge. However, this conclusion should by no means diminish the power and importance of science; indeed, I should like to argue that science is the most rational method of justified belief acquisition. Consider 'gravity' for example. We all have the self-evident experience of observing objects fall, feeling grounded with the Earth, and so on. From these self-evident experiences we concluded that things fall down. But this conclusion isn't quite right; a revision is needed. Thus we discover that massive bodies 'pull' on other massive bodies, and this in turn results in the appearance of things falling down, etc. But, again, upon further reflection we find out that this notion of gravitational 'force' isn't quite right either; another revision is needed. Now we discover that either due to the shape of four-dimensional space-time, falling objects follow a geodesic – i.e. a 'straight line' in curved space. These observations lead to a scientific inference. These inferences, however, while consistent explanations of the original phenomena, reveal that scientific principles, even of the strongest kind like Newtonian Gravitation, can be revised. All

of the above conclusions begin with a self-evident experience, and can be taken as S-knowledge, but as to what science says concerning future conclusions as to what is actually occurring in these experiences, we have W-knowledge at best, because these conclusions are always open to revision. What is most important here, however, is the methods from which we learn our defeasible conclusions – i.e. belief-formations – and how strong the evidence in support of our conclusion prove to be – i.e. justification. These latter two concerns are what we should be focused on with regards to scientific knowledge.

Finally, I agree with Russell that scepticism is untenable. On the other hand, I suggest that given the confusion surrounding 'knowledge' the focus of epistemology could bypass this problem all-together by instead focussing more on belief-acquisition and the justification for those beliefs and belief forming processes. Further, justified beliefs resulting in rational expectations are sufficient to navigate the world with some, perhaps quite high, degree of success, if we define 'success' in this context as rational agency.[86] One's degrees of credibility in the belief in a proposition concerning both facts and the correlations between facts are merely a reformulation of the justification one has in one's belief. Wherever knowledge, be it strong or weak, fits into this discussion is no longer the central concern of analysis; rather, 'knowledge' on my view just becomes a shorthand for some mental state to which we all associate some degree of epistemic approval. But, to belabour the point, the approval in this case is found in one's degrees of justification surrounding a doxastic state.[87] When we engage with Russell's theory of knowledge, these considerations seem most prevalent. We have here a theory of knowledge that cannot find a clear notion of what 'knowledge' is. And yet we are also able to engage in an

[86] By a 'rational agent' I mean a causally efficacious person with thoughts, beliefs, desires and intentions, who can set and achieve goals – i.e. flicking a light switch (belief in causal process) to turn on the light (goal/desire). This position requires an argument. However, I hope that however the reader wishes to define success in the context of 'world navigation' from an epistemic standpoint, can agree that justified rational expectations, as Russell describes them, do enable successful undertakings.

[87] See (Bonjour, 2010), especially pp. 79–80, on this point.

analysis of what it means to have reasonable expectations and be able to develop scientific knowledge, as well as what it means to be a belief forming animal. I suggest that 'knowledge' is a useful notion in common discourse, but as I agree with Russell that the concept is vague even after analysis, we should move on to more fundamental epistemic categories.

V
Review

Russell suggests that if we understand animal learning, then we can gain insight into our own process of discovery. Traditional epistemic programs tend to ignore our doxastic similarities with other animals and have thus simplified the problems of belief formation and 'knowledge' significantly. Russell argues that our understanding of the human learning process is similar to the processes taken by other species – i.e. animal learning. What we now consider the learning process has the potential for modification upon further discoveries in cognitive ethology and infant development. Russell concludes we are forced to recognize that there is no hard and fast method of understanding knowledge—it remains a chimera.

Although 'knowledge' has this interesting implication, Russell does not reject it as conceptually empty; he maintains that the there is a relationship between the world and belief-formers that can result in knowledge through learned associations, animal habits, and ultimately scientific inferences. Russell's epistemic scaffolding is based on foundational beliefs, unified in a coherent system, which thus provides justification for the collection of beliefs as a whole. Consider the conclusions as to the age of the universe made by astronomers, coupled with the astrophysicists' conclusions regarding the basic elements for life, and the geological evidence supporting the age of the Earth, the biological evidence for the amount of time required for evolution by natural selection to take place, and finally the archaeological evidence supporting the conclusions of the biologists, and we get a coherent picture of how long our planet and star

and ultimately our universe have existed. It is difficult to deny that the consistency of each independent field of inquiry, when shown to be consistent with other fields, provides support for the conclusions on the whole.

Although we are provided with an account of justification that seems to be quite strong, Russell is ultimately an epistemic fallibilist: any human knowledge can be measured by degrees of doubt. This result seems inevitable to Russell for a number of reasons; at the pith of these reasons is the necessity for non-demonstrative principles to facilitate scientific inferences and induction. And, while I have argued that Russell's, and *any*, notion of 'knowledge' is vexed, I suggest that the majority of Russell's conclusions concerning his assessment of knowledge development are correct. Whereas we want to employ the term in cases that seem obvious as knowledge, Russell suggests we are unclear as to exactly what 'knowledge' is. I therefore propose the alternative that the important work to be done in epistemology is not with knowledge *per se*; rather, our focus should be placed on principles of justification and the role of belief and the belief forming processes common to all animals, human and non-human alike.[88]

[88] I like to think of this suggestion as "taking the *episteme* out of epistemology."

4

Perception Epistemically Assessed: A Defence of Russellian Realism

To this point we have covered significant ground concerning Russell's later work – namely his ontology, philosophical worldview, theory of perception, and the conceptual basis of his later epistemology. In this chapter we discuss in more detail the epistemological problems of perception and where and how Russell's work fits into this tradition. Whereas in the previous chapter we were concerned with the conceptual aspects of Russell's epistemic program, here we will discuss his theory of perception as an epistemological foundation. I defend the view that, while there are conceptual problems with Russell's theory of knowledge, as argued in the preceding chapter, Russell's epistemic theory of perception points us in the proper direction for an adequate foundation for knowledge, and is better than alternative theories of perception in this respect.

On the epistemic problems of perception, two central issues emerge: (1) what is the nature of the relationship between the physical world and how we experience it? And (2), does

this relationship justify our beliefs about the physical world? We have already discussed (1) at length above (see especially Chapter 2). It is the purpose of this chapter to further discuss responses to (2), which have traditionally defended one of three positions: indirect realism/representationalism, phenomenalism, or direct realism.[89]

Russell, while being a realist regarding physical events, is not a naïve realist—a naïve realist being one who believes that an object of perception is as it appears, that the world consists of objects like tables, cars, coffee cups, and so on, and that these objects *are* what we perceive, and have all of the properties that they appear to have.[90] Russell argues that one's percept is not of the actual causal source of perception; rather, one's experience is of one's brain, and that all we can know from what is provided in a percept regarding the external world are structural properties.[91] Therefore, Russell may be considered a quasi-representational realist regarding the physical world and perception: for Russell, there are no objects being represented in a percept, although we can infer structure, which must be represented in some way in perceptual space. Further, because Russell does dismiss sense-data, replacing them with percepts so construed, his theory seems to require a unique label; I propose *Russellian realism*, where a percept is the result of a causal chain of events beginning with an object. We will proceed, then, by juxtaposing Russell's theory of perception with other such theories, and see how his theory holds up to the criticisms mounted by advocates of these other theories.

It is quite important here to make a distinction between the problem of perception as used epistemically and as used metaphysically. In the former, we are concerned with problems like

[89] It should be noted that each of these theories and our discussion in general adheres to an epistemic internalism. We will limit ourselves here to only internalist discussions as (a) Russell defends a form of internalism with regards to higher order scientific knowledge—cf. note 52 above, and (b) I think it's correct.
[90] This form of realism can be understood as the 'WYSIWYG' theory of perception: What You See Is What You Get. Credit to Nicholas Griffin for suggesting, in conversation, such an excellent label. While often naïve realism is used interchangeably with direct realism, there is a difference, which will be made apparent below.
[91] For this reason—that Russell rejects the notion of 'sense-data' for 'percepts'—when referring to what is traditionally termed sense-data, we will use percept.

external world scepticism and how we can gain empirical knowledge. The metaphysical problem, which is discussed in the following chapter, while somewhat concerned with the epistemic problem, is more general in that it focuses on how there can be an "open-ness" to the world, and in virtue of what is perception possible. This distinction has ramifications for how we here understand 'representation'. As I will argue throughout both chapters, one can have a direct access to an object of perception; however, as the object being perceived is represented in ways different than what physics tells us is there, we can still maintain a representationalist view of perception without incorporating any perceptual intermediaries, like sense-data. This implies that one can be an indirect realist concerning the epistemic problems of perception, while also admitting to a direct realist interpretation when considering the metaphysical problem. This distinction is important to remember for what follows.

The epistemic problems with perception traditionally involve a competition between two categories: direct realism and indirect realism, the latter most often being under the auspices of 'sense-data'.[92] Direct realism, as we have noted above, is the thesis that the object of one's perception is of *that* object and that there is no perceptual intermediary between the object and the perceiver; rather, there is a direct awareness of the physical source of the perception. Sense-datum theorists, on the other hand, hold that the object of one's perception is constituted in part or wholly by one's mind. Within the sense-datum theories we will discuss two sub-categories: phenomenalism and representationalism.[93] We will use as our representatives of each theory John Locke for representationalism, W.T. Stace for phenomenalism, and John Searle for direct

[92] I suggest that within the rubric of the sense-datum theory is the "adverbial" theory of perception, which is still an indirect realist theory of perception – e.g. upon experiencing a ripe Macintosh apple, one will have the experience of 'being appeared to red-ly'. For our purposes here, we will take the adverbial theory to be compatible with Russell's theory of perception. Also worth repeating is that there has been a surge of reliabilist externalist theories of perception emerging more recently. We are here, however, solely discussing the internalist theories of perception.
[93] We omit discussion on idealism here as any argument that is applicable to phenomenalism us equally applicable to idealism.

realism, ultimately concluding that Russell's theory is distinct from each of these types of theories. I will argue that Russell can be slanted as a direct realist with regards to perception, although, concerning the epistemic problems of perception, he is more closely related to the representationalist on the phenomenalist side of perception. We conclude with an analysis of the epistemic problem of perception and how Russell's theory is a more adequate epistemic foundation than the alternatives.

I
Russell and Epistemic Representationalism

The representational theory of perception, in a sentence, holds that "in ordinary perception one is directly, and most immediately, aware of subjective representations…of the external world" (Dretske, 1995, 770). A subjective representation takes place in one's mind in the form of some percept or sense-datum. Traditionally, those holding a representational theory of perception do so in response to arguments from hallucination or illusion. For example, the perception of a flying pig is quite clearly an hallucination, and although there is no external object causing the percept, there remains the experience of seeing a flying pig. Russell's type of representationalism, however, is not built on such arguments.[94] Indeed, Russell goes so far as to conclude that there are no such things as 'illusions', only mistaken perceptions.[95] Russell's main concern with the difficulties for perceptual knowledge appeals to science, specifically physics and psychology, as the foremost reason for why we are forced to accept the indirect realist position.[96] Perhaps the best way to clarify Russell's theory, and provide a reminder of its more

[94] It should be noted that in (Russell 1912), Russell's sense-data theory of perception did employ arguments from hallucination and illusion. Russell's later theory, however, sticks for the most part to scientific reasons for why we perceive in the way we do.
[95] See §IV, pp. 113–4 below.
[96] Generally, representative theories of perception are juxtaposed against the direct realist theory of perception—both positions accept the existence of external, mind independent, objects. The difference, which will be discussed in more detail below, between these two positions, is that what one perceives in the world on a representationalist view can only give us a limited amount of information regarding the object as it is in reality because the object of

salient points for our current considerations, is to contrast it with another famous representational theory of perception.

In *An Essay Concerning Human Understanding* John Locke develops a representationalist theory of perception.[97] BonJour suggests that Locke's defence of representationalism has two central ideas:

> first, that…some *explanation* is needed for the complicated and intricate order we find in our (involuntarily experienced) sense-data; and, second, that the *best* explanation, that is, the one most likely to be true, is that those experiences are caused by and, with certain qualifications, systematically reflect the character of a world of genuinely independent material objects, which we accordingly have good reasons for believing to exist. (2007)

Most of these ideas are consistent with Russell's theory of perception. Like Russell, Locke holds that objects in the world are the cause of our perceptions, but we cannot know these objects in themselves. His theory employs the notion of ideas to derive the conclusion that the object of our perception is distinct from the object as it is in actuality. Thus, for Locke, all of our knowledge is based on perception, but that with perception we cannot get a grounded understanding of the actual world; rather, all we have are *ideas* of it, where an idea is "whatsoever the mind perceives *in itself*, or is the immediate object of perception, thought, or understanding" (Locke, Bk.II, Ch.VII, §7). Without going into further detail concerning Locke's notion of an idea, we take exclusively the perception aspects of the aforementioned definition and discuss their role in Locke's overall theory of perception. Thus, for Locke, if ideas are the immediate object of perception, these objects can be understood as percepts – i.e. non-inferential phenomena that

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perception is a representation of the object of the physical world; whereas the direct realist argues that objects of perception are directly accessible—there is no representation of an object, there is only *the* object (I should repeat the point made above that this does not imply that the direct realist admits that all the qualities one perceives are of the object as they are in perception). I will thus sometimes refer to the representationalist position as indirect realism.

[97] Some theorists have called into question the orthodox reading of Locke as a representationalist. See, for example, (Yolton, 1970) and (Lowe, 2005). For our purposes here, we will maintain the standard reading of Locke as fitting within the indirect realist tradition.

one's mind has direct access to. The obvious question arises: how, then, do ideas represent the world through perception?

