

Beyond Beliefs

A philosophical examination of anomalous phenomena and explanation theory

**Beyond Beliefs:
A philosophical examination
of anomalous phenomena and explanation theory**

by
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Candidate's declaration

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You can't teach an old dogma new tricks

Dorothy Parker

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Abstract

This thesis argues that the dominant assessment of the anomalous phenomena associated with psi requires re-evaluation, as hidden beliefs and explanatory assumptions about the body of evidence underlie the mainstream philosophical arguments regarding psi.

A re-evaluation of pertinent issues with reference to contemporary explanatory concerns is therefore undertaken.

The current state of discussion about psi is outlined. It is shown that there is tension between the apparent evidence for the phenomena and lack of a tenable explanation for the phenomena. The mainstream arguments in philosophy, which ascribe fraud as an explanation for psi, are critiqued. In generic form the arguments are shown to be a problematic inference to the best explanation. It is argued that if the assessment of the phenomena is to be a legitimate inference to the best explanation the outline of the evidence, the compilation of hypotheses and the process by which the 'best' is selected requires re-assessment. The process of re-evaluation is carried out in the rest of the thesis.

The re-examination starts with an outline of the three types of evidence for psi. The discussion regarding potential explanation of the body of evidence for psi is shown to be similar to another problem in philosophy—the hard problem of consciousness. The competing hypotheses are then divided into comparable options in relation to psi theory: the Skeptic hypothesis, the Small Change Natural hypothesis, the Big Change Natural hypothesis and the Supernatural hypothesis. The unresolved debate about psi is thus transformed into a 'psi hypotheses discussion' which allows for more productive discourse regarding possible explanations of the phenomena.

An argument is made that changing explanatory schemes have historically accounted for psi phenomena and it is shown that one of the hypotheses, the Supernatural hypothesis, is untenable. The remaining three hypotheses are examined in more detail in the second part of the thesis.

A recent discussion between scientists and a philosopher regarding the potential to develop psi theory is used to show that when competing hypotheses for psi are debated, the contrary approaches to the data represent different research traditions. It is concluded that explanatory considerations regarding the various hypotheses require reassessment.

It is shown that an outdated explanatory system (the covering law model) has most likely influenced the mainstream assessment of psi phenomena and that this assessment has informed the dominant Skeptic hypothesis. However, because covering law model has been superseded by new theories of scientific explanation, an argument is made that a reassessment of the competing hypotheses is warranted.

An examination of the competing psi hypotheses in the light of three major contemporary explanation theories (causal, pragmatic and unificatory) is therefore undertaken. It is argued that the anomalous nature of psi usually prejudices the manner in which the explananda are presented. The psi explananda are therefore recast in terms acceptable to the contemporary explanation theories. Each competing psi hypothesis provides a possible explanation to the psi explananda. Then a comparison of the explanations is carried out using the precepts of each contemporary explanation theory as a guide to making an assessment of the competing explanations.

It is concluded that it is important the three psi hypotheses continue to be explored in relation to progress in science, psi theory and issues of explanation in science. The main achievement of the thesis is to provide a new platform for productive dialogue between the competing hypotheses with explanatory concerns upfront.

Table of contents

Introduction	1
0.1 What exactly is psi?	2
0.2 Use of the word psi	5
0.3 Status of apparent psi events	6
0.4 The psi debate	7
0.5 Structure of Beyond Beliefs	9
 Part I	 12
Chapter 1 <i>Terra incognita</i>	14
1.1 Psi arguments in mainstream philosophy	15
1.1.1 Explanation by fraud (EFA) argument	15
1.1.2 Modern Miracle Arguments (MMA)	22
1.1.3 Summary – explanatory issues & questionable certainties	33
1.2 Psi arguments as pre-emptive inferences to the best explanation (PIBE)	34
1.2.1 Inference to the Best Explanation	34
1.2.2 Pre-emptive Inference to the Best Explanation	38
1.2.3 MMA and EFA and PIBE	41
1.2.4 Summary of critique of mainstream psi arguments	42
 Chapter 2 <i>Evidence</i>	 45
2.1 Three-stage re-analysis of psi	45
2.2 Body of evidence	48
2.2.1 Historic	53
2.2.2 Anecdotal	55
2.2.3 Controlled experimental evidence	64
2.3 Response to the evidence	77
2.4 Compilation of hypotheses	78
2.4.1 The hard problem of consciousness—a similar philosophical problem	79
2.4.2 Psi theory	81
2.4.3 Psi hypotheses discussion	87
 Chapter 3 <i>Shifting Sands</i>	 91
3.1 Historic account	92
3.1.1 Two transitions	93
3.1.2 Support for the historic account	96
3.1.3 Scope of science and psi phenomena	99
3.2 Arguments against the Supernatural hypothesis	101
3.2.1 Naturalism and psi	101
3.2.2 Everyday psi	103
3.2.3 Dramatic psi	106
3.2.4 The argument from religious experience	108
3.2.5 Experimental psi and the Supernatural hypothesis	110
3.3 Application of the supernatural assessment on the psi hypotheses discussion	112
3.3.1 Hardcore skepticism and the Supernatural hypothesis	113

Part II	116
Chapter 4 Boundless sea	117
4.1 The importance of the development of psi theory	118
4.2 Example of contemporary discussion about psi	119
4.2.1 The radio discussion in context	119
4.2.2 The setting	121
4.2.3 The psychologist and the cognitive scientist	122
4.2.4 The philosopher	123
4.2.5 Discussion of competing hypotheses	125
4.3 Research traditions	128
4.3.1 Research traditions and the radio discussion	129
4.3.2 Comparing research traditions	131
4.3.3 Summary of radio discussion	133
Chapter 5 Explanation	134
5.1 The Skeptic hypothesis	135
5.2 The covering law model	137
5.2.1 Outline of the deductive nomological (DN) argument structure	138
5.2.2 The 'received view'	141
5.3 Lawless psi and the covering law model	141
5.3.1 Psi and vitalism	142
5.3.2 A note on psi and laws	144
5.4 Psi publications and the 'received view'	144
5.4.1 Psi publications	145
5.4.2 Mainstream discussion of psi	146
5.5 Consequences for psi theory	150
5.5.1 The Skeptic hypothesis prior to 1948	151
5.5.2 Skeptic hypothesis post 1948	152
5.5.3 Psi research in the 1970s, 80s and onwards	155
5.6 A case for reassessment	159
Chapter 6 Terra Firma	161
6.1 Review of IBE process	162
6.2 Problems for the covering law model	164
6.2.1 The problem of irrelevance	164
6.2.2 The problem of asymmetry	165
6.2.3 The problem of laws	167
6.3 Psi and scientific explanation	169
6.3.1 Psi and laws of nature	170
6.3.2 Anomalous phenomena and scientific explanation	171
6.4 Psi explananda recast	175
6.4.1 Psi explananda posed as interrogative statements	175
6.4.2 Psi questions and hypotheses	179
6.5 Psi explananda and contemporary explanation theories	181
6.5.1 Pragmatic explanation theory	181
6.5.2 Causation explanation theory	184
6.5.3 Unification theory	185
6.5.4 Psi hypotheses and explanation theories	187
6.5.5 Summary of explanation, theories and competing psi hypotheses	196
Conclusion	200
Bibliography	204
Appendix I	216
Glossary	219

Charts and grids

IBE three-stage chart _____	48 (10,163)
Psi hypotheses _____	89
Historic account _____	100
Publications and covering law model of explanation _____	149
Psi explananda as interrogative statements _____	178
Psi Q&A grid _____	180

Foreword

The study of psi in philosophy is controversial. Psi is often invisible in philosophical discussion because the plausibility of the evidence for psi is dismissed out of hand. However, there is a long and interesting history of rigorous investigation of psi and there are obvious consequences for philosophical topics if the evidence for psi is ever considered established. Unfortunately, the extensive literature which discusses the elusive phenomena is rarely represented in philosophical discussion. The study of psi retains a maligned status in mainstream academia today.

I became interested in the academic study of psi during my undergraduate years at the University of Sydney, where I was fortunate enough to happen across a considerable stash of psi literature which piqued my interest in the subject matter. Due to the Dewey Decimal cataloguing system in the infamous Fisher Stacks, a substantial collection of parapsychology texts were situated right next to the philosophy of mind books that were required reading at the time.

As I dipped into this heretofore unmentioned subject matter I became aware that there was much more to the investigation of psi than was recognised in most mainstream philosophy. The works were intriguing, rigorous and worldly and the discussions lively and philosophical—I was enticed into the world of psi theory. At the same time I came to realise how invisible the subject matter was outside the small world of psi theoreticians and researchers; that psi doesn't exist is almost a mantra in contemporary philosophy of mind.

This thesis is not an attempt to change the minds of those who maintain that psi should not be investigated in philosophy because it is implausible, nor does make an epistemic defence of the evidence against charges of fraud or flaky methodology. The dominant mainstream Skeptic hypothesis remains at the end of the thesis as one of two other explanatory avenues to explore. Instead, this thesis is an investigation of the explanatory issues that inform assessment of the anomalous phenomena. The aim is to provide a platform for more general philosophical discourse regarding psi. I hope that it becomes clear there is much to discuss.

Beyond Beliefs: **Introduction**

Lurking deep within the idea of explanation is a rudimentary appeal to rationality.

Charles F. Adams

This thesis is concerned with anomalous phenomena and explanation theory. The focus will be particularly on anomalous communication and anomalous action at a distance, otherwise known as telepathy and psychokinesis respectively. These two intriguing phenomena are often referred to under the umbrella word 'psi' (pronounced 'sigh'). The mainstream assessment of psi in academia is to ascribe fraud or fluky results to account for the phenomena. Despite this a small but persistent group of researchers continues to investigate the phenomena as genuine. They maintain that fraud cannot account for the data and have developed various theories to explain the phenomena. The two approaches are unreconciled and a Catch 22 has developed. If fraud or fluke can't account for the phenomena then some other theory must be employed, however, the mainstream will not accept psi until it is explained; but psi is unlikely to be explained until it is incorporated into more inclusive scientific problem-solving. There is therefore a tension between the apparent evidence for psi and lack of a tenable explanation for the phenomena.

I will partially resolve this problem by showing that the mainstream assessment of psi is first and foremost representative of *beliefs* about psi rather than an examination of possible *explanations* of the phenomena. It is hoped that the ensuing discussion takes the debate *beyond* beliefs—hence the title—by addressing the tension caused by psi phenomena with regard to pertinent issues in explanation theory from the philosophy of science.

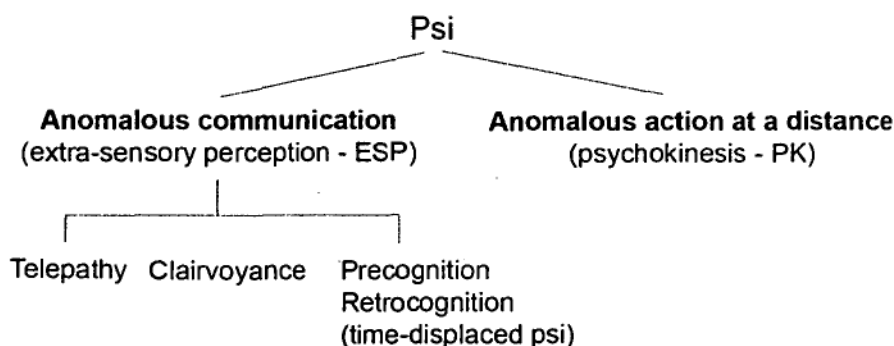
First I give a brief overview of psi and define the various components before clarifying the nomenclature used in this thesis. Then I outline the psi debate before sketching out the structure of the thesis.

0.1 What *exactly* is psi?

For millennia, psi events have been widely accepted as part of the human experience across many cultures. There is a lengthy literature on the performance of psi feats witnessed by credible people, and since the 1920s laboratories in university departments have replicated the phenomena to some extent. Consequently there has been a continued build up of historic, anecdotal and laboratory evidence for both anomalous communication and anomalous action at a distance.¹

The words that describe the phenomena covered by psi have changed over time and new words have been coined as theories about the phenomena developed. There is discussion amongst current theorists regarding the best way of defining and naming psi and the various effects associated with apparent evidence for the phenomena. This thesis is a philosophical (rather than psychological) discussion of psi, and I therefore draw in part on the work of the philosopher Stephen E. Braude as a guide to definitions and usage. Braude is a philosopher who has contributed significantly to discussion of psi and related philosophical issues. I also use the book *A Glossary of terms used in Parapsychology* by Michael Thalbourne as a standard for general definitions.

Psi is otherwise known as telepathy and psychokinesis. The former is anomalous communication and the latter anomalous action at a distance. Psi is commonly broken into the following elements:



¹ I outline the body of evidence for psi in Chapter 2 where examples of the historic, anecdotal and experimental evidence are provided.

I define the two types of anomalous phenomena that constitutes psi, ESP (and its three subcategories) and PK below.