We note first that Locke's theory of perception, like Russell's, is causal: our ideas are produced by external, mind-independent objects.[98] This point is important in that it distinguishes him from Berkeley's idealistic empiricism and thus from phenomenalism and idealism.[99] In addition, within Locke's causal story concerning perception, when we experience an object – say an apple – an idea is produced in us containing the properties, qualities, and structure of the apple. Indeed qualities are those things that have "the power to produce any idea in our mind" (Locke, Bk. II, Ch VIII, §8). Furthermore, these qualities are actually in the bodies – i.e. objects – that we perceive and are understood as *ideas* in the perceiver. Thus, an object's qualities are produced in perception as ideas in the perceiver. For our part it is unimportant to discuss Locke's theory of qualities, other than to highlight that what we perceive are caused by qualities.

Compare Russell's theory. Locke holds that qualities are the causal source of our percepts. Russell, however, holds that while bundles of qualities do make up aspects of our perceptions, the causes of our percepts are events. Furthermore, the only representational access we have to the world is of its structure. As we discussed in Chapter 2, this structure can be employed to model the world as it is in physics while enabling the type of perceptual experiences that we have. Given this potential, Russell maintains that physics reveals a necessarily qualified understanding of the world, especially in contrast to how we perceive it – i.e. the structure of the

[98] Locke holds that our perceptual knowledge gets its veracity through its relations with the world from without. Thus, all knowledge is based exclusively in perception and memory, which gives us knowledge of the past. The only thing we can know by reason alone is, not surprisingly, God. See (Locke Bk. IV, CH. XI, §1).

[99] Berkeley's empiricism held the well known maxim: "To be is to be perceived." The essential aspects of Berkeley's theory are that all we have are ideas, these ideas are what make up the world, and the existence of the world is sustained by God's ultimate ideas—what *we* perceive are our ideas, but these ideas are caused by God's ideas, which are what constitute the external world. I suggest further that Berkeley's philosophy of perception, while idealist, is, from the human perspective, strictly speaking representationalist, and completely empirical. See (Berkeley, 1710—especially "Of the Principles of Human Knowledge Pt. 1").

world we receive in perception is mathematical, and thus significantly limits what we can be said to know about the external world. Russell's quasi-representationalist theory of perception, therefore, seems much more sympathetic to a phenomenalist theory than Locke's does. Even though Locke admits that knowledge as to the intrinsic nature of the world is unattainable, he does maintain the external world existence of the qualities underlying much of our perceptual experience.[100] Russell on the other hand does not. Locke is closer to direct realism; Russell is closer to phenomenalism.[101]

Another important distinction between Russell's quasi-representationalism and Locke's representationalism *tout court* is Russell's grounding of perception in the postulates. Whereas Locke maintains that our perceptions can, and are, properly representative of qualities, Russell's event and bundle ontology pushes him to develop non-demonstrative and non-deductive principles of inference, wherein all we can perceptually access is the structure of the external world, not its qualities, if there are any. So, while there is a consistency between both Locke's and Russell's need for inferences to the best explanation, Russell holds that there are inferences not derivable from perception—they are only verifiable by experience. Russell maintains, however, that on the bases of causal laws and the corresponding structure between our percepts and the physical world, we can understand why direct realism is as successful as it is for our navigating the world. Even so, Lockean representationalism, as Koç points out, is epistemically incompatible with Russell's theory of perception: "Russell claims that we can know the structure

[100] It is for this reason that some theorists hold Locke as actually being a direct realist—cf. note 97 above. Again, this is not the standard reading of Locke; we are here maintaining the standard reading.

[101] I do not want to foster the promoted, but I think false, notion of Russell as falling within the line of British Empiricism, which could be assumed by placing him in the company of Locke and Berkeley. Russell is most certainly sympathetic to empiricism, but as we shall read below, his empiricism is at best a qualified one, and may perhaps be interpretable in ways that can avoid catch-all labels like empiricism. Given this concession, however, I believe that it will prove fruitful, with regards to perception, to compare Russell's theory with other ones, such as Locke's.

of the world (relations between qualities) and not so much qualities themselves" (2008, 56). This latter point reveals a crucial distinction between Russell's theory of perception and Locke's.

A final and again crucial distinction between Locke's theory and Russell's theory is the act-object distinction. For Locke there are objects in the world that are being perceived: the act of perception involves a relationship between the perceiver and the object. This process is not the case for Russell. For Russell there is no object of perception, there is only a direct acquaintance with a percept. Certainly Russell's percepts are caused by external world 'objects', but these objects are not perceived, they are inferred. We can think of Russell's causal theory of perception as analogous to the children's activity 'Telephone'. Let us say that there are 24 children (C*n*) involved in this game: C1 is given a sentence and is told to whisper it to C2, C2 whispers it to C3, C3 to C4…C23 to C24. Now, C24 has no idea what C1 said to C2 and must infer what was said by C1 from what she heard from C23. To remain consistent with Russell's theory, all that C24 can infer is the structure of what C1 said, and not the actual words. We should note that there is no intermediary between C24 and C23, their relationship is direct, which is what is going on in perception according to Russell. Thus in Russell's theory of perception, the event at the causal centre in the physical world is C1 and the resulting percept is C24, with the intermediary events traversing space-time being C2 – C23. It is for this reason that Russell maintains we must remain agnostic regarding qualities in the external world; it is also why he rejects that act-object distinction—there is no object of perception; there is only the percept, which is not an object at all.[102]

[102] Some may associate a percept with a sense-datum, but this is not quite right. A sense-datum is a perceptual intermediary between a perceiver and the world; a percept is a causal result of external conditions, but is not itself an intermediary. Again, a percept is what you directly perceive. It is for this reason that I argue Russell's theory lends itself to a qualified direct realist reading, while at the same time being representational, again in a qualified sense.

In sum: Russell and Locke both hold that our perceptions are mental – percepts and ideas respectively – and that they are caused by the physical world. The difference, however, is first in how they each understand qualities; secondly, in how they justify the consistency and existence of non-perceived entities in the physical world; and finally, how each deal with the act-object distinction in perception. Russell's theory is clearly a more sophisticated and stronger theory in that he anticipates, addresses, and avoids problems that Locke's does not – *viz.* induction and the problems of causality and causal laws so aptly raised by Hume.[103] Whether or not Russell's theory is ultimately acceptable remains to be seen; it is, however, most certainly an improvement on this traditional doctrine.

II
Russell and Phenomenalism

As we have discussed, Russell suggests that all percepts occur in one's mind. But, if perception does occur solely and exclusively in the mind, then how is this theory distinct from phenomenalism, as it seems to be quite consistent with it? Indeed Russell's theory has been confused as a phenomenalist one in the past and, as such, this is a legitimate consideration when discussing Russell's theory.[104] If all that the world of physics allows us to infer about the world is dependent on mental events, then how can we even infer the physical world from these mental events? Russell goes to pains doing so: "There are some who deny that physics need say anything about what cannot be observed; at times I was one of them. But I have become persuaded that such an interpretation of physics is at best an intellectual game" (PBR, 701).[105] Is

[103] See (Hume, 1739), especially IV.1 and VII.1.
[104] Maxwell addresses this issue: "…it is remarkable that many philosophers of my acquaintance seem to believe that Russell remained a phenomenalist throughout his philosophical career" (1972, 114). The irony here, of course, is that Maxwell makes the mistake of believing that Russell was at some point a phenomenalist, which is adamantly denied by Russell. See, (1915, 88). Although there are some passages that could allow one to conclude that Russell was a phenomenalist, especially in his acquaintance period, Russell maintains that this was never the case.
[105] Russell does not specify when it was that he held this view.

this inference justified, however? W. T. Stace argues it is not.[106] His position is much akin to Russell's in that he uses scientific considerations to form the basis of his argument. However, Stace argues that outside of sensations and the minds that house them, nothing exists—everything else is a mental construction. *Prima facie* much of this sounds like Russell. The big difference, of course, is the suggestion that nothing exists outside of sensations. A deeper look into Stace's reasoning may provide more of a contrast between the two theories.

Although it was just suggested that Stace's project was *prima facie* akin to Russell's, Stace, in fact, approaches the Russellian problem of physics and perception almost antithetically to Russell's own approach. Stace suggests that when we experience a sequence of events A—B—C, we have no reason to assert some set of causes *a', b', c'*. He draws this conclusion on the basis of Hume's reasoning – i.e. we never actually experience causation outside of perception. Stace applies this conclusion to the remainder of the world:

> Is it denied, then, it will be asked, that the star causes light waves, that cause retinal changes, that these cause changes in the optic nerve, which in turn causes movements in the brain cells, and so on? No, it is not denied. But the observed causes and effects are all in the world of perception. And no sequences of sense-data can possibly justify going outside that world. If you admit that we never observe anything except sense objects and their relations, regularities, and sequences, then it is obvious that we are completely shut in by our sensations and can never get outside them. Not only causal relations, but all other observed relations, upon which *any* kind of inferences might be founded, will lead only to further sensible objects and their relations. No inference, therefore, can pass from what is sensible to what is not sensible. (1967, 97b)

Stace's work proceeds with a further parsimony of scientific concepts. When discussing scientific notions like atoms, gravity, or even space-time, Stace renders them all equally unreal. He argues: "In reality the atoms no more cause sensations than gravitation causes apples to fall.

[106] Another phenomenalist, who we have briefly discussed already (cf. pg. 36 above), is A. J. Ayer. It should be noted that Ayer was influenced by Russell, and in some ways towed the Russellian project against the likes of ordinary language philosophy and other such movements after Russell ceased doing philosophy. We use Stace as our phenomenalist example here, however.

The only causes of sensations are other sensations. And the relation of atoms to sensations to be felt is the relation of cause to effect, but the relation of a mathematical formula to the facts" (99a). Thus Stace argues that inferences regarding the world outside of perception are not justifiable, and that the entities and notions of physics are nothing but fictions developed from the minds of those who want to explain events in the physical world.

It should be obvious from the proceeding paragraph that there are significant differences in the Russellian program, especially with regards to the conclusions Russell draws concerning perception and physics. How, from the Russellian position, can we respond to Stace's conclusions? Russell would argue that indeed causal laws and causal sources outside of our immediate sensations are neither logically necessary nor knowable in any strong sense of 'know'. However, if we are willing to give up causal laws within the entirety of the system, then there is nothing preventing solipsism, and even then, the solipsist would have to give up conclusions that she would want to rigidly maintain.[107] We must admit that we cannot prove otherwise and that the inferred world of science is as science tells us; we must also maintain, however, that this physical world needn't be incompatible with our percepts. What is more, our percepts can be used to construct the world of physics to a significant extent, although this construction is utterly dependent on there being causal laws, which, again, can only be inferred in Russell's theory.

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[107] Recall Russell's argument that if we do not accept some form of causality or other non-deductive principle to justify our experiences:

> either we must accept sceptical solipsism in its most rigorous form, or we must admit that we know, independently of experience, some principle or principles by means of which it is possible to infer events from other events, at least with probability. If we adopt the first alternative, we must reject far more than solipsism is ordinarily thought to reject; we cannot know of the existence of our own past or future, or have any ground for expectations as to our own future, if it occurs. (HK, 160)

This quotation, I would argue, is enough to stop Stace's theory dead: even if we want to admit that the world of perception is exclusively limited to the existence of one's mind, we do not want to admit the majority of the content of one's mind – *viz.* memories – are mere illusions or fictions also.

Russell would respond to the next suggestion by Stace – that physical explanations are merely mathematical formulas – by arguing that mathematical explanations of the world are possible because perceptual space represents physical space mathematically. Recall the passage from AM: "…our knowledge of physics is mathematical: it is mathematical because no non-mathematical properties of the physical world can be inferred from perception" (253). Mathematical formulae represent the world because the world is mathematical. Perception enables this understanding of the mathematical world. Thus, when science postulates atoms on the basis of observable phenomena coupled with theoretical hypotheses, and, from this postulate, mathematically develops a sophisticated theory robust enough to produce nuclear energy or 'The Bomb', Russell can argue that, logical fiction or not, we have to accept what physics maintains. It is foolhardy to do otherwise.

Noting this last Russellian response, we observe the biggest difference between Russell's position and Stace's: Russell accepts physics as the basis for metaphysics and knowledge; Stace does not. Although we recognize that Russell's theory has this foundation, is Stace correct in his assertion that those who insist on inferring the physical world from the perceptual are guilty of a non-sequitur? Even if this assertion is off base, which is not the claim here, we can question whether Russell is justified in his causal and quasi-representational theory of perception; perhaps he is not rigid enough in his wielding of Occam's Razor to admit the seemingly logical position his conclusions push him towards, namely Stace's conclusions.

The argument one could mount for either side of the debate between Stace's phenomenalism and Russell's indirect realism hinges on a central issue—causality. Thus the question appears to be: Is Russell correct in deeming causal laws as indispensable, or is Stace justified in his denial of the veracity of causes beyond immediate sensation? To clarify exactly

why the issue of causality is the central one, if we deny that there are causal laws, then Russell's entire project fails; if we accept that there are causal laws, then Russell's system can avoid the phenomenalist objections. What grounds, then, do we have to accept these causal laws?

I think the Russellian line of reasoning in response to this problem is probably the best one to take. Russell admits that there are no demonstrative examples of causal laws; however, to deny these laws is tantamount to denying knowledge itself. If causal laws do not exist, then perception is not possible. If perception is not possible, then even Stace's personal knowledge cannot get off the ground – i.e. one's memories, animal inferences, habitual expectations, and so on, would have to be denied. Thus, if causal laws are not admitted, then Stace's theory cannot avoid rigid solipsism and scepticism, even regarding one's own past. Since this conclusion is too absurd to embrace, we must accept the veracity of some form of causal law. Thus we return to Russell's conclusion and can proceed with the existence of the physical world, however, and with whatever, it is made.

Taking this inference to the best explanation, while enabling us to accept the existence of physical reality and the truth of many conclusions that we want to accept, may seem unsatisfactory. Russell agrees.[108] Even if he does agree that any theory of perception will lead to an incomplete epistemology, Russell still develops a system that can accommodate the world of physics and perception. But, if he wants to accept the veracity of what we can know through perception, why not accept direct realism? Of course, Russell argues, because physics shows us that perceptions reveal something much different than physics tells us there is, we only have an indirect knowledge of the external world. Some have argued, however, that this line of reasoning is fallacious.