Anomalous action at a distance – psychokinesis - PK

Anomalous action at a distance is thought to occur when matter is affected by a person without any known force or mechanism. The term psychokinesis, sometimes also known as telekinesis, is used to describe an event that appears to fall into this category. I will use the former term, which is often abbreviated to 'PK'. The target of PK can be an object outside someone's body or substances within the person's own body. To encompass both of these aspects of psychokinesis it is defined by Braude as:

the causal influence of an organism on a region *r* of the physical world without any known sort of physical interaction between the organism's body and *r*.
(Braude 1986, p220)

Importantly, PK is defined by what it is not; if something occurs that *cannot* be explained mechanistically by reduction to any of the four known forces then an instance of psychokinesis is thought to have occurred.

In the psi literature examples of evidence for PK are given on both the large, everyday macro scale and the micro quantum level. On the macro scale PK is evidenced by spontaneous cases such as those in poltergeist incidents in which objects appear to move without any known means. On the micro level anomalous action at a distance is measured by, for instance, the decay of an atom. I present more concrete examples in Chapter 2.

Anomalous communication – ESP - telepathy, clairvoyance, precognition

Anomalous communication is similarly defined negatively as the acquisition of information about a person or event in the past, present or future *without* the use of the ordinary five senses (taste, touch, sight, hearing or smell). The term extrasensory perception (abbreviated to ESP) is often used to cover the three forms of anomalous communication covered by this term. They are:

<i>Telepathy</i>	Information gained about another mind or minds without the use of the ordinary five senses.
<i>Clairvoyance</i>	Information gained about an inanimate object or event without the use of the five senses.
<i>Precognition/retrocognition</i>	Information about a person or event in the past (<i>retrocognition</i>), or future (<i>precognition</i>) without the use of the ordinary five senses.

All three types of ESP involve anomalous communication. The information is obtained either from another person, as in the case of telepathy, or from an object, as in the case of clairvoyance. Precognition and retrocognition are both time-displaced instances of either telepathy or clairvoyance, I refer mainly to precognition in this thesis as it is this form of psi-displaced psi that features more prominently in the literature. There are also more sophisticated discussions of the nature of ESP and its subsidiary categories differentiate between anomalous cognition and anomalous interaction (Braude 1979). It is also difficult to differentiate instances of telepathy and clairvoyance experimentally, which has caused one theorist, J.B. Rhine, to encourage the use of the term GESP (standing for General ESP) in order to account for general anomalous information acquisition. Specific examples of all three categories of ESP will be given in more detail in Chapter 2.

Psi researchers

The descriptions of people who are actively involved in psi research are also specific to the psi literature, so it is worth noting how they will be used in this thesis. In psi-oriented literature, proponents of the 'fraud hypothesis' (sometimes also referred to as the 'Null hypothesis') are referred to as 'skeptics'. Academics who actively research psi are often called 'parapsychologists'. However, because some academics who study psi are not psychologists and because some commentators on psi research are not academics and may include skeptics, I prefer the term 'psi researcher' to describe a person who has undertaken informed research into psi, regardless of their view.

Parapsychologists are usually not skeptics (why would anyone study a phenomena that they didn't believe existed?) and skeptics rarely undertake

scientific investigation of psi (for a similar reason), but skeptical parapsychologists do exist. They are sometimes called 'debunkers' as they often undertake to publicly critique the work of non-skeptical parapsychologists. In such forums sometimes these commentators are divided into 'believers' and 'skeptics'. Debunkers belong in the latter category and those that continue to research psi as a genuinely anomalous phenomena the former. Invective between the two approaches can sometimes be fierce and the terms 'believer' and 'skeptic' or 'debunker' have taken on a certain negative connotation depending on one's point of view.² Although overall I prefer to use the term psi researcher (or if the writer is not a researcher as such then 'psi commentator') sometimes context requires a differentiation between the various approaches to psi. In such instances I prefer the terms *pro-psi* and *anti-psi* to differentiate these points of view rather than 'believer' or 'skeptic' which can contain insinuations that are not intended in this thesis.

0.2 Use of the word psi

The word psi encounters some usage problems. It is an abstract word which is not well-known outside of the psi literature. Nor is it readily easy to pronounce without knowledge about its etymology. For instance, some people mistakenly pronounce it *pea-ess-eye* when they first encounter the word. Confusingly it is sometimes capitalised (PSI) and can be mistaken for pounds per square inch or quantum theory references to PSI. However, there does not seem to be any reason to revert back to the older terms for anomalous events and the word psi is certainly shorter and less cumbersome in comparison to more archaic terminology. I therefore continue with the tradition of using psi as an unassuming term to represent the notion that an experiment or experience has registered an anomalous event indicative of ESP or PK that apparently cannot be explained through normal means.

² I have been witness to such invective between the 'believers' and 'debunkers' of high academic status when I was a participant in an international parapsychology email discussion list. The list eventually devolved due to the list host's fears of libel charges (PRF 1998).

The word 'psi' is not new, it is the first letter of the word '*psyche*' in Greek. However, its use to describe what was once called psychic phenomena is relatively recent. 'Psi' was proposed for use in the area of psychical research by B.P. Wiesner and R.H. Thouless in 1942 to replace words such as 'psychic' or 'psychic functioning'. It was coined in order to avoid assumptions about what psi might be when little is actually known about its exact nature, or if it exists at all. It was hoped that, being more semantically neutral than previous terminology, any assumptions regarding the nature of the anomalous phenomena would be avoided. Thus, further unbiased investigation of the phenomena could then take place (Thouless 1972, p2; Thalbourne 1982, p56-57).

As a part of speech, the word 'psi' can be used by itself as a noun which refers to the apparent evidence for the anomalous phenomena previously described as 'psychic phenomena', 'psychic functioning' and 'psychic abilities'. Psi can also be used as an adjective to describes the anomalous nature of the apparent events or effects that are displayed when anomalous communication or anomalous action at a distance is thought to have occurred (Braude 2003, pxv). I adhere to the conventional use of the word in this thesis.

0.3 Status of apparent psi events

This thesis assumes that there is little familiarity with the body of evidence for psi in mainstream philosophy. The evidence is therefore outlined in some detail in Chapter 2 where it is shown that the body of evidence for psi is convincing enough to warrant examination. The phenomena are not easily explained away in normal terms, however, there is no dominant theory that has successfully accounted for the events. Accordingly the events can be best described as ostensibly paranormal. That is, they are currently unexplained, but not necessarily unexplainable (Braude 1979, p244). It will therefore be assumed for the purposes of this thesis that there is a putative body of evidence for psi which is comprised of evidence for what are most appropriately called *apparent psi effects* or *apparent psi events*. In order to keep the ensuing discussion of psi as semantically clean as possible I will not append 'ostensible' or 'putative' or 'apparent' before each mention of psi, psi

event or psi effect. These qualifications should be understood as implicit when psi is discussed in this thesis.

0.4 The psi debate

The psi debate is the main concern of this thesis and is its starting point. A small but persistent community of researchers think that the evidence for psi is worth investigating and that some kind of new, as yet undiscovered, explanation is required for the anomalous phenomena. This contrasts with the mainstream understanding of psi, which is to explain the evidence as either fraudulent, produced through flukes of coincidence, flaky experimental methodology or the product of self-deluded scientists. Currently the debate is at a deadlock.

Discussion between well-informed interested parties has not resolved the issue. This is evidenced by a 2003 publication of a special edition of *the Journal for Consciousness Studies* entitled 'Psi Wars'. In this issue various anti and pro psi proponents make clear their contemporary assessment of the state of play of the evidence for psi phenomena. In the paper 'Give the null hypothesis a chance' James E. Alcock, a skeptical parapsychologist, concludes that

Thus, the search for psi will go on for a long time to come, for I can think of nothing that would ever persuade those who pursue it that the Null hypothesis is probably true. Yet, as this search goes on, those of us who are sceptics should applaud and support the approach taken by parapsychologists who have contributed to this Special Issue—not because we agree with their conclusions, for we shall continue to scrutinize and, when appropriate, find fault with their methodology and challenge their interpretations—but because they share our belief in the power of the scientific method to reveal truth in nature. I do marvel at their tenacity, however, for they labour in search of psi despite a lack of the evidentiary and other rewards that are earned by mainstream scientists in their research... I continue to believe that parapsychology is, at bottom, motivated by belief in search of data, rather than data in search of explanation. It is the belief in the larger view of human personality and existence than is accorded to human beings by modern science that keeps parapsychology engaged in their search. Because of this belief, parapsychologists never really give the Null hypothesis a chance. (Alcock 2003, p49)

In contrast, another paper in the same issue by Simon Sherwood and Chris A. Roe entitled 'A review of dream ESP studies conducted since the Maimonides dream ESP programme' concludes that:

Our review has shown that dream ESP remains a promising, if somewhat neglected, area for parapsychological research. Combined effect sizes for both Maimonides and post-Maimonides studies suggest that judges may be able to correctly identify target materials more often than would be expected by chance using dream mentation. There is evidence of conceptual replication within both sets of studies, although this

seems to be concentrated within certain research teams... We hope that this review will help re-awaken interest in this neglected but promising paradigm.
(Sherwood and Roe 2003, p106)

There is obviously apparently little agreement amongst those who debate the topic within the parapsychology literature. The question that concerns me is: how can there be two such disparate views regarding the same body of evidence? There appears to be an unbreachable divide between those who consider the evidence for psi plausibly indicates a genuinely anomalous phenomenon and those who maintain that these people are self-deluded or mistaken. Reasoned discussion between the two parties, as represented in joint publications such as those quoted above, does not appear to be able to resolve the differences one way or the other.

In general there seems to be a resignation that the various proponents must just 'agree to disagree' as to what to make of the evidence. However, I think the lack of resolution to the dispute is harmful to both parties. If anti-psi proponents are correct then psi researchers are wasting time and money investigating a phenomenon that doesn't exist; if the pro-psi proponents are correct then mainstream science and philosophy is missing out on investigating new phenomena that are intriguing and, though anomalous, have the potential to impact significantly on contemporary theories of mind, time and causation.

The situation in the philosophical literature mirrors the debate in parapsychology. For instance Stephen E. Braude, a philosopher who has made a significant contribution to psi research, argues convincingly for the legitimacy of the evidence for psi in two of his earlier books: *ESP and Psychokinesis: A Philosophical Examination* (1979) and *The Limits of Influence: Psychokinesis and the Philosophy of Science* (1986). And he has more recently published another book *Immortal Remains* (2003) in which he draws on his earlier work to maintain that in response to the question "Do human beings have psychic (psi) abilities (ESP or PK)?...we can confidently answer "yes"" (Braude 2003, p2). He goes on to justify this answer and comments that it did not come easily, rather:

...researchers faced imposing and interesting problems concerning the nature and reliability of human testimony, and subtle and technical puzzles about randomness and probability. They've also had to confront a recalcitrant and incredibly annoying problem: namely, that if psychic abilities exist, then by their very nature they could elude all conventional experimental controls. (Braude 2003, p2)

The account he gives of the state of psi research is informed and reasonable. According to Braude it is apparent that, though difficult to come to terms with, the evidence (both anecdotal and to a less degree experimental) is convincing. The philosophical issues that are raised by the evidence have the potential to impact on theories of mind, causation, time and survivalist research. However, as I show in much more detail in the first chapter, the mainstream philosophical understanding of psi continues to propound that there is nothing to discuss because, it is asserted, fraud can reasonably account for the phenomena. The inspiration for this thesis stems from the desire to understand how to resolve the apparently unbridgeable gap between the mainstream view and the psi-oriented philosophical literature, which advocates that the body of evidence for psi is reasonably indicative of evidence for genuine anomalous events.

I think that it is more than a matter of an epistemic assessment of the body of evidence for psi. If the debate were so easily resolved the issue would not continue to be problematic today. Instead I maintain that the situation will remain unresolved until the background issues that inform the various stances are examined. I am therefore concerned with both the representation of psi in mainstream philosophy as well as the work that has been undertaken in the psi-oriented literature. I draw on both during the course of this thesis to come to a better understanding of how to close the gap between these disparate views.

0.5 Structure of *Beyond Beliefs*

In this thesis the initial assessment is grounded in philosophy by starting with an analysis of the dominant philosophical arguments regarding psi. In Chapter 1 the arguments are outlined and critiqued. It is shown that conservative explanatory considerations illicitly inform the arguments; the arguments are also shown to be pre-emptive inferences to the best explanation.

A case is made for a three-stage re-analysis in the form of a revised Inference to the Best Explanation, which is subsequently undertaken in the remainder of the thesis. The following chart indicates the stages in the thesis where the re-evaluation take place:

IBE stage	Section of thesis	Brief content summary
Stage 1 - E Evidence	2.2	Outline of evidence and theory, discuss issue of testimony
Stage 2 - $\{H_1, \dots, H_n\}$ Compilation	2.6	Compile the hypotheses based on current psi theory and comparison to the hard problem of consciousness
Stage 3 - H_n Process of selection	Chapter 3	Discuss background beliefs, present the historic account
	Chapter 4	Discuss competing hypotheses
	Chapter 5	Discuss dominant hypothesis
	Chapter 6	Compare remaining hypotheses

In more detail, the content of the chapters flows as follows:

Part I – Chapters 1-3

Part I sets the scene for the discussion in Part II and grounds the topic in philosophy.

<i>Ch. 1 Terra Incognita</i>	The mainstream philosophy arguments are analysed and critiqued. It is shown that the arguments are informed by explanatory assumptions. The result is that ‘unknown territory’ is opened up because the evidence for psi cannot now be automatically ascribed to fraud. An argument is made for a 3-stage re-analysis of the situation.
<i>Ch 2 Evidence and Theory</i>	The evidence and theory are presented. The hypotheses are compiled and the psi debate is recouched as the ‘psi hypotheses discussion.
<i>Ch 3 Shifting Sands</i>	The history of the explanation of psi is examined, the historic account is presented and an argument is made against the Supernatural hypothesis.

Part II – Chapters 4-6

Part II continues the discussion of psi using contemporary issues in philosophy of science to help understand how to develop the discourse between the remaining competing hypotheses (the Skeptic hypothesis and the two psi realist hypotheses).

Ch 4 Boundless Sea

The remaining hypotheses are examined using a contemporary example – the analysis reveals that competing research traditions inform the contemporary discussion.

Ch 5 Explanation

Explanation issues that inform the research traditions are examined and a case is made that an out-moded explanation theory (the covering law model) still informs the mainstream assessment of psi.

Ch 6 Terra Firma

The psi explananda are recast and the competing hypotheses examined using relevant issues in contemporary explanation theory. The new territory is sketched out using contemporary explanation theory. The thesis concludes leaving the philosophical discussion regarding psi on firmer explanatory ground.

A more detailed summary of Part I follows before Chapter 1 commences a critique of the mainstream arguments for psi.³

³ I have appended a glossary of terms especially relevant to this thesis. It includes definitions for psi phenomena and related issues that have been covered in this chapter.

Part I: Chapters 1-3

Oh, you should never ever doubt what nobody is sure about.

Willy Wonka

The main aim of Part I is to set the scene for a discussion of psi hypotheses in Part II in relation to explanatory issues in philosophy of science. The conceit that runs through the thesis is to take the reader on a journey from the *Terra Incognita* in Chapter 1—the unknown explanatory territory that is revealed after a critique of the mainstream assessment of psi—to the more grounded *Terra Firma* in Chapter 6. The chapters in between explore the explanatory issues that are relevant to psi as new explanatory territory is mapped out.

Chapter 1 commences with a critique of the philosophical arguments for psi which I show are problematic on a number of counts: failure to consider the evidence; inappropriate invocation of explanatory conservatism; and failure to acknowledge relevant background beliefs. I also show that there has been a failure to recognise the structure and logic of the arguments as Inferences to the Best Explanation. I use the latter point to argue that if an assessment of psi is to be a legitimate Inference to the Best Explanation, then the outline of the evidence, the compilation of hypotheses and process by which the ‘loveliest’ is selected require re-analysis.

The first two of these tasks are undertaken in Chapter 2 in which I outline the three types of evidence for psi. Theories that have been proposed to account for the phenomena are also summarised. I then re-analyse the psi debate in terms of a similar discussion in philosophy: the hard problem of consciousness. Four psi hypotheses are identified: the skeptic hypothesis, the supernatural hypotheses; and two realist accounts. The psi debate is thus recouched as a ‘psi hypotheses discussion’, which allows for more productive philosophical discussion of psi and related explanatory issues.

In Chapter 3, I examine some of the background beliefs that have informed the mainstream assessment of psi. In particular I show how changing explanatory schemes have historically accounted for psi phenomena as supernatural. I make a case against the supernatural hypothesis on the basis that most of the phenomena exhibited are mundane.

By the end of Part I there are therefore three competing hypotheses: the skeptic hypothesis; and two psi realist hypotheses. The competing stances form the focus for the discussion in Part II of the thesis where further explanatory issues are dealt with in more detail.

Chapter 1: **Terra incognita**

Faced, accordingly, with a paucity of solid fact-let alone laws- in parapsychology, one who tries to discuss its philosophical implications cannot help feeling that he is standing on spongy ground. Perhaps it is most appropriate to regard those implications neither as philosophical truths or probabilities nor as philosophical proposals, but as philosophical questions.

James M.O. Wheatley

This chapter examines the dominant arguments in philosophy which deal with psi phenomena. These are the Explanation by Fraud Argument (EFA) and the Humean-based Modern Miracle Argument (MMA). The former focuses on the Australian philosopher Keith Campbell's version and the latter on the case made by George Price in 1955. The arguments represent the most comprehensive examples of philosophical assessment of psi in relatively contemporary mainstream philosophy. Their impact on the mainstream philosophical assessment of psi has been profound and yet there is little discussion about the arguments themselves in that forum.

Firstly, I critique the arguments separately: I detail issues about explanatory conservatism that inform the Explanation by Fraud Argument; and I show the Modern Miracle Argument is problematic and requires an update. Secondly, the two forms of argument are considered together in a generic form, and an argument is made that the argument for psi as best explained by fraud falls to an overarching criticism: it is an illegitimate, Pre-emptive Inference to the Best Explanation (PIBE). The term PIBE is subsequently defined and described.

Two conclusions are drawn from the analysis of the mainstream psi arguments: firstly it is concluded that a more complex approach to understanding psi is warranted; and secondly the analysis is used to flag the issues of explanation and background belief, that are important to the development of a more sophisticated analysis of psi phenomena. Chapter 1 thus sets the scene for the analysis of psi and related explanation issues, which is then undertaken during the course of the thesis.

The exploration of explanatory issues that ensues in following chapters helps to resolve the tension between the apparent body of evidence for psi and the current lack of a tenable explanation for the phenomena, which is at the core of the psi debate and therefore of central concern to this thesis.

1.1 Psi arguments in mainstream philosophy

Arguments about psi phenomena are rarely made explicit in contemporary philosophy. Instead, it is assumed that although potentially relevant to philosophical issues, there is no evidence for psi and accordingly, further discussion of psi should not be undertaken⁴. As a result psi is often invisible in mainstream philosophical discourse. I show in Chapter 2 that there is a significant body of evidence for psi that does require an assessment. It is curious how the gap between the mainstream assessment of psi and body of evidence has occurred, hence it is important to analyse the mainstream arguments in philosophy that have given rise to the notion that there is no evidence for the phenomena. I suggest that behind the assertion lie two main arguments which show how this conclusion was reached. They are important because they are the dominant arguments in philosophy and have had an ongoing effect on the mainstream assessment of psi phenomena. I show both the Explanation by Fraud (EFA) and Modern Miracle Argument (MMA) suffer from similar problems due to assumptions about the explanation of psi. I critique the structure, set up and conclusions of both the arguments separately starting with the Explanation by Fraud Argument (EFA) in the subsection below.

1.1.1 Explanation by fraud (EFA) argument

The EFA asserts that psi phenomena are most rationally explained as the product of deliberate fraud or self-delusion. The argument has been most clearly put forward by the Australian philosopher Keith Campbell, who is concerned with the evidence for psi as part of a discussion of the mind/body problem published in his book *Body and Mind*. He writes:

the Mind-Body problem requires for its solution a judgement on parapsychology, and that in turn raises general questions in philosophy, and in particular epistemology (Campbell 1984, p95)

⁴ For instance, the following quote is taken from a general text book on philosophy of mind:
...If there were such [psi] phenomena, then existing physical theory would certainly appear to be inadequate. But there is no evidence of such phenomena (or so most current philosophers of mind assume). Moreover, even if there were, it is unclear how it would bear upon the explanation of vast amounts of perfectly normal human and animal behaviour when such evidence seems even less likely to arise. (Rey, 1997, p72)

He then goes on to say that:

We must confront the problem of how evidence can have weight, and this raises the question of fraud. The problem of fraud is that we know men can, and do, cheat and dissemble, but we do not know that they have paranormal capacities. On the contrary, the great weight of our fully attested knowledge of man's origin and constitution makes paranormal capacities extremely unlikely. So for any result in psychical research which can be explained either by appeal to paranormal powers or by the hypothesis of fraud, the explanation by fraud is the more rational one.
(Campbell 1984, pp94-95)

And finally that:

Only repeatability can eliminate the hypothesis of fraud. If the subject can repeat, or nearly repeat, his paranormal feat for anybody, at any suitable time, in any suitable place, under conditions which any independent experimenter is free to vary at will, with assistants whom the experimenter can choose, then fraud can be excluded as an explanation of the events. (Campbell 1984, p96)

In point form, the argument runs as follows:

PROBLEM:	When presented with the evidence for psi
SET UP	'we must confront the problem of how evidence can have weight.'
PREMISE 1	'we know that people can and do cheat and dissemble.'
PREMISE 2	'we do not know that they have paranormal capacities' (in fact paranormal capacities are extremely unlikely).
CONCLUSION	the 'explanation by fraud is the more rational one.'
CAVEAT	unless the repeatability problem is addressed.

I have called Campbell's argument the Explanation by Fraud Argument (EFA) because of its concluding statement: 'the explanation by fraud is the more rational one'. At first glance, it is reminiscent of Hume's miracle argument. That is, one must choose between something that is thought to contravene the laws of nature (highly improbable or unlikely) and something that one knows for sure (that people tell lies) and therefore one should question the source of the improbable events rather than believe the former occurred. At this stage of the analysis I treat Campbell's version as a standalone argument because he does not make any reference to Hume's work⁵. In

⁵ As the other argument I focus on in this chapter, George Price's Modern Miracle Argument, specifically references the Humean argument I will deal with issues of concern regarding the modern rendition of Hume's argument in the next section.

the following analysis of the EFA I show that there are important issues about explanatory conservatism that guide the set up and structure of the EFA argument which warrant further investigation of psi phenomena in relation to explanatory issues.

The EFA premises

It is hard to quibble with either of the premises. We definitely know that people do lie and cheat and can be deluded unwittingly from our own personal experience. It is also easy to confirm that psi is considered unlikely by mainstream science. Mainstream dictionaries and encyclopaedias define psi as anomalous in the strictest sense, and hence paranormal (Mautner 1996, p310, Blackburn 1994, p277)⁶. Therefore neither of the premises of the EFA argument are controversial statements. Instead it is the set up and structure of the argument which I will focus on in this critique.

The EFA set up

It is the set up to the premises that gives the first clue as to the hidden explanatory concerns that might be informing the argument. Campbell says 'We must confront the problem of how evidence can have weight' (Campbell 1984, pp94) which indicates that he believes that the evidence is significant enough to warrant examination. But directly after this statement he introduces the premise which states that we know people cheat and dissemble. Such a manoeuvre is problematic because it suggests that between the set up and the first premise lie certain assumptions about the evidence itself. The statement in the first premise is not an assessment of the actual weight of the evidence as promised in the set up of the argument. I suggest that there are other questions that could be asked and should be answered prior to the introduction of the fraud premises. For instance Campbell could ask:

⁶ In fact one such definition from the *Penguin Dictionary of Psychology* starts off with a rather acerbic comment on parapsychology which they defined as a 'more or less (with the emphasis on the *less*) accepted branch of psychology concerned with paranormal phenomena...' (Reber 1985, p517). The definition finishes up by advising want-to-be psi researchers to fund their research by using psychics to help them win at casinos and the race track—an absurd proposition.

What evidence is there for psi?

or,

Does the evidence for psi conform to current scientific standards?

There are also more complex questions that could reasonably be posed regarding the weighing up of probabilities in regard to fraud:

When does the evidence for an anomalous phenomenon such as psi outweigh the improbability of it?

How do we make an empirical judgement on what is considered anomalous phenomena?

How much cheating and dissembling can we reasonably postulate in order to explain the evidence in such a manner?

Campbell does not give any reason why he introduces the cheating and dissembling premise upfront without addressing any of the issues regarding fraud and psi explicitly. The introduction of the first premise without discussion is therefore presumably based on assumptions regarding the nature of the evidence for psi as anomalous. The EFA is then a circular argument based on the formally defined nature of the phenomena rather than an assessment of it per se.

It is important to realise the gravity of what is being proposed when it is suggested that fraud can account as a blanket explanation for the entire body of evidence for psi. The issue of fraud as an explanation for psi is well covered in psi literature. Some 14 years prior to the first publication of Campbell's book in 1970 it was noted that for fraud to be a reasonable hypothesis to account for the evidence one must 'believe that all parapsychologists are liars and montebanks but such a charge...' even if applied 'to the dozens of university and other scientists involved, is not likely to be taken seriously.' (Rhine 1956, p11) There is a body of evidence for psi⁷ which, although controversial, can be analysed in terms of scientific validity as any other evidence is in science. A genuine weighting of the evidence for psi indicates that the situation is more complex than that which is assumed by proponents of the Explanation by Fraud Argument.

⁷ Once again I remind that if the reader is unfamiliar with what constitutes the body of evidence for psi it is set out in some detail at the beginning of Chapter 2.