[108] As we discussed in the preceding chapter, Russell holds that anything we can consider knowledge is to some extent doubtful, and thus 'knowledge' is at best vague and ambiguous.

III

Russell and Epistemological Direct Realism

John Searle, in *Mind: A Brief Introduction*, suggests sense-datum theories that base their justification on the 'scientific argument'[109] commit the genetic fallacy. The genetic fallacy, according to Searle, is "the fallacy of assuming that a causal account that explains the genesis of a belief, that explains how the belief was acquired, thereby shows the belief to be false" (2004, 186).[110] Recalling that for Russell the causal account of perception, in juxtaposition with physics, is exactly where the problems for perception and knowledge begin, we can ask, is Russell guilty of this fallacy?[111] Searle elaborates further:

> the form of the genetic fallacy in the theory of perception goes as follows. We can show that when you apparently see your hand in front of your face, what is actually happening is that light reflected from the hand is causing you to have a visual experience of your hand. Because we can explain why you think you are seeing a hand, we can show that you did not really see a hand in front of your face but only the visual experience, which was the effect of the neurobiological process…. The causal account of how I come to see my hand in front of my face does not show that I do not really see my hand in front of my face. (2004, 187)

Searle indeed seems to have in mind the type of theory Russell is promoting when making his criticism of scientifically based sense-datum theories.[112]

From the basis of his criticisms of indirect realist theories of perception, Searle defends a version of direct realism. The crux of Searle's argument is that we have an extremely successful

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[109] This argument is essentially Russell's. Searle cites a passage from IMT as the paradigm of this argument: "Naïve realism leads to physics, and physics, if true, shows that naïve realism is false. Therefore naïve realism, if true, is false; therefore it is false" (15).

[110] With all due respect to Searle, if he is using Russell as an example of someone who is guilty of this fallacy, which by citing him he seemingly is, he should get his facts straight: Russell most certainly holds that many of our perceptually based beliefs are true, even if they all have a causal back-story. It is quite simply ridiculous to suggest that Russell commits this fallacy.

[111] Two points are worth noting here: first, I am not suggesting that Russell is a sense-datum theorist in any way whatever; secondly, we use Searle's example as he explicitly quotes Russell as an example of the scientific argument used against direct realist positions.

[112] Searle also presents problems with the argument from illusions – i.e. that when hallucinating or experiencing an illusion one is still perceiving something, only this something has no physical world referent and therefore we must accept a sense-datum theory of perception. For our purposes here, however, we will maintain the scientific line as (1) it is Russell's main thesis, and (2) I agree with Searle that the scientific argument is the much more convincing of the two.

way of communicating our common experiences of physical space. On the assumption that the experiences communicated have an actual referent, we seem to be forced to admit that direct realism is true. Effective communication about physical objects requires all members of the community to recognize a common object of perception. The common availability of the object that perceivers can communicate about must admit of the direct form of realism that indirect realism denies. Searle concludes:

> The general problem with the [percept] hypothesis, as with phenomenalism in general, is that it ignores the privacy of the sense data. Once you claim that we do not see publicly available objects but only [percepts], then it looks like solipsism is going to follow rather swiftly. If I can talk meaningfully about objects that are in principle epistemically available to me, and the only epistemically available objects are private [percepts], then there is no way that I can succeed in communicating in a public language, because there is no way that I can share the same object of reference with other speakers…. We do not prove the truth of naïve realism; rather, we prove the unintelligibility of its denial in a public language. (2004, 190-1)[113]

Is Russell's theory in trouble?

Let us briefly restate Russell's causal process of perception and the conclusion he draws from it. And let us further keep the following questions at the forefront of our considerations: Is there anything in Russell's theory that would disable the perception of a physical world hand? And would Russell accept or deny that there is indeed a hand in physical space? The causal account that Russell presents between physical space and our percepts goes as follows: There are physical events in physical space that begin at a causal centre – i.e. light reflecting off an 'object'. These events cause other neighbouring events that traverse space-time; the physical events grouped around a centre form a complex of events that represent a structure we label, in this case a hand, which hit the retina of the observer and start the neurobiological process,

[113] Note here that Searle uses "naïve realism"; he uses this term with "direct realism" interchangeably. I have thus read him as being a direct realist with regards to perception. Further, this is just a shortened version of the argument given in (Searle 1983, ch. 2). It is equally as weak.

eventually resulting in a mental event – a percept – representing one's hand. This process sounds quite similar to the one Searle suggests is fallaciously used to justify sense-datum theories. Is Russell's justification fallacious, however?

To answer this question we must first address the questions given above. Does Russell's theory deny the perception of a physical hand? In one sense yes: the percept of our hand is a mental event and he does say that *everything* we perceive is in our heads. He argues that the perception of there being a physical object external to our body is external only in perceptual space: in physical space the location of the percept is only in one's brain and therefore the location of the perceived hand is actually in one's brain. In another sense, however, no: there is an actually existing physical set of events that causally antecede the percept of the hand. It follows from these considerations that Russell, although not obliged to assert as much, needn't deny that there is a physical hand in physical space. And he can do so consistently with Searle's transcendental argument for direct realism. Within Russell's system there is a causal source for the object of perception in physical space. This causal source can affect any perceiver – whether it is a mind or perceptual analogue like a video recorder or still-frame camera – and thus produce a common experience that is communicable. The actual intrinsic character of the perceived object is, of course, unknowable from Russell's thesis; however, it does provide an account of perception that enables us to verify physics. Whether or not Russell is correct in this assumption regarding the truth of physics is another matter. What is of importance here is that Russell can accommodate the arguments Searle makes in favour of direct realism, while also avoiding its difficulties.

Commonsense is such a compelling premise for what we take to be knowledge of the physical world that it is hard to give up. For my part, however, much of it must be given up—or

at the very least recognized as insufficient in giving a complete picture. Direct realists need not deny this—unless of course they are assuming a *naïve* version of direct realism. But even if direct realists admit that a straight commonsense interpretation of the world is untenable, their position still seems to require an explanation as to how we interpret the information we receive perceptually. Even if we admit that there is a direct access to what it is we are perceiving, representations of the world resulting from the mental manipulation of perceptual information given in perception are what we perceive; as Russell suggests, we must remain agnostic towards the intrinsic nature of nature. Direct realists try to deny the epistemic indirectness of perception by arguing that if all that we have are representations, then we might as well just accept phenomenalism. Russellian realism may be open to that criticism as his theory excludes perception to only the mind. But, again, this is not a strike against this form of realism: if the causal story of perception checks out, then we do have access to the physical world, only not in a way we standardly believe we do. Two further points can be made here. First, the aspects of direct realism that are most attractive needn't be inconsistent with the epistemic problem of perception – namely, that there is openness to the world enabling our perceptual access to it. This openness implies that we have direct access to the world, the epistemic indirectness results, not from a 'veil of perception', but rather from the way our perceptual limitations require that our mind is where the information given in perception is accessed.

The second point concerning Searle's direct realist argument, however, is that his response is not an argument in favour of direct realism. It is a rejection of indirect realism. Certainly direct realists must admit that there is a causal story in perception, that the world as perceived is different than the world according to the physicists, and that our perceptual knowledge limits us as to the entire physical story. Thus, epistemically we can only have indirect

perceptual access to the world; this, again, is not to say that the physical world is not directly accessible, only that epistemically all we get are percepts at the end of a causal chain, which contain more information than we can justifiably affirm concerning the physical world – e.g. colours, qualities, and non-structural properties.

Russell is most certainly justified in his assertion that science, if true, will not allow for epistemically direct realism; if indeed the world is as science tells us, our senses are misleading. We may contend, however, that commonsense as a premise for knowledge does not need to be exclusively used for direct realist theories *of perceptual knowledge*. If science is true, then there will be an evolutionary explanation as to why we perceive as we do. An easy example is found in the electromagnetic (EM) spectrum. We are visually limited to the middle of spectrum; we know, however, that there are radio and infrared waves on one side of our observable spectrum and ultraviolet, x-ray, and gamma-ray on the other. Our perceptual apparatuses have developed in such ways as to enable the perception of light waves, but not the others (at least in the same way—obviously sunburns and radiation poisoning due to the 'right' side of the spectrum will eventually be perceptible in touch). Natural selection has promoted those species that have heightened senses within these middle sections of the spectrum to evolve in certain ways. Thus, if we are to have knowledge of the physical world, it will be limited perceptually to the areas of the spectra we can observe. What is more, when discovering the other elements of the EM spectrum, we manipulate those waves in ways that they can be observed – e.g. computer simulations, alterations of waves to fit the visual or audible areas of the spectrum, and so on.

The above paragraph suggests that from a commonsense basis we can begin to derive the world of physics, without having to accept a direct epistemic realism. What is more, Russell's variation of realism is an almost obvious choice when considering issues like the light spectrum.

The only things that we can perceive regarding waves and particles outside of the EM spectrum are effects from which we infer and thus derive our knowledge of the physical world. Those, like Searle, who criticize indirect realist theories of perceptually based knowledge must give an account of how, if our perceptive apparatus is limited as to what it can tell us about the physical world, we can still maintain some direct realism in the face of our knowledge of unperceived entities. Arguably, however, there are not, and cannot be, any positive accounts of epistemologically direct realism; rather, much in the same way as Searle argues above, direct realists point to the difficulties in the other theories and thus base the defence of their position on a negative thesis – i.e. that other theories cannot be correct, so theirs must be.[114]

IV

Epistemology and Perception: What is needed?

Regarding the difficulties with perception and the knowledge derivable from it, we have thus far addressed three positions: representationalism, phenomenalism, and direct realism. Having argued that Russell's theory can stand up to the criticisms and counter positions mounted by these theories, there are still further considerations to discuss. Seemingly, no one theory is completely satisfactory. Direct realism cannot respond to the arguments from illusion, or to the problems raised for perception by the acceptance of physics. Phenomenalism on the other hand is on the slippery slope to solipsism, which, on the face of it, is absurd for any self-respecting sympathizer of empirical knowledge. Finally we come to representationalism and Russellian realism, which, while avoiding the problems associated with direct realism and solipsism, must rest on some principles that are neither empirical nor deductive in order to get communicable

[114] BonJour, (2004) argues this point effectively. BonJour also argues that any justification given by the direct realist that would differ from indirect realism is insufficient. In addition, there have been tests empirically refuting the direct realist position, where in an experimental setting a "brain restructures…two incoherent signals from the two retinae into the two coherent pictures that the subject actually sees. Thus the Direct Realist theory is refuted, for it would obviously be most implausible to suggest that we see only what the brain computes to be probably out there…. Perception must depend on a brain mechanism that is unlikely to function in such an arbitrary fashion" (Smythies and Ramachandran, 438).

knowledge off of the ground.[115] While not an arbitrary one, there does seem to be some choice in the matter of what one is willing to give up in order for the system one accepts to be as coherent as possible. But are all problems equal in this case? I argue that they are not, that, in fact, the Russellian analysis of the epistemic problems of perception is how one should proceed when addressing these issues.

Prior to fully developing a theory on the basis of this type of analysis, let us consider the procedure that I am here defending. Russell's basic assumption is that we have knowledge. This assumption is correct. The best reason for why it is important to begin with this assumption is because it places the emphasis on the aspects of epistemology that are the most philosophically important – namely, justification and the processes of belief formation. This is not to say that 'knowledge' is not an important concept; rather, I am suggesting that once we grant that knowledge is possible, under whatever conditions are decided upon, we can recognize that 'knowledge's' elevated status is dependent on other, more immediately important concepts. We can proceed, then, with the two, in my opinion, more fundamental epistemological issues of belief-formation and justification.

The above consideration leads to the second important aspect we should adopt from Russell's theory: the relationship of human knowledge – i.e. belief formation and learning processes – to animal knowledge. As we have evolved by the same process as other creatures who, we can infer, have some capacity for learning, we should not consider our learning process to be in some great degree different than these creatures'. Thus, to help us grasp the ways in which we learn, and how from these methods we discover ways to navigate the world successfully, epistemology must be informed by the best science of the day. I am not here

[115] We use 'communicable knowledge' here as a solipsist may acquire knowledge, but since the solipsist won't admit of other minds, none of her knowledge would be communicable except perhaps with her schizophrenic self.

arguing for a hard-line naturalized epistemology; instead, I am suggesting that the traditional epistemic project of understanding how and why it is that our knowledge, which is quite limited, enables such a broad, albeit tentative, understanding of the cosmos, is best undertaken in conjunction with scientific progress. Again, we find Russell's theory providing us with another important criterion for engaging perception as an epistemological premise.

These considerations may seem question-begging in that our knowledge of science is based on perception, and thus if science teaches us something about perception, we are then seemingly caught in a circle. Addressing this point brings us to the next aspect of Russell's theory, in this case regarding justification—a foundation for knowledge. Russell argues that perceptual knowledge, which is the basis of all other knowledge, must be rooted in facts. Facts, in turn, can be connected inferentially through beliefs derived from other factually based beliefs. When connected, a belief in general laws can be generated and garner high degrees of credibility and thus justification. While these inferred beliefs can be revised upon further discoveries, again a laudable aspect of Russell's theory, the basic foundational beliefs cannot. Thus, I argue, in spite of Russell's own conclusions, that we can develop a clear understanding of 'knowledge'. More importantly, however, is that we have a theory of justification that can avoid potentially problematic issues in justification, i.e., issues like the problem of infinite regress.

A difficult but seemingly unavoidable aspect of Russell's theory is that for it to work, we must hypothesize that there are some conditions – *viz.* the postulates – enabling this knowledge. While it is admittedly difficult to garner certainty from such a view, we can accept, on the grounds given by Russell, that it is a sufficient and plausible inference, and that when considering a scientific analysis, this is the best we are going to do concerning knowledge acquisition. I am inclined to agree here: scientific inferences are a necessary part of beliefs, and

inferring to the best explanation seems to me a valid procedure when there are a number of possible options. That is why, given that all perceptual knowledge requires this type of inference regarding the physical world, and that this process is indeed the correct way we engage the world, we must choose the best, or perhaps more fittingly, the least problematic theory of perception. Russell rightly rejects scepticism and solipsism. And while we must agree with Russell that logically there is no inconsistency with perceptions being solely of oneself, and that all perception is of one's own mind, we can also agree that no one can honestly or consistently adhere to a position that asserts on this basis that only one person exists. This conclusion is one of the reasons why Russell so vehemently contests that we need the principles of non-demonstrative inference.