Psi has been studied using appropriate scientific methods that are acceptable to mainstream scientific processes⁸. The results are controversial because overall the experiments indicate that psi effects occur in the lives of regular people and they are confirmed to a certain extent in small scale replications in laboratories. I suggest that it is unreasonable to ascribe fraud as an explanation for the phenomena without taking into account how much fraud must be required in order to provide a satisfactory explanation for the phenomena. The fraud hypothesis becomes absurd (not to mention potentially libellous) once it is considered just how much fraud or lying or cheating or dissembling must take place in order for it to be a reasonable assessment of the case in hand. It is because arguments such as the EFA assume fraud without explicit assessment of the evidence that I think there is a deeper undercurrent informing the argument.

To underscore this point further, I will now review a similar contemporary example where there is debate and discussion regarding evidence. Global warming has been the topic of much debate amongst the scientific community and philosophers in recent years. It is similar to the psi debate because there are two sides to the debate: those that believe some scientific data indicates human activity is causing global warming and those who disagree with this statement and yet draw on the same body of evidence regarding the climate. The latter are often referred to as 'global warming skeptics' which is also indicative of a similarity to the psi debate.

The discussion regarding climate change has been the subject of philosophical investigation. For instance, in a paper called 'Scientific basis for the greenhouse effect' William R. Cline outlines the scientific evidence and analyses the data taking into account the views of scientists who propose various interpretations of the ultimate cause of the current fluctuation of the earth's temperature. In the end he concludes that 'it should be clear from this review that many scientific uncertainties remain about the greenhouse effect. However, uncertainty is not necessarily grounds for policy inaction' (Cline 1991, p916). The paper is indicative that a thorough assessment of the state of the global warming debate has been undertaken: the author performs an evaluation of the evidence available from scientific journals; and the

⁸ Assessments of psi in relation to scientific method have been performed on an ongoing basis since the controversy regarding modern day experiments first commenced. I mention some specific details in Chapter 5. For a recent summation of the history of the scientific study of psi and the status of the evidence can be found, for instance, in Adrian Parker's article 'Does psi exist?' in the *Journal of Consciousness Studies*' special issue on psi: *Psi Wars*.

article then goes on to compare the different interpretations of evidence; and finally, provides a summation of the situation. The weighing up of the evidence of the global warming debate is based on an analysis of issues relevant to philosophy of science, such as the problems of weighing up and the problematic nature of interpreting data in relation to theory development.

The examination of the global warming debate is in sharp contrast to the EFA argument, which also requires a weighing up of disputed evidence in a field of scientific inquiry. It is hard to imagine that a philosophical assessment of the climate change debate would, instead, mount a similar argument to the EFA. For instance, it would be considered rather absurd to contend that 'we know that people cheat and dissemble' and 'we are unsure if there is global warming' so therefore 'there is no global warming.' And yet that is exactly what the Explanation by Fraud Argument proposes is a reasonable response regarding the evidential issues that the body of evidence for psi raises. According to the EFA there need be no discussion of the pertinent issues in philosophy pertaining to an evaluation of the evidence for psi.

Despite this problem the Explanation by Fraud Argument has remained dominant and accepted by mainstream philosophy as the most rational response when it is required to make a decision about the body of evidence for psi⁹. But is it? I suggest that it is not. No, there are beliefs that inform the set up of the premises of the argument regarding psi that are specific to the phenomena and which are not reflected in other philosophical investigations of contentious debates in science. I explore these beliefs further in the section below.

Conservative explanatory concerns - E_n and E_ψ

I argue that that the set up of the premises of the Explanation by Fraud Argument is informed by a predisposition to a conservative approach to explanation in the sciences which is problematic. To illustrate this I suggest that when mainstream philosophers consider psi, they are really making an assessment which chooses one of two possible outcomes:

⁹ Cotemporary mainstream philosophers often re-iterate that 'there is no evidence for psi' even if they don't reference the EFA specifically. I make more specific mention of some statements in philosophy of mind that maintain this stance later in the thesis.

either

E_n - psi cannot be explained currently as a natural phenomenon therefore the fraud hypothesis is the most rational

or

E_ψ - psi does not fit into current scientific theory, but, given the apparent evidence, some kind of explanation is required regardless of the ontological outcome

The Explanation by Fraud Argument assumes the former, which is indicative of a conservative explanatory approach to psi phenomena. However, I showed that philosophical discussion of the climate change debate used current theory in philosophy of science to make an assessment of the relevant issues. I contend that psi is just as worthy of considered analysis as any other discussion regarding evidence in the sciences. The evidence should be examined and weighed in relation to current issues of explanation and measurement and broader issues of scientific process and progress as part of the analysis.

It is not possible at this stage to determine whether E_n or E_ψ is the most rational assessment of psi. If, just say, E_ψ is true then the conservative explanatory approach is not appropriate and therefore less reasonable than if E_n were true. I argue therefore that an assessment of the phenomena should be made when the comparison between the fraud hypothesis and other explanatory options are taken into consideration.

EFA conclusion

To sum up, there is a greater puzzle regarding the anomalous nature of a phenomenon for which there is substantial (if controversial) evidence. We do want to be able to differentiate between the truly impossible (that the moon is made of green cheese for example) without writing off the possible existence of ostensibly paranormal phenomena in the face of reasonable epistemic plausibility.

I argue then that rather than invoke the fraud hypothesis up front we should consider: When is it really more rational to believe that fraud can account for the body of evidence for psi rather than accept the possibility that the evidence might be indicative of another, as yet unaccepted, method of interaction between humans and the world? At this point in time the psi debate indicates that there are various alternatives to the E_n outcome. The Explanation by Fraud Argument must therefore be

considered as only one of other equally plausible assessments, which all require further refinement and discussion before it can become clear which is really the most reasonable. I explore and examine this issue further in the following chapters: The theories that have been developed to explain psi are explored in Chapter 2; and the anomalous nature of psi is explored in an historic context in Chapter 3. Finally an analysis of the Explanation by Fraud Argument, renamed the skeptic hypothesis, is compared to other possible hypotheses and is assessed in relation to issues in contemporary explanation theory in Chapter 6.

I have shown that conservative explanatory assumptions have guided the set up of the EFA. Next I will discuss the other form of argument which is dominant in the literature, the Modern Miracle Argument (MMA). Then I will show that both the EFA and the MMA suffer from more explanatory problems regarding Inference to the Best Explanation.

1.1.2 Modern Miracle Arguments (MMA)

As I mentioned earlier, Keith Campbell's Explanation by Fraud Argument is reminiscent of Hume's miracle argument. Therefore it is not surprising that philosophers have made a similar argument, but in direct reference back to the Humean form of the argument. I have called these the Modern Miracle Arguments (MMA).

The first Modern Miracle Argument was presented by George Price and published in *Science* in 1955. Another version was published 25 years after this by Anthony Flew in 'Parapsychology: Science or pseudoscience?'. Price himself acknowledges that the argument form is not new and long predates even Hume's famous miracle version. He references a similar argument to the Greek writer Lucian (Price 1955, p360). Price's version is more comprehensive than Flew's, so it will be used as the basis for the analysis of Humean-style miracle arguments.¹⁰

¹⁰ I make mention of Price's article later in the thesis when, in Chapter 5, I show that the timing of the publication of Price's MMA argument coincides with the time the covering law model of explanation became dominant in philosophy of science.

George Price's Modern Miracle Argument

In a paper called 'Science and the supernatural'¹¹ George Price states that after reading Hume's 'miracle argument' he 'converted' from being an avid believer in ESP to a non-believer, or radical skeptic (Price 1955, p360). George Price wrote that it is his:

opinion concerning the findings of the parapsychologists that many of them are dependent on clerical and statistical errors and unintentional use of sensory clues, and that all extra chance results not so explicable are dependent on deliberate fraud or mildly abnormal mental conditions. (Price 1955, p360)

Further to this, Price formulates his argument in the light of Hume's miracle argument (more on this shortly) and adopts a similar position with regarding psi phenomena. He shows that psi is incompatible with current scientific theory by accepting an analysis by the philosopher C.D. Broad. He cites a paper first published in 1949 in which Broad showed that the evidence for psi, if accepted as real, conflicts with Basic Limiting Principles (BLPs) which are fundamental to scientific concepts of mind, space, time and causality (Price 1955, p360). To further support this assertion George Price also quotes J.B. Rhine (a psi researcher from the 1920s who famously brought the study of psi into universities in the USA) as saying that even those who are actively researching psi phenomena believe that 'Nothing in all the history of human thought—heliocentrism, evolution, relativity—has been more truly revolutionary or radically contradictory to contemporary thought than the results of the investigation of precognitive psi' (Rhine in Price 1955, p361).

Price accepts these analyses and consequently argues that parapsychology and 'modern science' are incompatible. In Humean style he whittles his choices down to either believing in something 'truly revolutionary' and 'radically contradictory to contemporary thought' on the one hand and on the other, believing in the occurrence of fraud and self-delusion. He opts for the latter because 'all our experience suggests that it will be more profitable for us to assume that the old generalizations are still valid, and that the findings of the parapsychologists are to be explained on the old, familiar basis of human error' (Price 1955, p361).

¹¹ The use of supernatural rather than paranormal in the title is interesting and indicative of lack of agreement in the literature regarding psi's explanatory status. I deal with this issue when I present the historic account in Chapter 3.

So, in point form, for George Price:

PROBLEM	When presented with the evidence for psi, which looks at first glance convincing, we must remember that:
SET UP	Psi effects are incompatible with the nine 'basic limiting principles' (supported by Broad's discussion of psi and BLPs and Soal's and Rhine's work).
PREMISE 1	We must choose between believing something 'truly revolutionary' or that fraud and self-delusion occur.
PREMISE 2	Know for certain that fraud and self-delusion do occur.
CONCLUSION	Therefore there is nothing concrete to the evidence—even if it appears as if there is (as it initially did to him).

This stance has become known as the 'Humean Skeptic' position due to the Humean foundation of a modern argument which advocates skepticism regarding psi phenomena. The MMA will now be discussed and the issues pertinent to the psi debate teased out. Price's argument will be compared to Hume's original miracle argument. Then the response to Price's argument put forward by Paul Meehl and Michael Scriven is discussed. Finally, I show that some of Broad's Basic Limiting Principles do not currently hold and it is argued that the use of unchanging certainties in order to formulate a response to psi is problematic.

The MMA and Hume's miracle argument

In this section I compare Hume's miracle argument with Price's modern version. I show that because they involved different forms of testimony, psi cannot be substituted for miracles and that it is problematic to rely on a list of unchanging certainties.

In the original miracle argument Hume states that 'a miracle is a violation of the laws of nature, and as a firm and unalterable experience has established these laws, the proof against a miracle, from the very nature of the fact, is as entire as any argument from experience can possibly be imagined' (Hume 1817, p114). He uses this reasoning to develop the 'general maxim': 'No testimony is sufficient to establish

a miracle, unless the testimony be of such a kind that its falsehood would be more miraculous than the fact which it endeavours to establish; and even in that case there is a mutual destruction' (Hume 1817, p115). So for Hume, when confronted with events that appear to contravene the laws of nature (so-called miracles) it is sensible to believe they are the product of fraud or delusion rather than entertain the possibility that a genuine supernatural event occurred. Hume goes on to give us an example of how his 'everlasting check' for should be employed, Hume warns

when anyone tells me, that he saw a dead man restored to life, I immediately consider with myself, whether it be more probably, that this person should either deceive or be deceived, or that the fact, which he relates, should really have happened. I weigh the one miracle against the other; and according to the superiority, which I discover, I pronounce my decision, and always reject the greater miracle. If the falsehood of his testimony would be more miraculous, than the event which he relates; then, and not till then, can he pretend to command my belief or opinion. (Hume 1817, pp115-116)

The power of this argument is substantial, for it makes a case that no matter what testimony one is provided with it is forever doubtful that a miracle did actually occur.

In George Price's rendition of the argument, psi is substituted for miracles, Basic Limiting Principles for laws of nature, and a similar conclusion is drawn when faced with the choice between the perceived certainty of the Basic Limiting Principles and the unknown nature of psi. It is evident that the formulation of Price's argument adheres strictly to the original Humean miracle argument.

I do not want to delve into the controversy surrounding the assessment of Hume's original miracle argument, as a review of this literature is far beyond the scope of this thesis, but I will mention briefly the analysis performed by the philosopher Terence Penelhum who is both a Humean expert and, unusually, aware of the modern renditions of the argument pertinent to psi. Penelhum maintains that:

Parapsychological evidence challenges firmly entrenched assumptions. Those who doubt these assumptions may welcome this evidence, and choose to ignore the power of Hume's argument that all the experience that has caused us to make them weighs against the testimony on which the evidence rests. I think this is an irresponsible attitude. But those on the other side who are unwilling to entertain the possibility that there are more things in heaven and earth than our assumptions permit us to believe in, have to stare down the high quality of some of the testimony, and insist it must always be due to error or fraud. I think this looks like foolishness also. (Penelhum 2003, online)

Penelhum advocates an open-minded approach to parapsychological evidence, one that allows for the possibility that the evidence has been fraudulently produced but one which also questions whether or not science is able to deal with the apparent phenomena indicative of psi effects. He concludes that:

A rational mind (Hume's wise person) should not move to resolve the conflict too hastily. It is essential in the first place to be sure that the quality of the testimony meets the highest standards possible. It is also necessary to consider very carefully whether the scientific knowledge we already have may perhaps show that even if the phenomena are genuine, they can be accommodated within the laws of nature as we understand them. If they cannot, the pressure to uncover fraud or error in the testimony will grow, and although this pressure is often offensive and due to inertia or bigotry, it is still healthy. (Penelhum 2003, online)

He bases his conclusion on an analysis of the Humean version of the argument as he accepts that because miracles and psi both contravene laws of nature and require testimonial evidence the modern version is legitimate. Penelhum thinks that Hume's 'general argument requires us to recognise that there might be situations in which a 'proof' from prior experience collides with a 'proof' from impeccable testimony' (Penelhum 2003, online). And in the case of psi this state is potentially obtainable, whereas in the case of miracles it is theoretical only.

However, I think that there is a stronger case to be made against the modern interpretation of the Humean-style argument and that substituting psi for miracles is problematic because the strength of the testimony is different. I will focus now on Price's argument and the use of the miracle argument as a template for his psi version of the argument. I start the analysis by questioning whether or not this is a legitimate manoeuvre.

Miracles and psi are not interchangeable

As noted briefly before, Hume limited his discussion to weighing up *testimonial* evidence and more pertinently testimonial evidence that was reported by witnesses of events that had happened either in the past (such as biblical miracles) or in far off places (Penelhum 2003, online). The evidence for psi, even in George Price's time, is more complex and involves more than historical human testimonial evidence. There is historical testimony for evidence for psi, but there are also both laboratory evidence, which is a body of experiments that have yielded small but significant results, along with continued reports of spontaneous psi on a larger scale that have been collected into catalogues of anecdotes (examples of which will be presented in Chapter 2).

All forms of evidence can be considered 'testimonial' in some sense, but there is a difference between the type of testimonial evidence that Hume referred to and the body of scientific evidence for psi. Compare, for instance, the testimony of a friend who relates they experienced ESP with their twin sister when a young child to that of

a psychological study which undertakes analysis of ESP between twins. The first is based on personal experience and recollection of that experience. The memory could be faulty or faded or perhaps the initial assessment of the situation, from a child's perspective, too credulous. In contrast, a psychological study of ESP between twins would be undertaken within the bounds of accepted psychology methodology and scientific practice. The paper that provided the details of the experiments would also be evaluated and discussed in scientific peer-reviewed journals.

Price does not differentiate between the different forms of evidence that the body of psi literature contain (historic, anecdotal as well as experimental). And although all forms of evidence are testimonial to some degree there are significant differences between historic testimony and scientific testimony that should be taken into account when analysing the body of evidence for psi. I therefore argue that unless Price is to limit his assessment of psi to historical testimony of evidence then psi cannot be automatically substituted for miracles in his revised modern version of Hume's miracle argument. (I discuss further the difference between scientific, anecdotal and historic testimony in Chapter 2).

The Meehl and Scriven challenge

Price's 1955 paper elicited a response from prominent psi researchers and theorists. I will cover these responses in more detail later in the thesis as I want to focus on the structure of the argument in this early chapter where I am laying the foundations for the discussion that follows. I will therefore concentrate on a reply regarding the philosophical content of the argument which is most pertinent to the analysis at this stage of the thesis. It was written by Paul Meehl and the philosopher Michael Scriven who were mentioned in Price's initial paper.

Meehl and Scriven claim that to maintain Price's argument there are two points that must hold: that psi is incompatible with modern science; and that modern science is complete and correct. If either of these cannot be upheld, they maintain, then the argument is left without a basis for the conclusion that all evidence for psi must have been obtained through fraudulent or mistaken means (Meehl & Scriven 1956, p 14). There are not many (if any) people who would be prepared to contend that modern science is complete and correct. Therefore, they believed, that they had invalidated Price's argument by refuting at least one of the premises. 'In our view'

they contend ‘both of Price’s hypotheses are untenable. Whatever one may think about the comprehensiveness and finality of modern physics, it would surely be rash to insist that we can reject out of hand any claims of revolutionary discoveries in the field of psychology’ (Meehl & Scriven 1956, p14). I agree that Price cannot assume that the Basic Limiting Principles that he relies on will be maintained *ad infinitum* and I will take up this point further in the next section; for now, I suggest that the Meehl and Scriven counter argument does not do justice to Price’s original argument.

There is no need to maintain something as controversial as ‘science is complete and correct’ in order to validate Price’s argument. Although it is never seen spelled out as such (since it may be implicit in the argument), it appears that Price need only maintain that science is complete and correct *enough*, in order to uphold that the possibility of something like psi existing is nil – or as close to nil as makes no difference. However, this forced concession also reveals a small chink in the armour through which can be pursued an argument against Price. Namely, that if the evidence for psi ever becomes persuasive enough to warrant attention then it should be further investigated.

The conclusion I come to on this basis is similar to Penelhum’s. It is sensible to keep an eye on the evidence with the fraud hypotheses in mind, but also to allow for the possibility that the evidence is indeed legitimate. Price’s argument is then weakened so that it is not so much an ‘everlasting’ check as an immediate check that should be reviewed over time.

C.D. Broad's Basic Limiting Principles

In the set up to his argument Price refers to an analysis by the philosopher C.D. Broad which he uses to support his contention that psi is incompatible with modern science. Price argues that the evidence for psi is incompatible with Broad’s list of Basic Limiting Principles (BLPs) and it is on this analysis that his ultimate conclusion rests. He then uses the structure of the Humean miracle argument to bring about his final conclusion. Price makes the claim that ‘psi contravenes BLPs’ in the same way as Hume maintains that ‘miracles are violations of the laws of nature’. This is problematic because the BLPs have not been upheld as Broad anticipated.

Broad’s analysis of psi and Basic Limiting Principles is one of the most commonly cited assessments of the anomalous nature of psi by a philosopher. And as

I have shown it is used as the foundation for one of the main arguments involving psi, it is worthwhile going back to the original work done by Broad to make a more contemporary assessment of the analysis.

Broad defined a paranormal phenomenon, such as a psi event, as one that defied one of at least nine Basic Limiting Principles. His work was instrumental in setting out the ways in which psi defied the commonly accepted limitations of time, space and causal laws which, according to him, physics determined were unchanging. For Broad, Basic Limiting Principles (BLPs) were precisely what the name indicates: they define the limits of what is considered possible in science. These are principles that are stronger than a natural law in the sense that it is commonly believed that something is impossible rather than that they could be contravened. According to Broad, BLPs are:

...prior to and more fundamental than any named laws of physics: they are and have been accepted as items of basic common sense by many who have never benefited from any contact with systematic science. Like those named laws of physics, and like all other true laws of nature, these BLPs assert: not only that there in fact have been, are, and will be no occurrences incompatible with their own truth; but also, and more strongly, that such incompatible occurrences have been, are, and will be impossible. (Broad 1953, p7)

There are nine principles in total but I will focus on the main four for the purposes of this discussion. The remaining five are subcategories of the four, so the same criticisms apply as to the overarching four main BLPs. The four main basic limiting principles that, according to Broad, psi contravenes are:

1. General Principles of Causation. It is self-evidently impossible that an event should begin to have any effects before it has happened.
 2. Limitations on the Action of Mind on Matter. It is impossible for an event in a person's mind to produce directly any change in the material world except certain changes in his own brain.
 3. Dependence of Mind on Brain. A necessary, even if not a sufficient, immediate condition of any mental event is an event in the brain of a living body.
 4. Limitations on Ways of Acquiring Knowledge. It is impossible for a person to perceive a physical event or material thing except by means of sensations which that event or thing produces in his mind.
- (Broad 1953, pp9-10)

At first glance it is clear that the principles are far from being 'certainties' in the context of current day science and philosophy. The principles divide into two

types: One and three are examples of statements that are no longer credible in terms of current theory; and principles two and four are statements based on the anomalous nature of psi. Both types of statement are problematic and are discussed separately below.

First and third BLPs

Broad's first and third Basic Limiting Principles involve statements about causation and mind theory that would not be considered certainties according to current mind and causation theory. These principles may have been considered certainties to Broad at the time he defined the term BLP. However, subsequent development of mind, time and causation theories have shown that his statements are outdated and other theories now vie for dominance in the territory.

For instance, Broad states that 'it is self-evidently impossible that an event should begin to have any effects before it has happened' (Broad 1953, p9). However, this statement is certainly not taken as self evident in contemporary theoretical physics and philosophy of time and causation. There are current theories that deal with the notion of backwards causation that speculate 'we in fact do not live in a world in which there are three dimensions of space, but in one in which there are four, time being the fourth spatial dimension.' (Brier 1976, p53) There is no theoretical reason to discount backwards causation.

More recently Huw Price discusses the problem of apparent time symmetry - why does a vase break and smash into pieces rather than 'unbreak' from pieces to a vase? He maintains that although the 'unbreaking' of a vase is not conceivable at the intuitive level of everyday experience, at the high-level of physical theory if 'a given physical process is permitted by physical laws, so too is the reverse process' (Price 1996, p18). This allows—conceptually at least—for cause and effect to occur both forwards and backwards in time. Huw Price suggests that 'the best strategy is... to study the more familiar arrows of time in physics as if there were no exceptions to the principles that the underlying laws are time-symmetric.' (Price 1996, p18) So it would seem there is contemporary assessment that allows for the plausibility of backward causation, which is counter to Broad's statement in principle one.

Broad's analysis appears to assume a dualistic mind/body framework which is currently out of favour in contemporary mind theory. There are, of course,

contemporary dualists such as David Chalmers (1996). And psi theorists also count dualists amongst their number, for instance, John Beloff (1990) argues for a dualist ontology on the basis of acceptance of psi as real. However, there are current theories of mind that do not maintain, contrary to Broad's assessment, that 'a necessary, even if not a sufficient, immediate condition of any mental event is an event in the brain of a living body' (Broad 1949, p41). Functionalism, for instance, accounts for mental states (what Broad would refer to as 'the mind') by ascribing to them a 'complex causal network anchored to the external world at various points' (Kim 2003, p123). According to this explanation of mind our beliefs and desires are constituted by their causal relations to sensory inputs and outputs, rather than more traditional notions of mind/brain mental states. Of course functionalism is but one of many other competing theories of mind which do hold, as Broad does, that the mind is dependant on the brain. But that functionalism is still part of current discussion in mind theory indicates that Broad's notion of a set-in-stone Basic Limiting Principle that denies this possibility is a flawed foundation to work from.

The examples discussed above show that far from being scientific and theoretical certainties, Broad's list of BLPs has not stood the test of time. Presumably, when Broad constructed the list, it represented the dominant theories of his time (or the ones he believed were considered the unchangeable certainties). However, it is apparent that the statements are no longer applicable as a benchmark to which any phenomenon, anomalous or not, should be assessed. I therefore argue that the anomalous nature of psi and how it should be dealt with by science and philosophy should be updated and reassessed as the body of scientific knowledge changes and adapts to new theories and discoveries.

Second and fourth BLPs

I turn now to the second and fourth principles in which Broad states that 'it is impossible for an event in a person's mind to produce *directly* any change in the material world except certain changes in his own brain' (Broad 1953, p9). And also that 'it is impossible for a person to perceive a physical event or material thing except by means of sensations which that event or thing produces in his mind' (Broad 1953, p10). These statements are similar as they are both based on the anomalous nature of psi. However, psi is defined negatively; a psi event is only determined as such if there

are no normal explanations immediately apparent. I believe that there is much more than semantics being played out here. There are two issues involved which I will flag here and deal with in more detail during the course of the thesis.

The first is the circular argument which is apparent when a phenomenon is defined by virtue of its anomalousness. It is not enough to define something as anomalous and then to use this very definition against its possible existence. Principles two and four are statements adopted from the definition of what psi is when divided into the two main categories ESP and PK. Rather than merely reiterating that they are anomalous, I claim that it is necessary instead to make an assessment of the apparent anomalous nature of the phenomena and try to understand how best to approach the explanatory issues involved. I undertake such an analysis later in the thesis when, in Chapter 3, I commence an investigation into the explanatory history of the phenomena. Further discussion is carried out in Part II of the thesis when the explanatory issues are explored in more detail and placed in a contemporary context.

The second is that anomalous phenomena have been shown to be important in the development of new theories in science. Though anomalous phenomena pose special problems to science it is often through the investigation of such phenomena that science progresses. The history and philosophy of science literature is replete with examples. For instance, in a paper on the response of scientists to anomalous data William Brewer and Clark Chinn mention that 'the history of science suggests that theory change often requires a series of empirical anomalies, which collectively appear to be better explained by an alternate theory' (Brewer & Chinn 1994, p310). And they go on to give an example regarding the discovery of X-Rays which were 'met with some initial disbelief, but within a month the scientific community was convinced, as the basic phenomena were quickly and easily replicated' (Brewer & Chinn 1994, p310). The anomalous nature of psi is not as easily resolved, however, the fact that anomalous phenomena are sometimes subsequently subsumed into science and actually help to develop theories in science is a reason to ensure that the phenomena are not dismissed solely on the basis that they are not currently explainable by science.