Finally, Russell accepts that we are a part of the physical world and, as such, we must recognize that our conclusions regarding science are applicable to ourselves: we exist in time, more specifically in four-dimensional space-time. So too do physical objects. Thus, the causal correlation between our perceptions and the physical world are compatible, yet separate, thereby bypassing phenomenalism; they are structurally, but not qualitatively, related, thereby denying naïve realism; and they make possible a basis from which to further enable scientific discovery while also enabling the potential for belief revision, thereby facilitating the potential for knowledge, while also limiting it. It is for these, and the above reasons, that Russell's program is one that should be undertaken, as it provides us with a proper basis from which to engage the epistemic problems of perception.[116] In what follows I will attempt to develop such a theory.

[116] I say 'program' here, which should not be read as 'conclusions'. I think that Russell's theory of perception and the way of going about the problem is worth endorsing, but I most certainly do not suggest that he has given us anything near the final word on the topic.

V

Russellian Realism: An Interpretation & Argument

I have already argued that 'knowledge', even in Russell's loose sense, should not be the pith of our epistemic analysis. I am persuaded, however, that his method of justification is the correct one, and that from this method we can arrive at knowledge, however 'knowledge' is to be understood. Russell uses the notion of ostensive definitions as the beginning of learning. As was suggested in the previous chapter, beliefs concerning ostensively encountered objects are self-evident premises for knowledge—for Russell they are premises due to their high degree of intrinsic credibility. Thus, if our foundational principles of justification are ostensively acquired, they are self-evident. To repeat, self-evident beliefs are those beliefs that are formed on the basis of conditioned animal inferences regarding immediate perception and what is given in that perception. Thus, these beliefs, while inferred in some sense, are not consciously inferred; the perceiver does not take herself through the inferences made in perception. For example, if Jones, who has been suitably conditioned, observes an object consisting of tabs with certain symbols on them and spread out in a certain pattern on a platform, she will think *keyboard*. She will not think: "In the past objects that have had these patches of colour and this structural pattern has been called 'keyboard', thus my percept corresponds to 'keyboard' in the physical world"; rather, she will recognize the object and think: *keyboard*.

There are contexts, certainly, where what is given ostensibly may require a certain amount of reflection and reasoning to come to recognize what the object is, in which case one's inferences become more apparent. Consider, for example, that I observe an object that, to me, has an utterly unfamiliar structure. After I examine this object for a moment, I observe a switch, which when flicked turns on a light that is not on the surface of the object, but is covered by a translucent shield. I infer from this process that what I am observing is a strangely, to myself,

structured lamp, as the component parts of the object are those same parts that a lamp is composed of. Of course, prior to being able to name the parts of a lamp, one will have had to learn what 'light-bulb' means, what 'switch' means, and so forth. After we have encountered these objects and understand what they are, we can then construct from these encounters objects and be able to, as in the case above, habitually recognize certain things, like a lamp or a keyboard.[117]

Two issues arrive out of this discussion. First, we must become clear on what is and what is not accessible in ostensive percepts. Secondly, a problem arises if we consider the question: can ostensively formed beliefs be false? Concerning the first issue – what is meant by 'ostensive' in the context that I am using it – we begin with certain qualities: colour, shape, weight, texture, hardness, smell, etc. Each of these is self-evident; our beliefs in the experience of them have an intrinsic high degree of credibility – *a fortiori* when one has the experience of redness or hardness, the belief in having that immediate experience is infallible. When we are able to connect different qualities into a recognized bundle, we can then pick out objects. Thus, what is accessible through ostensive encounters are qualities, which only after a process of recognition, connection, and thus learning become recognized as 'objects' or, using Russell's word, bundles. It must be noted that the things that we perceive as objects are not immediately known; they are, rather, only recognized after we learn how to associate these qualities and structures into one concept. This is only to say that we are not born with the ability to recognize objects as such, but rather we develop, as in Russell's account, the capacity to properly associate sensations in to unified constructions – *viz.* percepts.[118]

[117] I use 'encounter' when one has had an ostensive or perceptual experience with an object.
[118] I had taken this point as obvious to any epistemologist willing to admit the similarities between our doxastic development and that of non-human animals; however, (Fodor, 2008, Chapter 5) argues that we have innate

Our next issue may create a problem, however. Can an ostensively formed belief be false? If we are discussing the beliefs, then yes, it is nearly undeniable that false beliefs can be formed on the basis of a perceptual experience. I would suggest, however, that the perceptual experience itself cannot be false: if something is immediate in experience – i.e. non-inferential – then my belief formed concerning that perceptual experience cannot be false. My attribution to the object represented in this belief may be false, but my belief about the bundle of qualities that were just experienced cannot be—*a fortiori*, the beliefs about the experience cannot be false, the belief as to what caused this experience may be. As Russell says:

> as soon as words are involved, a conventional element enters in. A child, seeing a mole, may say 'mouse'; this is an error in convention, like being rude to an aunt. But if a person who is thoroughly master of the language sees a mole for a moment out of the corner of his eye and says 'mouse', his error is not conventional, and if he has further opportunities of observation, he will say 'no, I see it was a mole'." (HK, 373)

To employ Russell's example further, I would argue that there is an infallible, non-inferential, phenomenal experience occurring: say grey fluffiness.[119] The inference to 'mouse' or 'mole', however, is quite fallible. Regardless of this fallibility, and as Russell points out, when one is given an opportunity to closely perceive an object, while having adequate background conditions in place to make a correct inference as to the causal source of the percepts, then one can form the justified belief *mole* on the basis of the percept of the mole.

Regarding this conclusion, an analogous problem emerges, not so much for the incorrigibility of the non-inferential aspects of sense experience, but on the reliability of percepts

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capacities to understand concepts prior to developing these concepts out of more primitive sensations. That is, concepts like 'tree' or 'chair' are innate or 'built into' us.

[119] Just to be a forthcoming as possible with what I am proposing, it is not the belief about the inferred external world that is infallible; rather, the non-inferred immediate experience is. All beliefs beyond one's immediate phenomenal experience are subject to doubt, and as such are no longer infallible.

as the correlate to the world. One may ask how much correlation and detail must be given in a percept of a physical object. This is, of course, the problem of the 'speckled-hen'.

The problem of the speckled hen is as follows:[120] say you experience a hen that, from one's vantage point, has exactly 47 speckles. Given that one's percept is supposed to represent the object of perception and thus the speckles on the hen, how many speckles are on the percept of the hen? It is suggested that in appearance the hen does not indeed have 47 speckles, and thus does not present you with the appearance of 47 speckles. Conversely, the hen does not appear to *not* have 47 speckles, thus, it does not present you with an appearance that does not have 47 speckles. What this argument is supposed to point one towards is that sense-datum theories are false. Indeed, this is one of the reasons that adverbial theories of perception gained some traction: rather than seeing individual percepts, one could be appeared to 'speckled-ly'.[121] Another response, made by Tye, in the same vein as Ayer's (1940) response, is to hold that one's "visual experience is indeterminate with respect to the number of speckles…. it is perfectly correct to say both that you see all the speckles and that there are individual speckles that you fail to see" (2009, 262).

I do not think, however, that we need to accept either of these conclusions. On the one hand, we should not get rid of percepts as our principle for self-evident beliefs; on the other, it seems to me to be an unwelcome conclusion if one has to accept contradictions as Tye does. The main reason this problem does not apply to Russellian realism, is that what is being perceived is a percept, not an object or mental intermediary. There is neither an external object with *n* speckles being perceived, nor an internal object with *n* speckles being perceived. What is being perceived is a set of events in one's mind. Thus the problem of how many speckles does the hen

[120] The original problem is attributed to Gilbert Ryle in response to A.J. Ayer's theory of perception. I have adapted this problem from (Tye, 2009).
[121] This is the move that (Chisholm, 1942) makes.

have for Russellian realism is an epistemic one, which is then a problem, not for the object being perceived, but in accounting for the point at which a perception becomes propositional. I suggest that through learning and cognitive developments perceptions become propositional at the point from which they cease being mere sensations and turn into inferential beliefs—which as we discussed in the preceding chapter, is a lengthy process of learning and perceptual recognition.

If we consider the process of learning, which begins ostensively, I suggest that we can account for these problems of propositional perceptions, and provide some epistemic insight regarding belief formation and justification. Consider the original scenario of one who encounters a speckled hen, and consider further that this person just so happens to be a professional speckle counter. Her skills in being able to perceive the number of speckles are far superior to the normal person's. Thus, she can be said to have perceived the appearance of 47 speckles. A non-professional speckle-counter would not have this same learned ability and thus would not have the same appearance present in his perception. Consider an analogy: a trained botanist will be able to distinguish between different plants and flowers, which are indistinguishable to a non-botanist.[122] Thus, we have an account that in some cases may be indeterminate – e.g. when a non-expert is the one perceiving – whereas, in the case of an expert, we can argue that indeed she does have the appearance of *n* speckles, or a certain species of flowers, or pick whatever observational expert you wish compared to a lay person. To be very clear: it is not that there is more information *per se* in the respective perceptual experiences; rather, an expert's interpretation will provide her with more details concerning the percept—the perceptual information present for the layperson is still *n* speckled, she just has not developed the ability to discern the numbers present in the perceptual experience.

[122] Cf. the discussion on learning and developing different perceptual abilities above, specifically the 'scotch connoisseur' example on p. 47 above.

To repeat, there are no objects that are represented in perception; there is only the percept resulting from a causal chain. A perception does not become *of* something until it becomes propositional as I am suggesting. The information that is given in perception is present although our beliefs formed about these experiences may take different forms depending on our interpretive abilities: for one person the hen may have 47 speckles, for another the hen may have an indeterminate amount of speckles, in neither case is there an object that has *n* speckles. We can form this conclusion based on Russell's model: we have direct access to our percepts which are caused by physical events and provide a limited amount of information about the physical world; how we understand and interpret that information is where the difficulties emerge.

The above discussion has an important implication regarding justification. If we are correct in concluding that the learning process for our perceptual skills can be developed throughout our lives, then different people will require a different amount of evidence for their justification regarding certain perceptually based propositions. Or perhaps a better way of stating this point is that certain people will amass different amounts and different types of information in a perception than others, given their experiences and expertise. That this conclusion is intuitively correct is easily observed: consider the difference in the amount of information that is amassed when a fully functioning adult observes the same picture as an infant or child. All of the data is there to be perceived, whether or not it is depends on one's perceptual abilities, conditions, experience, and so on. This assessment does not avoid problems with illusions or hallucinations; but these problems are (a) not exclusive to Russell's theory of perception, and (b) potentially avoidable when using the bridge model for justification in conjunction with the entirety of one's edifice of knowledge.

Another implication from the above 'speckled hen' discussion is related to a previous point. That is, something that is self-evident for one person may not be for another. As we have been discussing, self-evidence is found in ostensive definitions – i.e. *that* is a hen.[123] Coupled with the process of learning and belief formation, the professional speckle-counter's ostensive definition could include more information – i.e. *that* is a hen with 47 speckles. In either case there is a justified belief. What is justifiably believed by one person over the other, however, may include more information in the belief or even more beliefs themselves, as the self-evidence of certain ostensive propositions will be more available to the expert. I do not think that these implications are problematic, however. Knowledge remains attainable but unimportant for the most part; justification works in degrees; and the belief forming process is rooted in perception.

Two potential difficulties remain for my defence of what I am calling "Russellian Realism." First, do we undermine the credibility of our justification if it allows for assertions about the physical world to be false – e.g. mistaking a mole for a mouse? Secondly, are we able to distinguish between those experiences that appear to be ostensive, e.g. dreaming, and those that are actually ostensive in that they have a real world correlate? I suggest that both problems can be addressed in the same way. Recall that not only are our beliefs founded and justified by ostensively formed beliefs, but also that these beliefs are not the sole source of their own justification—the more interconnected coherent sets of the independently credible ostensive beliefs are, the more justification and credibility they get. Thus, in the case of either a misperception or mistake of attributing a mouse in place of a mole as the cause of a percept, we

[123] It is important to remind ourselves that when we are talking about ostensive objects of perception in this context, percepts remain in one's mind. The "*that*" in "*That* is an X" is the antecedent complex of events at the causal centre – *viz.* the source – of the effects on one's mental events. It is equally as important to note that the self-evident "*that*" does not insure the veracity of the inference to what "*that"* is external to one's mind. For example, one perceives a 'table looking' object, has the self-evident experience 'table', but the perception happens to be false as the object only appears tablely, and is in fact not a table. Thus the belief 'table' is false, but the experience of the qualities, which taken as a whole appear tablely, cannot be false, if one indeed had that experience. This conclusion implies that one could have a self-evident illusory experience or hallucination.

may be said to have a justified belief. But if we discover that our belief *mouse* is incoherent with a number of other beliefs, then we must dismiss, or suspend judgement concerning the belief *mouse*. The belief that one saw a grey, furry, patch of colour would not be false; the interpretation that it was a mouse would be, however. And if we have reasons to believe otherwise whether we saw a mouse or not, the belief *mouse* loses some of its credibility due to lack of coherence with the rest of our beliefs.[124]

Regarding dreams that have appearances which are indiscernible from waking ostensive perceptions is more difficult. I suggest that while the experiences in dreams may themselves be indiscernible from waking life, their coherence to other perceptions within the broader context of one's experiences and beliefs is fragmented. The fragmentation of these beliefs dissolves the criticism that ostensive premisses cannot be used as principles of justification. If one has a perception that in itself has an intrinsic degree of credibility, but is incoherent with a greater number of coherent beliefs founded ostensively, then the one belief should be dismissed as mistaken. Russell discusses this point in the context of 'scepticism of the senses':

> There is a long history of discussions as to what was mistakenly called "scepticism of the senses". Many appearances are deceptive. Things seen in a mirror may be thought to be "real". In certain circumstances, people see double. The rainbow seems to touch the ground at some point, but if you go there you do not find it. Most noteworthy in this connection are dreams…. But in all cases the core of data is not illusory, but only the derived beliefs. My visual sensations, when I look in a mirror or see double, are exactly what I think they are. Things at the foot of the rainbow do really look coloured. In dreams I have all the experiences that I seem to have; it is only things outside my mind that are not as I believe them to be while I am dreaming. There are in fact no illusions of the senses, but only mistakes in interpreting sensational data as signs of things other than themselves. Or, to speak more exactly, there is no evidence that there are illusions of the senses. (HK, 149–50)

[124] An interesting implication of this conclusion is that in some cases we may be forced to suspend judgement on or outright dismiss a true belief due to lack of coherence with other beliefs, which also may be true. Say for example there is a mouse epidemic in your area. You see a grey furry animal scurry across the room and your initial inference is *mole*, but upon reflection you recall that there are *many* mice running around and you conclude that it was probably a mouse, and thus suspend judgment on the initial inference, when in fact the initial inference was correct.