It cannot be assumed that lists of Basic Limiting Principles, such as Broad's, will hold over time. It is therefore problematic to rely on them, as George Price does, in order to formulate a modern version of Hume's miracle argument. I argue therefore that Price's argument is flawed because of its reliance on Broad's list. This raises the

problematic nature of anomalous phenomena in regard to science and especially to the problem of laws. I address these issues in chapters 5 and 6 when I look at the psi hypotheses in relation to covering law theory. For the moment I hope that I have shown that the notion of an 'everlasting check' for psi is not plausible because of the difficulties in assessing what scientific certainties will absolutely, definitely hold over time. And that this is especially problematic in relation to anomalous phenomena, which are defined by the fact that science is unable to account for the production of the apparently anomalous events.

The use of outdated lists such as Broad's, in order to make a philosophical assessment of psi, indicate that the background beliefs and explanatory considerations regarding analysis of the phenomena require a contemporary update.

1.1.3 Summary – explanatory issues & questionable certainties

So far I have analysed representatives of the two main philosophical arguments that assess psi phenomena. I have shown that both are problematic. It is evident that certain assumptions regarding explanation of anomalous phenomena such as psi are guiding the set up and construction of these arguments, which have remained the dominant understanding of psi in mainstream philosophy to this day.

In short, the Explanation by Fraud Argument (EFA) is flawed because it assumes an unwarranted conservative explanatory approach to the phenomena which does not take into consideration the body of evidence for psi. And the Modern Miracle Argument (MMA) falls short for two reasons: firstly, because the psi cannot be legitimately substituted for miracles unless the argument is limited to historic testimony of psi events; and secondly, because it relies on a list of outdated basic limiting principles.

The next section continues to explore problems with the arguments using a generic form of argument devised from both the EFA and MMA forms. I argue that in generic form, there is failure to recognise the structure and logic of the arguments as inferences to the best explanation. I introduce a new term 'Pre-emptive Inference to the Best Explanation' to explain the problem in more detail. I introduce this new term in the section below.

1.2 Psi arguments as pre-emptive inferences to the best explanation (PIBE)

I have devised the term ‘Pre-emptive Inference to the Best Explanation’ to describe inferences that are made without making a thorough assessment of the situation that requires explanation. First I outline what an Inference to the Best Explanation (IBE) is and I outline why they must be used cautiously. I then define Pre-emptive Inference to the Best Explanation and indicate how to determine instances of Pre-emptive Inference to the Best Explanation. I show that both the Modern Miracle Argument (MMA) and the Explanation by Fraud Argument (EFA) are cases of Pre-emptive Inference to the Best Explanation (PIBE). I then use this analysis to tease out the explanatory issues that require updating and indicate how they will form the structure of the following chapters of the thesis.

1.2.1 Inference to the Best Explanation

An Inference to the Best Explanation (IBE) is the process used in order to choose the best hypothesis that explains the evidence for any given situation. In everyday life this is easy to comprehend and apply. For instance one evening I am happily reading a book in my living room and as it starts to get dark outside, I switch on a lamp so that I can continue to enjoy reading. At that moment I hear a sharp snapping sound and see a brief flash of light. However, the usual warm glow does not emanate from the bulb. I conclude that the bulb needs replacing. I am about to do this when my flatmate—let’s call him Spooky—who is also sitting in the living room at that time says that changing the bulb will not fix the problem, because a ghost in the socket of the light has temporarily shorted out the bulb. Spooky asks “Didn’t you see the flash of astral energy and hear the snap of the ghost de-materialising?”

Now we have a situation whereby two competing hypotheses have been postulated to explain the same event. Both apparently explain the events experienced—the cracking noise, the flash of light and the current lack of light. However, most reasonable people would think that my explanation was better than Spooky’s. But why is that so?

Inference to the Best Explanation theories of explanation address two important issues about making such inferences. First, they assess the relationship between such inferences and approximation to 'truth' or 'knowledge' and second they delve into the explanatory issues involved during the selection process of one hypothesis as 'best' given a set of competing hypotheses that could be used to explain the same data.

Gilbert Harman coined the term Inference to the Best Explanation in a paper published in 1965. Harman was concerned to make a distinction between enumerative induction (if all *observed* As are Bs then one may infer that *all* As are Bs) as warranted non-deductive inference and to make a case that 'where it appears that a warranted inference is an instance of enumerative induction, the inference should be described as a special case of another sort of inference, which I shall call "the inference to the best explanation."' (Harman 1965, p88) Inference to the Best Explanation then, according to Harman, is how we make a distinction between a warranted inference and one that is not. He explains the process of making an IBE as follows:

In making this inference one infers, from the fact that a certain hypothesis would explain the evidence, to the truth of that hypothesis. In general, there will be several hypotheses which might explain the evidence, so one must be able to reject all such alternative hypotheses before one is warranted in making the inference. Thus one infers, from the premise that a given hypothesis would provide a "better" explanation for the evidence than would any other hypothesis, to the conclusion that the given hypothesis is true. (Harman 1965, p89)

So, in its most simple form, an IBE is as follows—there are the three stages:

- E The evidence, data or phenomenon that requires explanation is examined.
- $\{H_1, \dots, H_n\}$ A group of possible hypotheses is compiled that explain the evidence.
- H_b The best hypothesis is chosen from the group.

Analysis of IBE involves discussion about how the group of possible hypotheses is compiled, how it is that one is chosen and how strong the final hypothesis is in relation to obtaining a 'truthful' assessment of the situation. Harman, for instance, argued that the process of Inference to the Best Explanation had considerable import. However, as the notion of truth became less strong, claims that the final explanation was an approximation of truth became accepted.

A more recent analysis of Inference to the Best Explanation by the philosopher Peter Lipton fleshes out these issues. He adds complexity to the process by arguing that, rather than inferring the 'best' explanation, when we make an Inference to the Best Explanation 'we do not infer the best actual explanation; rather we infer that the best of the available potential explanations is an actual explanation' (Lipton 1991, p60). So the competing explanatory considerations that vie for attention are acknowledged up front. For instance my hypothesis that the bulb needs changing might be considered a favourable hypothesis because it does not require an ontology in which immaterial ghosts have an effect on the electric circuitry of the home, thus it is neater and less complex. However, Lipton also allows for the fact that background beliefs play an important role when making an Inference to the Best Explanation:

Given our data and our background beliefs we infer what would, if true, provide the best of the competing explanations we can generate of those data (so long as the best is good enough for us to make any inference at all). (Lipton 1991, p58)

The explanatory issues, informed by background beliefs, guide both the compilation of the group of possible hypotheses and the selection of one as the 'best'. So, there might be a case for my flatmate's scenario after all. Maybe it *was* a ghost that caused the light to short out and if so, then my flatmate's explanation would be better than my more prosaic one. However, at some stage we need to make a decision: should I change the globe or should I get my flatmate to perform an exorcism on the light socket?

We must therefore weigh up the hypotheses in relation to each other. Lipton gives an indication of what the guiding factors are when one hypothesis is selected over another. Lipton makes a case that IBE is more effective at obtaining approximation of truthful inference if the process is understood as 'inference to the loveliest potential explanation', rather than 'best'. He comes to this conclusion by comparing *likeliest* explanations (ones that seem most likely but don't tell us very much) versus *loveliest* explanations (ones that are more comprehensive). For Lipton:

An Inference to the Best Explanation is not simply an inference to what seems the likeliest explanation, but rather the inference that what would be the loveliest explanation is likeliest. (Lipton 1991, p169)

Discussions regarding likeliest and loveliest hypotheses involve explanatory issues therefore these are also important when considering the process by which one hypothesis is chosen over the other. So it is important to be able to assess when enough appropriate competing explanations have been compiled in order to be sure

that the selection of the ‘best’ potential explanation is legitimate. My understanding of the IBE process, taking into account Lipton’s additional points regarding the compilation and selection of hypotheses, is as follows: in this version there are also three stages:

- E** The evidence, data or phenomenon that requires explanation is examined.
- {H₁,...H_n}** A group of possible hypotheses is compiled which is guided by background beliefs and explanatory considerations that should be made explicit
- H_i** The loveliest hypothesis is chosen from the group of hypotheses such that it has the greatest subjective probability of being true of the group.

Lipton’s theory of Inference to the Best Explanation shows how we go about choosing one hypothesis over another, but also making sure that we have the most comprehensive selection of hypotheses to choose from.

We can return to the light in the living room example: just say I decide to try changing the light bulb first rather than getting my flatmate to perform an exorcism on the light socket. I choose to try out my theory first because I deemed it the loveliest on the basis that it fitted with my prior experience of light bulb blow outs and what I know about the workings of light sockets and light bulbs. It was also ontologically more simple—it was not based on additional entities such as ghosts.

However, if I changed the light globe and it didn’t work and I tried another one and still the light was not functioning, I would have to reassess the process by which I had concluded that mine was the ‘loveliest’ explanation. I must then go back and reassess the hypotheses and compile another list (taking out the one that I mistakenly thought was the ‘best’) and select another.

Maybe this time I get my flatmate to perform an exorcism on the light socket, but then again I am more likely to ring an electrician to check the wiring. My new assessment is also based on my background belief that faulty wiring, rather than poltergeists are more likely to be responsible for the faulty light socket. Only perhaps as a last resort when everything else had failed I might humour my flatmate and ask that he perform an exorcism on the light socket. If it worked I would be surprised.

The process of making an Inference to the Best Explanation is then to select one hypothesis then to test it and if the initial assessment proves to be faulty, to go back and revise the compilation of the hypotheses and select another. There are two

points that I emphasise here: the first is that during all of these steps our background beliefs and our experience and knowledge will be guiding what we consider the best hypothesis to explain the data; and the second is that the process is reviewed and can be undertaken again if the first hypothesis proves to be unworkable.

The light bulb example is intended to show that IBEs make intuitive sense when applied to such a small domestic concern and to illustrate the process by which they are made. The IBE process is, however, more complex when employed to understand the machinations of explanation in the sciences. Lipton's analysis makes it clear that the relationship between inference and explanation is subtle and complex and involves background beliefs and explanatory concerns as well as the need to test and update the hypotheses as required. And even the light bulb example showed that experience and belief systems play a role in determining the compilation and selection of the hypotheses.

Therefore, the IBE process must be used cautiously, only when we can be fairly certain that a reasonable assessment of the evidential situation has been obtained and that we are in a relatively knowledgeable position to allow us to select one hypothesis over others. It is always possible that, despite our best intentions, we are wrong and if the hypothesis selected does not accord with future predictions then we should go back and take a look at how we made that initial assessment and whether it was justified or not.

1.2.2 Pre-emptive Inference to the Best Explanation

There are concerns about the IBE process that should be kept in mind: How do we know we are actually inferring the best explanation when explanatory considerations are already potentially guiding that very inference? What happens when we are oblivious to potential hypotheses because they do not accord with our current belief system? How do we know we are making a reasonable comparison between competing hypotheses? How strongly should we maintain that any selection is the 'best', let alone approximately truthful?

Inferences to the Best Explanation can lead to what are ultimately thought to be incorrect explanations. Some of the reasons the initial assessment is later found to be faulty is that background beliefs are illicitly guiding the compilation of the initial set of hypotheses, or perhaps some hypotheses were missed when the process was

first undertaken. It might be that one hypothesis was selected over others because of beliefs about explanation that should be updated, or too much was assumed at the time that has subsequently come to light. When the process is clearly not thorough or contains hidden presumptions, an IBE is not a legitimate assessment.¹² I call an instance of this kind a 'Pre-emptive Inference to the Best Explanation' or PIBE. As the name suggests, they are inferences to an explanation that are made without taking into consideration assumptions regarding the initial assessment of evidence and compilation of hypotheses.

How to detect a PIBE

If my charges that the fraud hypothesis is a Pre-emptive Inference to the Best Explanation are to hold, then I must show how to differentiate between a PIBE and a legitimate IBE. Here are the three warning signs that one is dealing with a PIBE rather than a legitimate IBE:

- 1) The assessment of the evidence was flawed
- 2) The initial compilation of the hypotheses was not thorough
- 3) The selection of the 'best' explanation is shown to be unwarranted

To exemplify, take an everyday example. I turn on my computer and the digital display doesn't appear as per usual. If I cry 'Oh no, someone's broken my computer either that or those gremlins in the keyboard somehow got into the hard drive and wrecked it', and subsequently conclude 'Someone must have broken into my home in the middle of the night and broken my computer,' I would be guilty of making an PIBE. As I leave my desk and go to exit the room in order to call the police and report a burglary, out of the corner of my eye I see that the plug is lying on the floor. I plug it in and sit back down, red-faced and feeling foolish that I hadn't thought of this before. I forgot that I had unplugged the computer yesterday as there was a storm when I was closing down my computer and I was worried about power surges. I determine not to make such an error again and go through my thought processes at the

¹² In Chapter 6 I deal briefly with the argument that inference to the best explanation cannot be considered a legitimate explanation. I argue that this point does not diminish my argument that a re-analysis of psi is warranted as I could make a case for re-analysis of psi in a contemporary context on the basis of the critique of the arguments earlier in the chapter when I showed that both the EFA and the MMA are problematic.

time. I realise that I was guilty of making the three mistakes (aside from being forgetful) that correlate to the ones above:

- 1) I didn't look at all the evidence available

A quick check of the whole computer would have ascertained that it was not plugged in.