If we adapt Russell's conclusion regarding scepticism of the senses to the above suggestion, then our assessment is, I suggest, more or less correct. Those things that appear ostensive are, in experience, indeed ostensive. But, if they are a result of a mistake as to the facts – i.e. the world independent of oneself – then they will cease to cohere with other percepts and ostensively based inferences.[125] We can agree with Russell, then, that there are no illusions, just mistakes. And these mistakes are unjustified from the get-go and thus cannot produce knowledge.

VI
Review

I have attempted to defend Russellian realism as an epistemic thesis against other theories of perception within the internalist tradition of doxastic justification. Russellian realism, as I interpret it, is a causal theory of perception and is a quasi-representational epistemic thesis concerning the external world. It is quasi-representational in the sense that there are no objects of perception, and thus is not representationalist in the act-object sense of indirect realism; rather, we can infer the structure of physical objects, which is 'represented' at the end of a causal chain of physical events. Using Russell's theory as my template, I have further argued that as a result of our learning and belief forming processes, what is given ostensively can eventually be understood in terms of 'objects'.[126] While the initial process of learning requires explicit inferences, by employing both memory and habitual association of qualities, these inferences cease being explicit and our reactions to certain phenomena will be nearly immediate – e.g.

[125] Much greater problems, which I will not discuss, are brains-in-vats scenarios. Although I find these hyper-sceptical arguments for the most part uninteresting and unfruitful, if I were pushed I would argue from a grand sort of contextualized position. That is, in the context of a world that works according to physics, and how we are related to it, regardless of what is occurring outside of my perception, we must treat the physical world as a causal source regarding our perceptual experiences. Although this is not a satisfactory response to the BIV problem, I hold that it does all the work I need it to in order to advance the discussion in better directions.

[126] I have not assumed a materialist metaphysics, I only use 'object' as a bundle of qualities taken to be a single entity – i.e. object. I would maintain with Russell, however, a four-dimensionalism, where other things considered, 'objects' are a constructed fiction resulting from our perceptual conditioning.

perceiving a keyboard and thinking or stating ‘keyboard’ without consciously inferring the process. This process is causal and based first on sensations, which will eventually become percepts when one begins to recognize specific objects. I have argued further that our sensations are self-evident, and that on the basis of this self-evidence we can develop justified beliefs, which will form a foundation from which to build up further beliefs. As beliefs are built on these more basic self-evident beliefs, and cohere with other basic beliefs, we can acquire a self justifying structure that is ultimately empirically founded.

As a part of this discussion, I have suggested that Russellian realism is a superior theory of perception when compared to traditional representationalism, phenomenalism, and direct realism. In the case of phenomenalism, although there are obvious similarities between it and Russell’s quasi-representationalism, I have suggested that we must take seriously the explanatory power of physics and thus the causal relationship between the physical world and our perceptions. Furthermore, I agree that phenomenalism leads to solipsism, which is ultimately untenable.

Regarding the direct realist thesis concerning the epistemological issues found in perception, I have suggested, again on the basis of physics, that it cannot accommodate what we are told about the physical world. Rather than holding that what is given in perception is an epistemic openness to the world, we must admit that if physics is true, direct epistemological realism cannot be.

A topic that has yet to be addressed in my development of and argument for Russellian Realism are the postulates of non-demonstrative inferences. I suspect that there are no ways around the need for such inferences. In much the same way as we want to avoid solipsism and the conclusions of phenomenalism, our best explanations for justified beliefs, while somewhat

unsatisfactory, reveal a need to employ some type of adduction. Furthermore, beyond just the adduction to an external world, we must adduce how this world even enables our perceptual knowledge to be possible. And thus, while I want to base knowledge in ostensive experiences, I remain sympathetic with Russell's claim that as a theory of knowledge, empiricism "has proved inadequate" (HK, 446). However, as the tenets of empiricism are the best we can do thus far, the charge for future work in the problems of perception is to limit these empirical inadequacies, and thus develop a novel theory of knowledge, which is neither solely empirical, nor solely ideal.

5

Russell on Phenomenology, Epistemology, and the Problem of Perception

We come now to an overall assessment of Russell's theory of perception. And although Russell's primary concern in undertaking such a theory is epistemological, a number of central problems involved in the philosophy of perception are metaphysical. One important goal of this chapter, then, is with how it is that perception can give any access to the world whatsoever. Therefore, rather than concerning ourselves with justifying external world beliefs, the topic of the previous chapter, we are concerned here with more of the metaphysical aspects within the perception debate. These epistemic and metaphysical differences are discussed in the first part of this chapter. Following the distinction, we review in § II a number of considerations and principles that are used to elucidate how different theories of perception address and account for a number of problems within this topics. We follow this discussion by formulating in § III – IV how one would respond to these considerations using Russell's theory of perception and further how his theory is to be interpreted concerning the metaphysical status of percepts and phenomenal content. It is our goal in this chapter, not to argue a specific position, but rather to

examine Russell's theory of perception, bringing together the majority of what has been hitherto discussed into a condensed whole. This chapter can be understood, then, as a concluding chapter.

I
The Metaphysical Problem of Perception

We discovered last chapter that there are issues concerning knowledge acquisition and constraints on that process due to problems in perception. Here, however, we are not concerned with what we can know or justifiably believe from perception; rather, we are currently discussing how it is that we perceive and what we can infer regarding our minds and our relationship with the rest of the world from this basis. This problem has been most often motivated by the problems of hallucinations and illusions. From these problems we can ask: if we are subject to the types of error presented by hallucinations and illusions, then how are we to understand our intuitive notions of perception – i.e. our perceptual access to the world? Whereas in the previous chapter we were dismissive of the argument from illusion on the grounds that it was merely a mistaken perception when considered amid the coherence these mistaken conclusions have with the remainder of one's doxastic states, here the problem reaches the forefront of our consideration. Indeed, we can even use Russell's own description of his epistemic project in terms of our current problem: how, if the world of physics is the way it is, can we have perceptual access to the world? For the present chapter, we can rephrase this problem as Crane does: "perception seems intuitively to be openness to the world, but this fact of openness is threatened by reflection on illusions and hallucinations. Therefore, perception, as we ordinarily understand it, seems to be impossible" (2011). Let us discuss what exactly our concern is within the current discussion.

When we think about perception intuitively, we think that what we perceive are mind-independent objects with certain properties. The properties that we perceive seem as though they

are caused by, or a part of, mind-independent objects – i.e. the objects have the properties we perceive whether or not there are minds in the universe. But as we have seen with Russell's discussion of perception, and what we discover upon reflection, is that perception cannot be understood as happening in such a realist vein. The world of objects and properties becomes hardly tenable when considering certain arguments – e.g. illusions and hallucinations or scientific explanations of perception and light – against what we normally believe occurs in perception.

Take, for example, the perceptual experience of a red apple. When one observes the apple, it appears a certain shape and a certain colour—round and red respectively. Further, the round and red sensation is labelled "apple" and has an existing complex of events that causes the perceptual experience. But, if one's perceptions can be subject to experiences that are indiscernible as to whether or not there is a causally antecedent mind-independent object or a mere illusory experience of what seems like an apple, then how is it that such experiences can give us access to reality? We are here asking neither what the psychological processes are for perception nor what perception can teach us about the external world; rather, we are concerned with two further considerations. First, how do the objects that we experience *seem* to us in experience? This part of the problem of perception is known as the *phenomenal character* of one's perception. Secondly, how is this phenomenal character related to the objects of perceptual experience? It is in attempting to answer these two questions that we encounter the problem of perception.

To better grasp this problem and our questions, let us consider an enjoyable metaphor presented by David Chalmers, which uses the perception of colour to present our problem of perception:

> In the Garden of Eden, we had unmediated contact with the world. We were directly acquainted with objects in the world and with their properties.

> Objects were presented to us with causal mediation, and their properties were revealed in their true intrinsic glory.
>
> When an apple in Eden looked red to us, the apple was gloriously, perfectly, and primitively *red*. There was no need for a long causal chain from microphysics of the surface through air and brain to a contingently connected visual experience. Rather, the perfect redness of the apple was simply revealed to us. The qualitative redness in our experience derived entirely from the presentation of perfect redness in the world.
>
> Eden was a world of perfect color. But then there was a Fall.
>
> First, we ate from the Tree of Illusion. After this, objects sometimes seemed to have different colors and shapes at different times, even though there was a reason to believe that the object itself had not changed. So the connection between visual experience and the world became contingent: we could no longer accept that visual experience always revealed the world exactly as it is.
>
> Second, we ate from the Tree of Science. After this we found that when we see an object, there is always a causal chain involving the transmission of light from the object to the retina, and the transmission of electrical activity from the retina to the brain. This chain triggered the microphysical properties whose connection to the qualities of our experience seemed entirely contingent. So there was no longer reason to believe in acquaintance with the glorious primitive properties of Eden, and there was no good reason to believe that objects in the world had these properties at all. (2006, 1–2)

We are thus left with a conundrum: how is our perceptual experience of the world to be understood in light of one's phenomenal character and what, if anything, can this phenomenal character tell us about the physical world?

In recent history there have been a number of attempts to reconcile the above issues concerning perception, our mental-content, and its representation of the world. Our goal here is merely to interpret how Russell's theory accounts for this problem of perception. Prior to doing so it will be beneficial to clarify a number of central terms that we will be engaging. As explained above, when we use the phrase *phenomenal character* it is meant to signify what it *seems* like to have a certain experience—or another way this may be described is the *phenomenology* of a perception. For example, the phenomenology of perceiving a Macintosh apple will be what it is like to perceive said apple. Closely related to phenomenal characters is the notion of *intentionality*. Intentionality is the 'aboutness' of one's cognition at a given time.

With regards to perception, if one is focused on a computer monitor, then the intentionality of one's perception at that time is the computer monitor. As Russell was dismissive of the 'aboutness' of perception—a notable strike against his theory—we do not engage the intentionality thesis in any further detail. One additional concept to understand is *representational content*: "A representational content of a perceptual experience is a condition of satisfaction of the experience" (Chalmers 2006, 2). Thus representational content are both what the perceiver is perceiving and can be either true or false when compared to the world. That is, whatever it is being represented in one's perception can either be veridical or falsidical about the world.[127]

While each of these concepts is important in our current discussion, it is this latter issue that concerns us most here. In our current consideration we ask: How is the phenomenal character of perception connected to its representational content? And ultimately, how can we square these above concerns with the problems found in illusions, hallucinations, and the story of science discussed above?[128]

II
Criteria for a Philosophy of Perception

To say that contemporary philosophy of mind is convoluted with attempted responses to the aforementioned issues could only be understated. I propose, then, to merely lay out a

[127] It is widely accepted in contemporary literature that this way, i.e. perceptual-content as propositional-attitude, of treating perceptual experiences is to be accepted. See (Siegel 2010) for a general picture of the contemporary discussion going on within this discipline. For an alternative view concerning content as propositional see (Crane 2009), where he maintains the intentionality thesis, consistent with this way of thinking about representational content as an accuracy condition, but denies that perception is a propositional attitude, likening the content to be more like a picture than a newspaper story.

[128] It is important to remind ourselves here that this is not an epistemological problem *per se*; we are not discussing what we can know and justifiably believe about the world on the basis of perception. Rather, we are discussing the metaphysical nature of how perception seems to be about the world, and yet how these perceptual states can falsely portray the world and yet still be as strong as veridical perceptual experiences. Furthermore, when discussing illusions here, we are not discussing them in the sense of David Copperfield or the Great Bambini; rather, we are discussing everyday occurrences like seeing an ellipse where a circle should be, or seeing white where we would normally see yellow.

Russellian response to these problems in light of what has been discussed throughout this work. This project is necessarily speculative, as the philosophy of mind has become one of the most widely discussed philosophical topics in general. Thus many of the concepts that have become central to the topic may have only been peripherally touched upon by Russell, and consequently Russell's work may very well be outdated. Be that as it may, I propose that we can give an adequate reading of the Russellian project in contemporary terms. As we have already discussed the specifics of Russell's theory of perception in significant detail, I seek here to respond in the Russellian vein, and not rehash previously discussed points—unless the points are essential in clarifying specifics regarding the above problems.

In his introduction to the philosophy of perception, William Fish (2010) suggests that when addressing different theories of perception we should ask how they explain or account for the following considerations: (A) Phenomenologically how accurately does the theory capture what it is like to have the perceptual experience; and (B) epistemically, how well can the theory make sense of perception's role as a source of empirical knowledge? From these primary considerations, then, Fish further suggests three key principles that a theory of perception will have to account for: (i) The common factor principle: "Phenomenologically indiscriminable perceptions, hallucinations, and illusions have an underlying mental state in common" (4); (ii) the phenomenal principle: "If there sensibly appears to a subject to be something which possesses a particular sensible quality then there is something of which the subject is aware which does possess that quality" (6); and (iii) the representation principle: "all visual experiences are representational" (7); that is, a visual experience is about something in the world.[129] Using Fish's suggested guide as our template, then, we proceed with an assessment of Russell's theory of perception and how it stands up to the problems presented in § I.

[129] This discussion is developed out of (Fish, 2010, Ch. 1).

III

Establishing Russell's Theory of Perception

We begin with the phenomenological and epistemological aspects of Russell's theory of perception. A Russellian response to the above problem must first admit that perception, as ordinarily understood, is indeed impossible: we only perceive our own minds, and we only have structural correlations between those percepts and the physical world. But if all that our percepts can give us regarding the external world is structure, then how is it that we see colours, feel hardness, smell and taste certain flavours, and so on. Seemingly we must account for these experiences as being ingrained in, or representative of, the structures of the physical causal sources of the percepts. Thus, when one recognizes that a percept appears red to oneself, then it is part of the structure of the physical source coupled with light that reveals redness. This does not, however, entail, or even suggest that the source itself has those qualities; rather, the phenomenology of perception is one which is a mere effect of some certain physical source, which, when there is a change in the cause, produces a change in the effect. Russell likens perception to a scientific instrument:

> The thermometer enables us to infer the temperature from the height of the mercury, but we do not think that the greater or less height of the mercury resembles what physicists call heat or cold. We have equally little reason to suppose that what the psychologist calls heat or cold—viz. certain kinds of sensation—resembles what the physicist calls by the same names. The thermometer goes up when its neighbourhood is hot, and goes down when its neighbourhood is cold. There are thus concomitant changes between the greater or less height of the mercury and what the physicist calls heat or cold. It is because these changes are concomitant that the thermometer can measure temperature. In like manner, though with far less accuracy, our sensations of hot and cold fluctuate with the temperature, and therefore indicate facts other than themselves exactly as a thermometer does. The similarity between sensation and temperature is not between single sensations and single temperatures, but between changes of sensation and changes of temperature. (1957, 305–6)

We are thus supposed to conclude that whatever the phenomenal qualities are when perceiving a percept, these qualities are a result of a change in the perceptual source, but are not actually

intrinsic in the object. All this is well and good, but what does Russell have to say concerning the phenomenal experience of perception itself?

For the "what it is like" of perception Russell seems almost flippant; when writing about the two aspects of perception, the phenomenological and epistemological, he emphasizes the latter while cavalierly bypassing the former:

> There are, however, two objections to the physical causation of perceptions. One is that it makes it impossible, or at least very difficult, to suppose that external objects are what they *seem* to be; the other is that it seems to make it doubtful whether the occurrences we call "perceptions" can really be a source of knowledge as to the physical world. The first of these may be ignored as having only to do with prejudices, but the second is more important. (HK, 175-6, my italics)

And while Russell is seemingly uninterested in the 'seemings' of perception concerning the causal source of a percept, I suggest that a Russellian response to the phenomenal aspect of perception would be something like the following. We directly experience events that make up the contents of our minds. These events are organized in such a way that they produce in us sensations, and eventually percepts, which are themselves events. So for example, when one is observing the sun, one's phenomenal experience will include all of those things that we associate with the sun, e.g., brightness, heat, circularity, and so on. It is noteworthy to highlight that the initial phenomenology of visual perception is merely the sensation of coloured patches, only after there have been multiple experiences with different objects and qualities does one's phenomenology become *of* an object and not merely the qualities that the object is composed of. All the while we must remember that the qualities that we perceive, and the events that are our percepts are mental.

Russell's theory of perception does not in any way detract from what we normally take as the common-sense phenomenological experience of perceiving. What it is like to experience the sun is something that we are directly aware of in our consciousness. Due to the epistemic

considerations, however, we begin to embrace the more counter-intuitive aspects of Russell's theory of perception. Ironically in light of the above dismissal of the phenomenological aspect of perception, as a result of Russell's epistemic motivations, when we consider Russell's theory of perception our first step in analysis is to take seriously our phenomenal experiences. Indeed, for Russell we cannot move beyond these immediate experiences without some high levels of inference, which are speculative at best concerning the objects at the origin of the perceptual causal chain. Thus when we turn to the epistemological question—how well does Russell's theory make sense of perception as a source of empirical knowledge—we may find the most difficulty for Russell on perception.

As the epistemic question is what motivates the bulk of Russell's philosophical work in the period we are here engaging and has therefore already been discussed at considerable lengths, we will bypass an in depth analysis of the perceptual aspects of Russell's epistemology and revisit the reason *why* perceptions plays such an important role for Russell's account of knowledge. As should now be expected, it is because the advanced sciences are developed on a perceptual basis that Russell considers perception with the detail and depth that he does. If physics, astronomy, and the other advanced sciences are true, then perception must in some way provide information about the world. The trouble is found, however, in the counter-intuitive conclusion that if what physics tells us about the world is correct, then what we perceive seems to be an utterly different account of what is actually going on physically. As regards the knowledge that we can acquire through perception, it is a process and works in degrees. The more advanced our understanding is of the world – i.e. the more our inferences are shown to be correct – the less we can rely on perception and the more we rely on the less ambiguous structures represented in our perceptions. We can thus gain the knowledge of physics and the abstractness of the physical world without gaining knowledge about the veracity of our

qualitative phenomenal experiences of perception. This counterintuitive result will be worked out in more detail below.

We turn, then, to the first of Fish's three principles, the common factor principle. By way of reminder, this principle is that "phenomenologically indiscriminable perceptions, hallucinations, and illusions have an underlying mental state in common" (Fish, 4). Our first principle, then, is also central to the problem of perception discussed in §I above – that is, how can one be confident that one's perception is veridical if one's perceptual experiences are indiscernible? We reserve discussion of that problem for the next section, however.

When discussing the common factor principle, for the sake of simplicity, we will only discuss visual perception. Thus our concern will be: given a visual perception, if successful, it will be veridical; if incorrect, however, it may be from an illusion – seeing an object as it is not – or an hallucination – seeing an object that *is* not. In any of these cases a visual experience is occurring. According to this principle, there must be similar mental events occurring when one, e.g., visually experiences a mouse, whether the experience is veridical or not. To begin with, what for Russell occurs in a normal case of perception during this experience? He suggests that there is a set of compresent events which, through a causal process of contiguous events, traverses space-time resulting in an effect on the events that make up one's percepts – i.e. mental events. These mental events are composed of bundles of qualities that make up the percept of a mouse. If the perception is veridical, then the mouse and surrounding environment will be the causal source of the bundles of qualities; when rightly interpreted these qualities would lead to the conclusion *mouse*.[130] Thus, the mental events that make up the percepts are structured in such a way as to accurately represent the structure of the mouse. What happens in cases of illusions or

[130] Cf. Ch. 1-§I, pp. 14–5.

hallucination, however? If there is a causal explanation for how perceptions come about, how are illusions explained?

As a percept theorist, Russell's theory of perception can accommodate these types of phenomena nicely.[131] In cases of mistaken or illusory perceptions, we can expect that somewhere in the causal chain there has been a deviance or other like factor that affects the resulting perception, or one's interpretation of the sensation is false. So, in the case of the mouse, where one sees a mouse that was in fact a grey dust-ball caught in a draft, the causal process would remain the same, but the concluding belief that there was a mouse would be a mistaken interpretation of the mental events. The same goes for hallucinations, only with these the mistake is generally attributable to a fault in one's perceptual machinery. This fault, however, still creates a set of mental events that result in a percept, which is analogous to a set of mental events that are veridical. Discussing these types of circumstances, Russell writes:

> We are often misled as to what is happening, either by peculiarities of the medium between the object and our bodies, or by unusual states of our bodies, or by a temporary or permanent abnormality in the brain. But in all these cases *something* is really happening, as to which, if we turn our attention to it, we can obtain knowledge that is not misleading. At one time when, owing to illness, I had been taking a great deal of quinine, I became hypersensitive to noise, so that when the nurse rustled the newspaper I thought she was spilling a scuttle of coals on the floor. The interpretation was mistaken, but it was quite true that I heard a loud noise. It is a commonplace that a man whose leg has been amputated can still feel pains in it; here again he really does feel the pains, and is only mistaken in his belief that they come from his leg. A percept is an observable event, but its interpretation as knowledge of this or that event in the physical world is liable to be mistaken, for reasons which physics and physiology make fairly clear. (OP, 146)

Russell holds, then, that mistaken perceptions are at once possible and do share the types of mental occurrences that result from veridical perception. The difference between these is a

[131] It should be noted that there have been other percept theorists; see, e.g., (Firth, 1965). I do not take Russell's theory to be in this vein, however. When I refer to percept theory, I will be referring solely to Russell's unless otherwise noted.

matter of interpretation on the part of the perceiver, and at that point it becomes equally an epistemic problem as well as a metaphysical one.

Concerning the second principle, the phenomenal principle, which is defined, "If there sensibly appears to the subject to be something which possesses a particular sensible quality then there is something of which the subject is aware which does possess that quality" (Fish, 6), we find Russell arguing for something which, on the face of it, seems difficult to accept. Prior to addressing these difficulties, let us first discuss some ambiguities in the principle and subsequently how Russell deals with both of these. If this principle means that the external or causal sources of perception have the qualities that we observe, then it is difficult to understand how *any* contemporary theory of perception would accept this conclusion, especially in our current understanding of light-physics and quantum mechanics. The type of naïve realism that is required for this interpretation of the principles makes it difficult to accept, even for the direct realist.[132] I think what is really being addressed here, however, is, if a percept is that which we are immediately aware of in perception, does that percept share the qualities that we associate with the object? On Russell's reading, the qualities we experience are of our own minds and we must remain agnostic towards the qualities of the causal source. Consider the following from HK, which in this context strictly applies to spatial-relationships, but applies equally to other qualitative experiences like colour-perception:

> There is a rough correlation between physical space and visual space, but it is very rough. First: depths become indistinguishable when they are great. Second: the timing is different; the place where the sun seems to be now corresponds with the place where the physical sun was eight minutes ago. Third: the percept is subject to changes which the physicist does not attribute to changes in the object, e.g. those brought about by clouds, telescopes, squinting or closing the eyes. The

[132] Recall our discussion regarding the distinction between naïve and direct realist theories of perception. To admit the principle now under discussion uncritically would lead to the WYSIWYG theory of perception, which I hold is utterly untenable. See p. 87 above.

> correspondence between a percept and an object is therefore only approximate… (179)

Thus, to reiterate, the phenomenal qualities that are present in one's perceptions are the end result of a causal chain and therefore the qualities given in a perception are of nothing other than this final set of events, or percept.

The most common objection to this account of the phenomenal principle is the metaphysical baggage that is associated with percepts or mental events. How do we ontologically account for an entity above and beyond the object and the perceiver, as now we must also account for some extra entity, a percept? This problem is accounted for by Russell, recalling Chapter 1, through the employment of neutral monism.[133] Thus, what we take to be percepts are merely events so construed that they are labelled mental. But at base all that exists are events. Furthermore, Russell distinguishes between two types of spaces: physical and perceptual.[134] In perceptual space there are mental events that make up one's thoughts, generally construed. These thoughts include percepts, images, and sensations and have the qualities that we perceive when in the act of perception or recollection of an object. This latter point may also be problematic for Russell's theory. We return to these issues below.

We come next to the last of Fish's principles, the representational principle, which is the claim that "all visual experiences are representational" (Fish, 7). It has been suggested that in cases of percept or other sense-datum like theories, this principle is the most difficult to satisfy. This difficulty lies in the fact that if what is perceived is a percept or mental event, then what is being represented in perception is at best inferred as there is no direct access to the object we take the percept to be representative of. Russell here splits the difference: he certainly suggests that what we take the physical world to be made up of is inferred from our percepts—although

[133] Cf. Ch. 1 - §II, pp. 14–25.
[134] Cf. Ch. 2 - §I, pp. 26–8.

we should add that nothing is really represented in perception for Russell; rather we directly access our percepts, which are not representative of any object: "From what we have been saying it is clear that the relation of a percept to the physical object which is supposed to be perceived is vague, approximate, and somewhat indefinite. There is no *precise* sense in which we can be said to perceive physical objects" (HK, 184). Russell also suggests, however, that there are aspects of our percepts that we can infer as having a direct correlation with the external world, namely structure. Thus, those structural properties that we perceive are structurally related to the external world; those qualities that are non-structural, however, are merely subjective and tell us nothing about the physical world; *a fortiori*: "Concerning properties that are not structural, [we] can know nothing whatever" (1950, 288).[135] Russell's defence of this position is epistemological: "If physical events are to suffice as a basis for physics, and, indeed if we are to have any reason for believing in them, they must not be *totally* unknown" (HK, 202).[136] Thus, because the basis of all of our knowledge of physics is found in perception, there must be some perceptual access to the world enabling our potential to understand its structural, and therefore mathematical, basis. Reiterating this point, and incorporating the phenomenological, Russell writes:

> Except where mental phenomena are concerned, the inferences that I can make as to the external causes of my experiences are only as to structure, not as to quality. The inferences that are warranted are those to be found in theoretical physics; they are abstract and mathematical and give no indication whatever as to the intrinsic character of physical objects. (1950, 290–1)

Thus, while Russell does admit that there are representations in perception, what is represented is something not conducive to what common-sense wants to accept. That is, while our perceptual access is limited to our minds alone, what is 'represented' concerning the physical world in these percepts, when veridical, is solely structural.

[135] Cf. Ch. 2 - §II, pp. 39–42.
[136] Cf. p. 39.

We have come to the final analysis of Russell's theory of perception on the basis of Fish's three principles and two broader considerations. To recapitulate what has been concluded here, Russell's theory of perception requires us to take seriously the phenomenology of perception as it is the basis for all of our knowledge; ironically, however, the phenomenological account of perception is somewhat sacrificed in Russell's account for the greater epistemic good because of its more focal epistemological features. These epistemic aspects of perception reveal that what we know about the world is structural; we must remain agnostic towards all non-structural qualities of the physical world. Concerning perceptual experiences, there is a causal relationship between physical events and veridical perception; whereas in cases of illusions and hallucinations, the falsidical percept has an analogous mental state to the percept in a case of veridical perception—although in the former either the inference as to the causal source is false or the perceptual machinery is faulty. In any case, what is being perceived in a visual experience is a percept, whether veridical or not. Concerning the last two principles, Russell's theory suggests that the qualities that we attribute to the objects of perception are interpretations of our percepts. Furthermore, what is represented in perception is strictly structural, nothing more. We are now in a better position to address the problems laid out in §I regarding the problem of perception based on Russell's theory.