- 2) I only thought of the two dramatic scenarios to explain why the screen didn't work

I didn't think to add the hypothesis that the power supply was temporarily cut from my computer into the list of possible explanations which would have enabled me to select a more appropriate explanation.

- 3) I selected the most unlikely of the already limited wrong batch of scenarios.

My earlier mistakes ruled out the possibility that I select the best explanation for my computer screen not working. So I really had no chance to rectify the situation at this stage. It was just lucky I saw the plug as I left the room.

My experience with the computer makes me resolve to be more thorough when making explanatory assessments in the future. It is important to make sure that the initial assessment of the evidence is as comprehensive as possible, to compile the hypotheses as thoroughly as possible and to make a selection based on considered explanatory issues. Otherwise one risks making a pre-emptive IBE.¹³

The process must be performed at the same time as acknowledging that background beliefs will play a role in each stage of this process - maybe I was paranoid about burglars at that time having recently been burgled three times. Explanatory considerations (unfounded or not) will also be lurking behind the scenes. It is important that all issues that could be guiding the assessment should be brought into the open so that they can be addressed and analysed. Caution must be taken with

¹³ Unfortunately making a Pre-emptive Inference to the Best Explanation in everyday life can have a tragic result. In a story reported in the newspapers earlier this year a mother who was jogging with her child in a pusher stopped to take a mobile phone call and turned briefly to write a number down on her leg. When she turned back around the pusher was gone. She assumed that someone had stolen the baby and ran to the nearest road to get help. By the time they returned to the site and realised that the pram had rolled down the bank into the river the baby was not able to be revived. (Kyriacou, & Doherty 2006, online)

any IBE-like assessment of a given evidential situation and the more upfront these issues are the more likely it is that the appropriate hypothesis is selected.

1.2.3 MMA and EFA and PIBE

I will now use a generic form of the argument in order to analyse the mainstream assessment of psi in relation to issues of Inference to the Best Explanation.

Both the EFA and MMA claim to make an assessment of the body of evidence for psi and they both run a similar argument, which in its most simple form it can be formulated as follows:

There is some evidence for which there is no explanation that indicate people can move things without touching them and obtain information without the use of the regular five sensory channels.

We know that people cheat

We know that psi is unlikely

Therefore we should explain all apparent instances of psi as produced by fraud.

When recouched in this form it is apparent that it contains all the elements of an inference to the best explanation. There is a phenomena that requires explanation (psi), two hypotheses (fraud or telepathy and psychokinesis) and the selection of one (fraud) that is chosen over the other (belief in the veracity of evidence for telepathy and psychokinesis). To make this clearer I'll put it in the form of Lipton's IBE which was outlined in the previous section. So we have:

The evidence:

E body of evidence of apparent psi events

Then the compilation of the hypotheses based on the premises above:

{H₁,...H_n} {evidence is produced by fraud; evidence is produced by psi}

Then a selection takes place and it is concluded that the 'best' explanation for the evidence is that:

H₁ Evidence for psi is produced by fraud

Each version of the argument has a different reason why the fraud hypothesis was chosen over the telepathy/psychokinesis hypothesis; Price uses the Broad list of BLPs and Campbell the repeatability problem. However, essentially they are both performing the same type of assessment of psi phenomena and favouring one hypothesis (that the evidence is produced by fraud) over another (that the evidence is produced by an anomalous and unexplained phenomena).

I have suggested that an IBE is pre-emptive, and therefore explanatorily illegitimate, if: 1) The assessment of the evidence was flawed; 2) the initial compilation of the hypotheses was not thorough; and 3) the selection of the 'best' explanation is shown to be unwarranted. I now argue that the generic argument that advocates that fraud is the best explanation is a Pre-emptive Inference to the Best Explanation because it fails on the first two counts: it does not take into consideration the body of evidence and show how fraud can account for the phenomena; and it has not considered other plausible explanations for the phenomena that are available in the psi literature. As in the computer example, the final 'selection of hypothesis' was consequently illegitimately limited to two hypotheses that were not appropriately compiled given the initial scenario.

1.2.4 Summary of critique of mainstream psi arguments

Below I summarise the main criticisms that I have made against the mainstream psi arguments. I mention where I go on to address the issues later in the thesis.

Failure to recognise the structure and logic of the arguments as IBEs

As I argued for in the above section, there has been a general failure in to understand that the EFA and MMA arguments are pre-emptive inferences to the best explanation. Hidden assumptions regarding explanation issues are behind these assessments of psi. It appears, therefore, that assumptions about the potential to explain the phenomena as fraudulent, without further evaluation, are unrealistic and founded on an assessment which fails to take into consideration the body of evidence. Nor do the arguments deal with other potential hypotheses that could be employed to explain the phenomena, but which are available in the psi literature. The assessment of the evidence and the compilation of potential hypotheses is therefore lacking in

rigour. I address this issue by using the IBE structure to carry out a reassessment of psi in three stages.

Failure to consider the body of evidence for psi

A related point is that the conclusion of both the EFA and MMA that the evidence for psi is most reasonably attributed to fraud, fails to consider the amount of fraud that is required if the evidence is to be explained by such an hypothesis. Whether it be fraud or unwitting self-delusion that is proposed, an examination of what evidence there is and how it could be explained by such activities and behaviour is warranted, just as it would be in other similar circumstances when a 'weighing' of the evidence is required to resolve a dispute. The fraud hypothesis, as argued for by the EFA and MMA, is maintained at a cost because they exclude other plausible hypotheses from entering the explanatory scene. This situation is redressed in Chapter 2 where I outline the evidence for psi as well as some of the psi realist theories that have been proposed as explanation for the phenomena.

Misapplied explanatory conservatism

Once again, the point above is related to the assumptions that lie behind the fraud hypothesis. The fraud hypothesis is maintained because the arguments are founded on an unwarranted conservative estimation of the explanatory situation. The arguments are not an epistemic assessment of the weighing up of the evidence for psi. Instead they have chosen one explanatory option over another:

E_n - psi cannot be explained currently as a natural phenomenon therefore the fraud hypothesis is the most rational
over

E_ψ - psi does not fit into current scientific theory, but, given the apparent evidence, some kind of explanation is required regardless of the ontological outcome

The EFA and MMA propose that only E_n is plausible. It is thus biased towards the conservative solution. The arguments do not make a case for choosing E_n over E_ψ , except on the basis of psi's apparent anomalous nature. However, I have shown that it

is a circular argument to eliminate the plausibility of a phenomena on the basis of its anomalousness when it is defined as such. At this stage a more comprehensive argument would be required in order to justify the choice of E_n over E_ψ and this does not appear explicitly in the literature. I deal further with issues regarding explanatory conservatism in relation to anomalous phenomena in much more detail in Part II of the thesis. I also undertake a re-analysis of the psi explananda in Chapter 6 that attempts to avoid the problem of explanatory prejudice for anomalous phenomena when constructing explanatory statements.

Failure to acknowledge background beliefs

Background beliefs inform explanatory considerations. It is important that these beliefs are explicit. Current beliefs about psi are determined by hidden beliefs about the explanatory status of the phenomena. These are evident when assumptions are made about the potential to explain the phenomena in relation to perceived scientific certainties. However, I argue that these beliefs should be examined and brought upfront. Further assessment of the background beliefs that inform the discussion is made in Chapter 3 when I present the historic account.

A way forward

I have highlighted the importance of understanding the background beliefs and explanatory considerations that inform the dominant analysis of psi in mainstream philosophy, which I have shown to be lacking. A review of the psi and related explanatory issues is therefore warranted.

I suggest that it is more prudent to make an assessment of the phenomena by outlining the evidence that requires explanation, compiling the hypotheses thoroughly and all the while explicitly acknowledging the background beliefs that have previously informed the mainstream assessment of psi. All of these steps will be undertaken during the course of the thesis.

I commence the analysis in Chapter 2 where I show how the argument must be fleshed out in order to avoid the criticism that it is a Pre-emptive Inference to the Best Explanation. I then outline the evidence for psi and recouch the psi debate as a discussion between competing hypotheses.

Chapter 2 - Evidence

It is a capital mistake to theorise before one has data. Insensibly one begins to twist facts to suit theories instead of theories to suit facts.

Sherlock Holmes

The last chapter countered the main arguments in mainstream philosophy pertaining to psi. I maintained that the Explanation by Fraud Argument and the Modern Miracle Argument are problematic. Furthermore, an analysis of the arguments showed that both suffered from the same problem, that they a Pre-emptive Inference to the Best Explanation. I outlined the four major concerns that arose from the discussion.

In this chapter I commence the process of re-analysis. First of all I use the three-stage IBE model as a basis to outline how the process of re-evaluation will take place. Then I outline the body of evidence for psi as well as the psi realist theories. I show that the psi hypotheses are similar in approach to the various philosophical assessments regarding the hard problem of consciousness: eliminativist; direct realist; reductive realist; and supernatural. I subsequently create a list of possible responses to the evidence for psi based on similar division of appropriate responses to a philosophical problem. By the end of the chapter the psi debate is recast as a 'psi hypotheses discussion'. Further examination of the possible responses is subsequently undertaken in the rest of the thesis.

2.1 Three-stage re-analysis of psi

In the last chapter, the second section made a case that in their most generic form both of the main arguments that deal with psi can be seen as cases of Inference to the Best Explanation. I noted that Inferences to the Best Explanation, if they are to be used as an explanatory tool, must be made cautiously and are warranted only when one can be as sure as possible that the evidence, the competing hypotheses and means of choosing the 'best' hypothesis have been thorough.

A main concern was that the proponents of the EFA and MMA were pre-emptive in their assessment of the body of evidence for psi. The problem arose because unwarranted conservative explanatory considerations informed the epistemic

assessment of psi and too few hypotheses were generated as a result. Consequently the conclusion that fraud was the most likely explanation for the body of evidence for psi was flawed and pre-emptive. I will redress this problem by undertaking a new analysis of the situation.

When I critiqued the arguments separately I also flagged that there are explanatory considerations and background beliefs which inform the analysis at all stages and these should be made explicit in order to make an assessment of the situation when, as in the case of the psi debate, there appear to be two positions that are at loggerheads regarding the assessment of a body of evidence for an anomalous phenomenon. I will keep these positions in mind as I undertake the re-analysis of psi.

The analysis will be presented in three stages which are informed by Lipton's account of IBE as discussed in Chapter 1 and re-iterated below:

<i>Stage 1</i>	E	The evidence, data or phenomenon that requires explanation is examined.
<i>Stage 2</i>	{H₁,...H_n}	A group of possible hypotheses is compiled which is guided by background beliefs and explanatory considerations that should be made explicit.
<i>Stage 3</i>	H_i	The loveliest hypothesis is chosen from the group of hypotheses such that it has the greatest subjective probability of being true of the group.

I now explain the steps that will be undertaken to make the re-analysis that accord with the three IBE stages.

Stage 1 - Section 2.2 Body of evidence

The body of evidence for psi is outlined in this section. I outline three main types of evidence: historic, anecdotal and laboratory, and I discuss each in relation to philosophical issues of 'testimony'. This provides a basis to discuss the nature of evidence and what theories have been developed (aside from the fraud hypothesis) that attempt to account for the evidence. These become important as they inform the compilation of hypotheses.

Stage 2 - Section 2.4 & 2.5 - Compilation of hypotheses

In the last chapter I showed that the compilation of the hypotheses is crucial to the process of IBE. I argued that the hypotheses selected in the MMA and EFA (the choice between explanation by fraud or belief in telepathy and psychokinesis) require a more thorough analysis because unacknowledged beliefs about the phenomena in relation to explanation and laws of nature have limited the discussion of available hypotheses. A new mode of compilation will be undertaken in sections 2.4 and 2.5 in which I compare the body of evidence for psi to another similar type of philosophical problem (the hard problem of consciousness) and use it to introduce a more complete set of possible explanatory hypotheses for psi, based on the theories currently proposed in the psi literature.