IV

Further Considerations Concerning Russell's Theory of Perception

As was alluded to in our discussion of the common factor principle in the preceding section, Russell's theory seems to account for how illusions, hallucination, and veridical perceptions are consistent within the phenomenology of perception. The factor that accounts for the consistent mental state of all perceptual experiences in this explanation are percepts; in all cases of perceptual experiences what is being experienced is a percept. And as we discussed

above, Russell defines a percept as "what happens when, in common-sense terms, I see something or hear something or otherwise believe myself to become aware of something through my senses" (HK, 180). Thus a percept can occur, whether or not it has a veridical external world correlate.[137] Two immediate issues arise: first, the problem of perception that we have been hitherto discussing seems to get magnified on this account; and secondly, what are we to make of the metaphysical status of percepts themselves? Are we to interpret them as esoteric versions of sense-data or are they something different? We discuss this latter issue first.

In the previous chapter I offered a defence of indirect realism on epistemic grounds. We can ask now, however, if it follows that because there is an epistemic limitation to our access to the physical world, that there also be a metaphysical one. If we accept Russell's percept theory, must we also accept that there is an additional metaphysical category in one's mind, namely percepts? Russell's defence of these mental items, as we have discussed at length, is based on the construction of events in a causal chain, all of which are ultimately based on the existence of neutral stuff—events. Ignoring for the time being whether or not neutral monism and four-dimensional eventism are correct, what are we to make of the defence of percepts?

Traditionally the responses against mental entities such as percepts, like sense-data, could lend theorists the firepower to outright reject them due to their being non-physical. Here, however, we have a percept theory that bases the structure of the phenomenal experience on a physical causal relationship between the physical source and the perceiving mind. Thus, the percept cannot be *prima facie* dismissed on the metaphysical grounds that it is non-physical. In Russell's case, this response is facilitated by the event ontology. Events are ontologically basic

[137] Interestingly, one's illusory or hallucinatory experience would still be an accurate representation of the *physical* world in a strange way on Russell's account. This is so on the basis that the events making up the percept would have a location in physical space – namely, the location of the brain of the perceiver – and, as such, there would be an accurate representation of what was occurring in physical space at that specific space-time point.

and according to Russell are the logical conclusions of physics. Although these events are physical, does it follow that percepts are too? Percepts and therefore the mind, or mental events, it would seem, are epiphenomenal, emerging out of a certain arrangement of the events. However, this should not be read in the dualist vein that epiphenomenal theses often are, as for Russell matter must also be an epiphenomenon. This is again a result of neutral monism. The differences between matter and mental are merely differences in how the events are grouped. If we take the brain and the mind as consisting of events, then Russell concludes "the events making up the living brain are actually identical with those that make the corresponding mind" (1950, 288).[138] Ultimately the metaphysics of this conclusion plays out as follows:

> If what I [Russell] am saying is correct, the difference between mind and brain does not consist in the raw material of which they are composed, but in the manner of grouping. A mind and a piece of matter alike are to be considered as groups of events, or rather series of groups of events. The events that are grouped to make a given mind are, according to my theory, the very same events that are grouped to make the brain…. The important point is, that the difference between mind and brain is not a difference of quality, but a difference of arrangement. (1950, 289)

We observe, then, that percepts and mental events in general are simply a restructuring of the events that are the ultimate constituents of both mind – mental events – and matter – brain.[139] While this interpretation of Russell may be open to separate criticisms, it does seem to be able to bypass the standard objections given to other postulated mental/perceptual entities like sense-

[138] As we noted above, cf. note 18 p. 19, this way of describing the mind cannot be exactly right as it would mean that the flow of blood in the brain is identical with the mind, which he cannot mean.

[139] Epiphenomenalism is often criticized for its inability to account for mental causation, such as actions or the basic sense of agency we associate with such person centered causation (see, e.g. (Searle 2004, 20-1 and 31-2) or (Dennett 1991, 402)). And while we are only here concerned with the "what goes in" aspect of agency – i.e. perception – we would be remiss to avoid this criticism. As far as the status of freewill and human agency, we seem with Russell to be stuck with a supervenience thesis. That is, whatever it is that can be construed as "caused" by the agent is just an event in a larger causal context, of which the agent is merely a conduit and not simply a prime-mover or causal source. Whatever occurs at a time *t1*, be it matter, mind, or gravity, supervenes on the events at *t0*, which in turn supervene on the events preceding them in the causal chain. Thus, mental events can be causes in so far as they affect other subsequent events, but these events do not have a special status as far as their ontology is concerned. What we would call perception or action, again, supervenes on the events that make up either of these occurrences.

data. Given this construal of percepts, then, we come to further metaphysical considerations concerning perception.

What is interesting about the conclusion that percepts are physical – in Russell's non-materialist formulation of 'physical' – is what we are to make of the metaphysical status of the realism in Russell's theory of perception. On the one hand it seems as though it is of the indirect variety: all that we perceive in perceptions are our own minds. On the other hand, however, there is no veil of perception on Russell's account: we are directly aware of the causal results of our perceptual interaction between the object and our experience of it, which is then a direct access to what is perceived. One of the issues becomes what are we to make of the perceptual process – i.e. the causal intermediary. We can maintain that *epistemically* Russell is most certainly an indirect realist, as on his view our access to the external world is solely inferred from the contents of our own minds. Metaphysically, however, this classification is much less obvious.

Consider, for example, how the sense-datum theorists are construed on Fish's reading. According to him, sense-data

> are typically defined as nonphysical objects of awareness, which are logically private to a single subject…. Whilst it might be the case that when we have a given visual experience we take the sense data to be 'of the world' as a matter of habit or custom, they are not 'of the world' in their intrinsic nature. (16)

With mental events being portrayed in this way, there is some overlap between sense-data and Russell's percepts. Percepts are private to the single subject for Russell; they are also not of the world in at least one important way – qualitatively. However, percepts are causal ends and correlate with the world in a different, but again important, way – structurally. It is with this last point that we see one major discrepancy between the traditional notion of percepts and Russell's rendering. Also with the traditional notion of percepts, nothing from the external world is

represented, whereas for Russell, although it is inferential, there is a representation of the structure of the world as portrayed from our percepts.[140]

From these considerations it becomes, like so many other aspects of Russell's theory, difficult to place his work within a specific tradition. On the one hand, perceptions are exclusively of our brains; on the other hand, veridical percepts are causal resultants of physical events, and are themselves understandable in terms of physical space – i.e. the location of one's brain. Furthermore, we have direct non-inferred access to these percepts. So while we must infer the physical world from the perceptual one, it is a result of the access we have to the perceptual world that we can make these inferences to the physical. Russell himself rejected the act-object notion of perception passed down from the indirect realist tradition:

> The dualistic view of perception, as a relation of a subject to an object, is one which…empiricists have now for the most part abandoned. The distinction between "seeing the sun" as a mental event, and the immediate object of my seeing, is now generally rejected as invalid, and in this view I concur. But many of those who take the view that I take on this point nevertheless inconsistently adhere to some form of naïve realism. If my seeing the sun is identical with the sun that I see, then the sun that I see is not the astronomer's sun. For exactly the same reasons, the tables and chairs that I see, if they are identical with my seeing of them, are not located where physics says they are, but where my seeing is. (HK, 182)

Seemingly, then, there must be something that we have direct access to perceptually, and thus there is no intermediary other than the causal chain of events between the percept and the physical source. We can remain directly in perceptual contact with the events that make up the

[140] The point to remember here is that Russell, in taking physics as the basis for how we should understand perception, holds that for physics to be knowable whatever, our percepts must represent something consistent with our knowledge of physics. Therefore, our perceptual knowledge of the world is necessarily structural because physics is mathematical, and mathematics is logical, which in turn can be representative of the structures that we encounter perceptually. Failing to recall that this is the underlying motivation for Russell may lead one to think of Russell's system as inconsistent, when on the contrary it is because of its consistency that Russell's theory is so difficult to pigeonhole.

perception.[141] Or take, for example, Russell's somewhat confusing conclusion regarding the status of events in perception:

> Physical space, unlike the space of perception, is based upon causal contiguity. The causal contiguities of sense perceptions are with the physical stimuli immediately preceding them and with the physical reaction immediately following them. Precise location in physical space belongs not to single events but to such groups of events as physics would regard as a momentary state of a piece of matter, if it indulged in such old-fashioned language. A thought is one of a group of events, such as will count for purposes of physics as a region in the brain. To say a thought is in the brain is an abbreviation for the following: a thought is one of a group of compresent events, which group is a region in the brain. I am not suggesting that thoughts are in psychological space, except in the case of sense impressions (if these are to be called "thoughts"). (1950, 291–2)[142]

In this case, a thought – or for our purposes, a percept – is a part of a compresent set of events found in the brain. If this percept is dependent of the contiguity of events beginning with a causal source, then taken as a whole compresent set of events at that instant, we can include both the object at the time it caused the perceptual events and the resulting percept as the compresent event of perception. If this last point follows, then there may be a direct realist interpretation concerning the metaphysics of Russell's theory of perception—namely, the contiguous events taken as compresent in the process of perception, which enable a direct encounter with the events generated from the causal source.

V
Review

Tying the above discussion concerning the realism of Russell's theory of perception together with the grander problem of how perception seems to be an openness towards the world, whereas the phenomenal character of experience is indistinguishable from veridical and illusory

[141] I would suggest, again, that this is a form of metaphysical direct perceptual realism, while epistemically it is not—epistemically we can only infer the physical source and, as such, the source is indirect.
[142] Cf. this with Russell's similar discussion in HK: "The astronomer's sun is not inferred, it is not hot or bright, and It existed eight minutes before what is called seeing it. If I see the sun and it makes me blink, what I see is not 93, 000, 000 miles and eight minutes away, but is causally (and therefore spatiotemporally) intermediate between the light-waves striking the eye and the consequent blinking" (182).

or hallucinatory percepts, we encounter a now common answer to these types of questions: If we do not assume that perception is open to the external world, physics and all that come with it would be impossible to understand. We are thus presented once again with an epistemological basis dictating the conclusions of our metaphysical thesis. The openness to the world that perception provides to us results from the causal nature of perception. Russell suggests that the mere fact that when we close our eyes we disable the causal chain of external events that enable our percepts is enough to convince us that there is indeed an external cause to our percepts. The further facts concerning the verifiability of science and the formulation of most hypotheses indicate that the power of physics and its ability to predict verifiable outcomes are reliant on perception being open to the world. Thus, what needs to be accepted if physics is to be accepted is that there is some empirical basis for our understanding of the physical world. This empirical basis is not to be taken as a given in the way that physics is, but rather it is to be analyzed to discover how it is possible that something so cosmically insignificant as a group of bio-chemical compositions on a small rock in space can discover the intricacies of the Universe.

Russell, in developing his causal physical theory of perception, holds that we exist in a four-dimensional universe where the fundamental stuff is no stuff at all; rather, occurrences, or events, become fundamental. From this conclusion he argues it follows that the universe is bound to certain causal laws and that these causal laws dictate how perception is achieved. Furthermore, perception provides us with a very limited, yet very sophisticated, understanding of physical space. These limitations are the ones we addressed in §I above, namely, Chalmers' trees of illusion and science in which the qualitative world of perception is not the physicist's world. The sophistication, on the other hand, is found in our predictive and manipulative skill concerning the physical world. These skills are enabled by a mathematical understanding of physical space that is enabled from our cognitive access to physical structure provided through perception. And

whether or not we are to accept the trustworthiness of our perceptions in so far as they can be open to doubt due to illusion, dreams, or hallucinations, that fact remains for Russell that "in considering the reasons for believing in any empirical statement, we cannot escape from perception with all it personal limitations…. But there is one thing that is obvious from the start: only in so far as the initial perceptual datum is trustworthy can there be any reason for accepting the vast cosmic edifice of inference which is based upon it" (HK, 13).

Appendix

Russell's Perceptual and Logical Construction of Time[143]

Having discussed perception and its role in enabling the inferred structure of the physical world in Chapter 2, we come now to *time* as an example of the constructive method. Although we never discussed the technical details of the construction of space, from the account given in Chapter 2 we can understand that Russell accepts that perceptual conditions are sufficient for such a construction.[144] We use time as our example for two reasons. First, it is different from other physical constructions as it is distinct from other physical entities with regard to our experiences. This is to say, time is first person dependent in ways that space is not—our experience of time can be construed and measured in relativistic terms. Physical space, on the other hand, is only a logically constructed inference concerning mathematical properties and is potentially much different from perceptual space, with the exception of structure. On the other hand, our understanding of time, while still considered a logical fiction – *viz.* an instant – is personal in a way that the structure of physical space is not. In what follows, our purpose is to

[143] Much of this section is taken from (Olson, 2011).
[144] See Part III of AM for Russell's technical constructions of space, space-time, points, and point-instants.

observe the methods of construction Russell employs for physical space and how it is possible via perception.[145]

There are two scientific views addressed by Russell concerning time: classical and relativistic. Regarding the latter, Russell suggests that "for philosophy, far the most important thing about the theory of relativity is the abolition of one cosmic time and the one persistent space, and the substitution of space-time in place of both" (OP, 119). It follows, then, that we must understand how time is affected by the advent of STR. Prior to STR it was assumed that there was, in theory, one time corresponding between two events, which could tell us if the events happened simultaneously or not. For example, if an event occurs in London at time *t*, it was thought that we could discover whether or not an event occurring on the moon would be at or plus or minus *t*. With STR, however, we discover that there is no one cosmic time; rather, time is relative to a reference frame. We know this conclusion as "the relativity of simultaneity."

To understand how this conclusion works, let us discuss to Einstein's train example.[146] Consider that you are standing by the track at the midpoint of a train that is traveling at 60% the speed of light[147] when you observe lightning strike both ends of the train simultaneously. I, however, am in the middle of the train, and although you see the lightning strike simultaneously, it appears to me that there is a flash of light at the front of the train followed by a flash at the back. According to Einstein, both of our conclusions are correct. Because the motion of one observer is relative to one's reference frame, either you or I can consider ourselves motionless in relation to the other and, as such, we are both equally valid in our respective conclusions.

[145] As I have alluded to above, Russell constructs other physical concepts, but they are much more complicated and take us away from the general project and, as such, I believe that one example will suffice, even if it is somewhat different than the other constructions.
[146] This example is found in Einstein (1924 31-2). I have altered it slightly and added a speed; this remains consistent with Einstein's initial example, however.
[147] This speed is *really* fast—179,875.475 km/s. It must be fast, however, in order to experience the affects of STR.

We can arrive at the same conclusion when the light source is emitted from the train. I flip a switch, which, from my perspective, causes lights at both ends of the train to flash simultaneously. From your perspective, however, even though I flip the switch when you are exactly opposite me, you observe the light at the back of the train flashing first followed by a flash of light at the front. Again, this is consistent with Einstein's conclusions regarding simultaneity, as we are each justified in our observations as to the order in which the light flashes took place.

Regarding simultaneity and STR, Einstein writes: "every reference-body (co-ordinate system) has its own particular time; unless we are told the reference-body to which the statement of time refers, there is no meaning in a statement of the time of an event" (1924, 32). We are thus left with the difficult conclusion that the idea of time becomes completely relativized due to our respective positions and motion in space-time. Russell understood Einstein's conclusions:

> The old view [of time] was that there is one cosmic time, and that, given any two events in any two parts of the universe, either they are simultaneous, or the first is earlier than the second, or the second earlier than the first. It was thought that the time-order of the two events must always be objectively definite, although *we* might be unable to determine it. We now find that this is not the case. Events which can be regarded as all in one place, or all parts of the history of one piece of matter, still have a definite time-order. So do events in different places if a person situated where the second takes place can see the first before the second happens, or, more exactly, if light can travel from the place of the one to the place of the other so as to reach the other place before the second event…. But if light traveling from the place of the one event to the place of the other event arrives at the place of the other event after the other event has taken place, and conversely, then there is no definite objective time-order of the two events, and there is no reason for regarding either as earlier than the other, nor yet for regarding the two as simultaneous; ideally careful observers will judge differently according to the way in which they are moving. Thus time is not cosmic, but is to some extent individual and personal for each piece of matter. (OP, 171–2)

As we discussed above, Russell argues that we can no longer understand the world as portrayed in classical physics – i.e. instants, points, and particles; rather, we must understand that *events*

are the bedrock of a relativistic universe. How, then, are we to understand time, even if our experience does not make these distinctions?

Citing *t* as it is employed within STR, Russell argues that, in theory, we can still consider *t* as an instant.[148] However, rather than holding that a universal instant is possible, as is suggested in classical physics, Russell develops a theory that incorporates events to construct *t* – i.e. an instant: "We take 'events' as the raw materials, each occupying a finite continuous portion of space-time. It is assumed two events can overlap and that no two events can recur" (HK, 237). Thus, instants will be made up of overlapping events within a portion of space-time. Russell develops his theory of *t*: "An 'instant'…is a class of events having the following two properties: (1) all the events in the class overlap; (2) no event outside the class overlaps with every member of the class. This group of events…does not persist for a finite time" (238). What this theory amounts to, then, is that all members of the class must overlap with all others—if an instant changes within its own set, then it persists over time, which is not possible: if change occurs the class of events ceases to be an instant. The same applies for instants themselves: no two instants can share all their events, for if they did there would be no progression or becoming. Let us consult the following images to help clarify exactly what is going on within Russell's position. Consider three events, A B C, which overlap and are the lone members of a set of overlapping events. A B C, then, will become an instant *i* (fig. 1).

$$\overbrace{\underbrace{\text{A B C}}}^{i}$$

Figure 1

[148] In relativity theory, *t* represents the time variable within either an interval or point of space-time. For example, the formula for a space-time interval is $I^2 = d^2 - c^2t^2$; where $d = x^2 + y^2 + z^2$ or the spatial distance between events, *c* is the speed of light, and *t* is the time variable or fourth coordinate. *t* is also known as coordinate time within this context.

Now, if we include events A, B, C, D where A B C overlap, and B C D overlap, but A and D are wholly distinct from one another with no overlap, then A B C make up one instant *i*, whereas B C D constitute another instant *ii* (fig. 2).

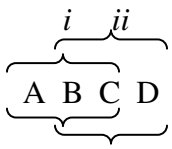

Figure 2

Consider further that events A B C overlap, B C D overlap, C D E overlap, and D E F overlap; whereas A does not overlap with D, B does not overlap with E, and C does not overlap with F. If we apply this sequence as it is in Russell's theory of time, we are presented with four instants – *i, ii, iii, iiii* (fig. 3).

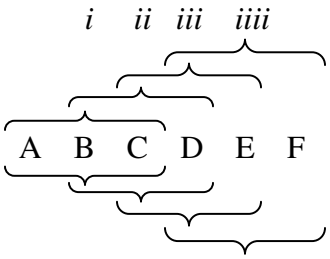

Figure 3

We can therefore observe in these diagrams how it is that succession is possible. If one instant is a set of overlapping events, and instants can overlap as the above figures show, then we can observe how the experience of time – i.e. succession and becoming[149] – are possible in physics.[150]

We must now engage Russell's explanation for the experience of time as personal, as we must understand that in STR each piece of matter has its own time. Having accounted for the time variable as cosmic time, how are we to accept time as only applicable to individuals?

[149] *Becoming*, as I am using the term, is the process by which events come into one's present while other events pass into the history of one's worldline.

[150] I have argued elsewhere (Olson, 2011) that Russell's construction of time provides a way to solve some contemporary problems in the philosophy of time – i.e. the potential for time passage in a four-dimensional manifold. There are a number of theorists who argue against the plausibility of time being able to pass in such a manifold. Russell, however, seems to provide a template from which to formulate a response to these problems.

Regarding his interpretation of *t*, Russell responds to this above problem: "I have been speaking so far as if there were, as used to be thought, one cosmic time for the whole universe. Since Einstein, we know that this is not the case. Each piece of matter has its own local time" (239). Given this concession, then, Russell applies his theory of *t* to relativity *tout court*: "The construction of 'instants' as classes of events, given above, is to be held…as applying only to events happening to one piece of matter—primarily the body of a given observer" (240). A description of how we can possibly experience a *relativized* time is now needed.

Russell explains that we can experience time in a "specious present." Russell first discusses the specious present in reference to C. D. Broad's (1925) discussion of it.[151] Here we are to understand that there is a short finite period of time that is sensibly present at a given moment. From this understanding, we are then provided with an explanation of the specious present with regards to time: "By the felt degree of fading, you can distinguish earlier and later…and thus experience temporal succession without the need of true memory…. The difference is that, in quick movement, the whole falls within the specious present, so that the entire process is sensible" (OP, 216). From this assessment, then, we can understand that in short time-spans we encounter change with events becoming while other events pass, and this occurs within the specious present.

The first, and most important, point to be made regarding the specious present is that it is what enables us to individually understand time-order or before and after. Secondly, the specious present according to Russell is objective and thus bridges our subjective experiences with the time-experiences of others:

[151] Somewhat ironic is Russell's initial assessment of Broad's 'specious present', as he writes: "This is a logically possible theory, but it seems nevertheless somewhat difficult to believe. I do not know, however, of any easier theory, and I shall therefore adopt it provisionally while waiting for something better" (OP, 213). The irony here is that nothing better must have arrived for Russell as this statement was written in 1927, yet the specious present is still employed in 1948 when Russell returns to the topic of time.

> It should be observed that what we mean by "the past" in the historical sense is understood by us in virtue of the experience of succession within one specious present. It is this experience that makes us understand the word "precedes". We can then understand: "If y is in the specious present, x precedes y." We can therefore understand what is meant by saying that x precedes everything in the specious present, i.e. that x is in the past. The essential point is that the time that occurs in the specious present is objective, not subjective. (HK, 191)

We gather, then, that the experience of time is possible through recognizing the immediate perceptions of change, which provides us with the experience of events preceding other events. From these experiences we come to understand temporal succession and time-order. This, then, is the experience of time according to Russell as constructed out of commonsense experiences.[152]

Having developed the notion of a specious present, we observe Russell giving a perceptual account of time. However, with the science of relativity and the 'instants as classes of events' theory of time, how can we understand physical time as it is in physics versus mental time as we experience it—that is, how do we infer physical time from our perceptions of relations so described above? Russell replies that time is special amongst other physical phenomena in that the phenomenological and the external can have a direct correspondence, at least locally. Adopting relativistic language, Russell provides the following explanation:

> …psychological time is the same as time measured on our person. Our head moves along a world-line, and our psychological time-intervals are measured physically by integrating *d*s along the world-line. Thus there is no difficulty in adapting the statement that psychological and physical time are identical to the requirements of [STR]. In this respect, time differs from space, because physically all our simultaneous percepts are in one place. (AM, 253)

We are again provided with a thoroughly relativized account of time. What is needed now is the perceptual inference between time and experience, which according to Russell is provided by

[152] It should be further noted that, according to Russell, for us to be able to 'know' time, we must employ some inference to the veridical nature of memory, since there is no logical reason to accept memories as true—although we can infer them through feelings of remoteness, distance, and the experiences of the specious present.

relations that are not *prima facie* temporal: (1) a vivid to a fading sensation (specious present); (2) a percept to a recollection (memory); and (3) recollections laid out in the correct order. Regarding this last relation, Russell concludes:

> Here, also, however, all that we perceive is in the present, and the time order of the original events is inferred from relations among the simultaneous events which constitute our present recollection. Thus the conclusion seems to be: Psychological time may be identified with physical time, because neither is a datum, but each is derived from data by inferences of the sort we have found elsewhere, namely inferences which allow us to know only the logical or mathematical properties of what we infer. (254)

Thus our perceptual understanding of time is correspondent with physical time in that both require the experience of external phenomenon to infer from. Thus we have a causal account for the perception and construction of time.[153]

[153] For a contemporary defence of a casual theory of perception and its relation to time see (Le Poidevin, 2004).

Afterword

At the completion of *Human Knowledge* Russell's epistemological and scientific concerns that vexed him since the completion of *Principia Mathematica* had reached a culmination. The theory put forth in this text is to be taken as the final word on his epistemic outlook. Given Russell's status as one of the founding fathers of 20th Century Analytic philosophy, it is curious (an understatement of superlative measure) as to why his later works were dismissed in a cavalier manner. I am sure that there are sociological explanations, but whatever the reason may be, it is my opinion that this speaks very poorly of the state of philosophy at the time.

HK appears to be one of the last great systems of philosophy, providing a logical, epistemic, and metaphysical account for our relationship with the universe. And, if philosophy is to be good for anything, it is my contention that it should seek to ask the fundamental question: "What is going on here?" where "here" is to be understood as denoting the space between us and the universe; or in Russell's terms, what is going on between perceptual and physical space? The preceding work on Russell's philosophy – specifically his theory of perception and the epistemic and metaphysical outworking of that theory – has only scratched the surface of what can be

gleaned from this system. There are a number of reasons for why this conclusion is valid. Foremost among them is that this is an entirely unique epistemological theory, which employs the traditional logical and philosophical arguments with a powerfully wielded understanding of the philosophically relevant aspects of modern physics. In this regard, Russell's philosophy far surpasses previous metaphysicians – with the potential exception of Leibniz – as a systematic *tour de force* that is relevant for both his philosophical and scientific contemporaries. Peter Lopston has suggested that

> there is a very good case for the view that Russell produced one of the major philosophical—metaphysical and epistemological—systems of the entire canon, one that, as far as can be seen, is importantly original, ought to and (when it acquires the prominence it deserves) probably will endure indefinitely, and–last but not least–may well be true. (2010, 3)

These sentiments reflect my own.[154] It is due to the acceptance and importance that has been placed on understanding the fundamental nature of our universe – *viz*. physics – that Russell's system reveals its relevance and power. He embarks on an intellectual exploration that all of us who want to do fundamental philosophy should, in whatever way, embrace and continue.

This afterword is not meant to be a praise laden diatribe inspired by an overblown reverence for Russell. The point is that there is a system of philosophy, one that is relevant and important, that has been virtually undiscovered—or ignored. Will this system be found ultimately and universally correct? This question must most certainly be answered in the negative. But will it prove fruitful and important? The answer here is most certainly in the affirmative. I should like to suggest that because Russell's is a systematic account of perception, and subsequently mind and matter, there are many avenues into his theory that are open to criticism; any one which may indeed undermine the entirety of his conclusions. At the same

[154] Lopston and I are not alone either. In conversation with Nicholas Griffin, we discussed the incredible breadth, degree of sophistication, and prescience that Russell's later philosophy has shown. I have had similar conversation with Rosalind Carey, Jeremy Shipley, and Gregory Landini.

time, however, due to the depth and consistency with which Russell addresses these problems on the whole, his system does not open itself to the standard criticisms mounted against similar theories of perception, of mind, and of matter. Furthermore, it is for these reasons that Russell's different positions taken independently of the entirety of his system seem so hard to place.[155] Essentially what a proper rebuttal of Russell's system would require is to show how it is either inconsistent with, or does not follow from, what contemporary physics has concluded. And thus, since physics has not drastically altered its fundamental conclusions since Russell's time, we at the very least must take seriously his arguments, if for nothing more than advancing our philosophical consistency with the physical order, which we must accept if we hope to remain relevant in what we seek to achieve as philosophers.

[155] For example is Russell an empiricist or a rationalist? Is he a direct or an indirect realist? Is he a foundationalist or a coherentist? Is he an internalist or an externalist? None of these questions has a straightforward answer.

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