Stage 3 – Chapters 3-6 Examination of hypotheses

Peter Lipton's analysis of Inference to the Best Explanation advocated the view that the best explanation should be considered the loveliest potential explanation. He also acknowledged that background beliefs are important when considering the selection of the 'best' explanation. The discussion of the competing hypotheses is complex and takes up the rest of the thesis. First I discuss the issues of background beliefs and present an account of the explanatory history of psi in Chapter 3. I continue the psi hypotheses discussion in PART II of the thesis where I look at the hypotheses in relation to theory development and explanation theory in contemporary philosophy of science. Below is a chart that outlines the three stages and indicates where and what issues are dealt with during the course of the thesis:

IBE stage	Section of thesis	Brief content summary
Stage 1 - E Evidence	2.2	Outline of evidence and theory, discuss issue of testimony
Stage 2 - $\{H_1, \dots, H_n\}$ Compilation	2.6	Compile the hypotheses based on current psi theory and comparison to the hard problem of consciousness
Stage 3 - H_n Process of selection	Chapter 3	Discuss background beliefs, present the historic account
	Chapter 4	Discuss competing hypotheses
	Chapter 5	Discuss dominant hypothesis
	Chapter 6	Compare remaining hypotheses

The re-analysis will cover both my initial criticisms of the EFA and MMA arguments: that the EFA was based on unwarranted conservative explanatory considerations; and that the MMA was unable to substitute psi for miracles unless it was restricted to historic testimony of psi events and that it relied on an outdated list of scientific certainties. The three-stage analysis also rectifies the two further problems when the arguments were shown to be pre-emptive in their assessment of the situation: that the body of evidence hadn't been examined; and that the compilation of the hypotheses was incomplete. In this way the problems with the main psi arguments that I outlined in the first chapter will be taken into account and reworked. During the process, the unresolved psi debate and consequent tension between the pro and anti psi stances is transformed into a contemporary philosophical discussion between competing hypotheses. I commence with an outline of the body of evidence section below.

2.2 Body of evidence

Before a description of the body of evidence is undertaken it is probably pertinent to highlight, once more, that this thesis does not attempt to make an epistemic defence of the evidence¹⁴. The analysis of the main philosophical stances undertaken in the first chapter regarding the phenomena indicate that the reasons the evidence is

¹⁴ The background information regarding the evidence for psi is drawn, in small part, on some work undertaken previously for a Master of Arts thesis in which I also presented an outline of the body of evidence for psi. The thesis was called *Psi Possibilities* and was awarded in April 2004 by the University of New South Wales.

controversial is because of ingrained ontological beliefs about the evidence rather than epistemological problems. Analyses of the evidence in reference to current scientific methodology find that the current laboratory evidence compares favourably to similar types of scientific investigation and spontaneous occurrences of alleged psi phenomena continue to be compiled.

This status of the evidence is re-iterated in much of the informed literature (see for instance the various articles in the 'Psi Wars' volume of the *Journal of Consciousness Studies* edited by James E. Alcock or the summary by Douglas Stokes in his 2002 article 'A history of the relationship between statistics and parapsychology'). The upshot is that there appears to be some evidence for apparent psi events. The debate about psi is exacerbated by this state of affairs because if there were clearly absolutely no evidence for psi (say, for instance, if every single attempt to produce above chance telepathic guesses came in as chance expectation or if every single poltergeist incident was readily explainable as produced fraudulently by mischievous attention seekers) there would be no debate about what the effects entail. Instead there *is* debate about what at least appears to be apparent psi effects as I detailed in the introduction. This has led me to believe that it is not an assessment of the evidence itself that is relevant to resolving the psi debate, rather it is the beliefs about the evidence which hold the key to unravelling the psi puzzle. That is the reason why this thesis focuses on theory and explanation of the anomalous phenomena. But first I shall outline what there is to develop theory about.

The body of evidence for psi raises questions about testimony which are important when making a catalogue of any evidence, but which are especially pertinent when the phenomenon of concern is considered anomalous. I mentioned in the last chapter that the MMA's substitution of psi for miracles was a problematic manoeuvre on the basis that Hume's argument referred to historic testimony of miraculous events, whereas there were other forms of evidence for psi, not least that which has passed the test of adherence to what is currently considered appropriate scientific method. I flagged that scientific evidence was also a form of testimony though with more strictures and checks and balances than some other forms of testimony such as historic accounts for psi. However, at that stage I eschewed the problem that is sometimes raised in philosophy regarding whether or not we can ever consider any type of testimony a reasonable base for the assessment of any phenomena, even that which passes the supposed test of scientific proof.

To illustrate this problem think, for instance, of the commonly asserted notion that fluoride in the water makes people's teeth stronger and less likely to decay. If asked on what foundation they can make this statement most people will answer: because science says this is the case. But when pressed many will acknowledge that they are really founding this belief on a prominent advertisement on television for toothpaste that they saw when young. In this ad a character called Mrs Marsh dips a piece of chalk into a glass of bluish water, as she snaps the chalk in half she makes the connection between fluoride soaking into teeth, just as the blue coloured water was absorbed into the chalk. The ad emphasises the protective power of fluoride in its toothpaste. It is common knowledge that fluoride is put into the water supply in Australia. The two combined is really the source of people's 'evidence' that fluoride in the water protects teeth from tooth decay. This is obviously not a very solid foundation on which to base the answer to the initial question about tooth decay and fluoride. The example shows how readily we make assumptions about how we know things about the world.

I might react to this mistaken claim to scientific authority and decide to take the matter further and ask a scientist to undertake an analysis of the water. However, this poses problems too. Given I am not a scientist I decide to take a sample of water to a local lab and ask the scientists there to analyse the contents. I give over the sample and receive back a piece of paper with the breakdown of what the scientists say they had found in the water. If I see the letter 'F' I can look up a chemical table and then surmise that there was, indeed, fluoride in the water. If I want to be certain I could corner the scientist and ply them with questions about their procedure of analysis and interpretation of results on the slip of paper I have been given. However, even then, if I were of a certain cautious nature, I might have some doubts. I know for sure that I got the water from the tap in my kitchen, but what if the scientists accidentally or deliberately swapped samples once I had given it over to the lab? What if their analysing procedure was lax and they just took a guess at what might be in the water? What if their equipment was faulty? Even if I were to accompany the water into the lab and watch the scientist take the sample from the container and drop it into the test tube for analysis I would still have to question the veracity of the tests that the scientist performed on the water. (I will stop there though as I do not want to wade into the brain-in-the-vat type of scepticism in philosophical speculation). Is there a point at which I can allay my concerns and trust the testimony that I am

presented with by the scientist? Society has had to make a decision that at same stage what scientific evidence is counted as valid.

An example of how society makes this assessment is exemplified by an interesting recent case where two school girls in New Zealand decided to test the vitamin C content of Ribena for a school project. It was reported that the 'students Anna Devathanan and Jenny Suo tested the blackcurrant cordial against rival brands to test their hypothesis that cheaper brands were less healthy. Instead, their tests found that the Ribena contained a tiny amount of vitamin C, while another brand's orange juice drink contained almost four times more.' (Vasagar 2007, online) This was compared to the Ribena commercial which claimed that Ribena drinks contain four times as much vitamin C as their orange juice competitors. The students made a case that the company was responsible for false advertising and challenged them to account for the statements in the advertisement. The company's first port of call was to question the scientific testimony of the school children, however, subsequent tests confirmed the students' results and Ribena was fined for false advertising. At some point society makes a determination that evidence has been obtained despite problems of testimony; how legitimate a step this is, fall to the realm of philosophical speculation regarding the nature of testimony.

The philosophical problems regarding testimony are tied up with those of belief, the essential question being: when do we have enough testimonial evidence to warrant belief (be it the domain legal, scientific, historic, eyewitness etc.)? The situation is even more problematic when it is testimony regarding the anomalous that is of concern, as is the case of psi. An oft-cited phrase in relation to psi evidence is 'extraordinary claims require extraordinary proof' and this sort of notion is entrenched in issues regarding what is considered acceptable testimony for a phenomenon when that phenomenon is at odds with what is expected to occur by the status quo. C.A.J. Coady, in his book *Testimony*, refers specifically to the problem of testimony in regard to anomalous phenomena and makes the point that:

it has been thought relevant to the credibility of certain records of telekinetic phenomena that the alleged witnesses were initially very sceptical about the possibility of what they later recorded as happening. (Coady 1992, p185)

Different types of evidence require variously different types of testimony and these will be determined by a number of factors. Coady goes on to point out further that:

Clearly, when some piece of testimony is in doubt or under challenge we will want to know what we can about the circumstances of its deliverance and production, such as the integrity and psychological stability of the witness, his capacities, the observational conditions at the time, his interests and beliefs insofar as they are relevant to the issue, whether there were other witnesses, and so on. (Coady 1992, p185-186).

What is regarded as acceptable testimony, as far as we can be certain of anything, requires substantial consideration regarding the nature of the person involved in providing us with it. I will keep this in mind as I outline the body of evidence for psi below.

As mentioned previously, there are various types of testimony: legal, scientific, historic, or evidence of events witnessed first hand. In this thesis I deal with three types of evidence for psi and related issues of acceptable testimony for each category:

- 1) historical
- 2) anecdotal
- 3) laboratory

A broad-stroke picture of the evidence for psi starts first with historic accounts (written and oral) of phenomena that fit the definition of psi events in current terminology, but which at the time were considered supernatural in origin. Then, at the end of the 18th century, attempts were made to investigate such phenomena with the view to explaining them as natural, rather than supernatural. Some experiments were carried out in this era, but the main contribution that early researchers made to the study of psi was to collate collections of anecdotes of psi events in ordinary people's lives.

These anecdotes were gathered and verified to the best ability of the researchers and out of these accounts came theories and nomenclature to describe the anomalous events that are still with us today. They also informed the types of early experiments in which attempts were made to replicate psi in laboratories under controlled conditions which, due to long runs and careful collection of data, could be analysed to give statistical analysis regarding chance expectation. I will now take each category in turn and present a brief account of the evidence that is considered relevant.

2.2.1 Historic

Overall, the historic account of psi-like events is similar across cultures. However, the description of the events and the people who are able to perform the psi feats are different. Historically, psi events are attributed to supernatural causes and although the events themselves are similar, the explanation changes between religions. The history of psi as described as such is still relevant today because many people in the world, across all cultures, still ascribe a supernatural interpretation to psi-like events and people who apparently perform such feats sometimes hold positions of authority in their particular religious belief system. This holds for both mono-theistic religions and pantheistic traditions as well as animist belief systems.

One of the earliest accounts of an investigation into the veracity of psi phenomena is related by Herodotus in his *Histories* (Book I.48). The story involves oracles and is thought to have occurred around 550BC. At this time, the leader of Lydia, King Croesus, wanted to obtain some precognitive advice on whether or not to engage in a war with a neighbouring kingdom. However, there were many competing oracles and he wanted to ensure that he received advice from a genuine source (one can imagine the political uses that perceived oracle advice could be used for¹⁵). He therefore decided to test the prominent oracles of his day and he designed an experiment to test their powers. Accordingly he sent out messengers to the various oracles and asked them to send back word with the messengers, having used their apparent psi abilities to ascertain what he was doing on a designated day. On that day in question he performed an unusual activity and cooked up some lamb and turtle in a copper pot. The only ones to send back a message to that effect were the Delphic Oracles. He consequently asked them advice on his proposed invasion of a neighbouring territory; they sent back word which he interpreted as an indication that, should he invade, he would be successful. When he did, he lost the war. Regardless of this outcome or the problematic nature of assessing the advice of the oracles, it is interesting that this is perhaps the first ever recorded psi experiment.

Of course this is an account from a long time ago regarding the assessment of a psi phenomena that may or may not have been legitimate. However, the pertinent point for this thesis is that for millennia there have been reports of human belief in

¹⁵ To put this in a modern day context think of the potential power of the astrologist who Nancy Reagan famously consulted during the time of Ronald Reagan's presidency in the USA.

and use of psi-like abilities. Reports such as the story of King Croesus suggest that from early on the validity of the information obtained through non-normal means has been questioned and assessed.

The Bible is also an historical source of psi-like events which in this context are explained as miracles. Events that could in current terminology be described as PK and ESP events are represented in biblical stories as Jonathon Harrison points out:

A large number of miracles appear to consist in some privileged person exercising control over some physical occurrence, usually outside his body, without producing this occurrence in any of the usual ways. For example, Christ changed water into wine, which was outside his body without expanding or contracting his muscles, moving his limbs, finding grape concentrate and adding it to the water. Telekinesis consists in just this control, by the 'agent', of things (usually, though not necessarily, outside the confines of his body) without his fist manipulating his muscles in any usual way. (Harrison, 1976, p98)

Other anomalous events recorded in religious literature include reports of saints levitating usually during intense prayer sessions (Harvey-Wilson, 2006, p21), as well as knowledge obtained from disembodied voices and premonition in dreams. (Rush, 1986a, p11). In short, the historic accounts of psi phenomena in pagan and monotheistic religions represent the full gamut of what are now considered psi effects, some of which have become the focus of laboratory investigation in more recent times.

Other cultures also contain both written and oral accounts of psi-phenomena. The accounts are similar and comparisons have been made between shamanistic practices and those of the saints of Christian religions (Harvey-Wilson, 2006). Shamans exist in African, Asian, South and North American Aboriginal, Australian Aboriginal and Russian Aboriginal cultures. They are thought to be able to heal the sick through anomalous means, perform rituals so that their awareness leaves their bodies (or they transform into animal spirit) and gain information of the past and future in regions sometimes some distance away. Some shamans also claim to be able to control the weather. Other non-Judeo Christian belief systems, such as Tibetan Buddhism, also have figures who are able to access knowledge through non-normal means and, like shamans, maintain that they can leave their bodies, be present in two places at once and gain access to information in the future and past that they should otherwise not know other than through anomalous means. These events, if real, are similar to that which is currently considered indicative of psi. They involve

anomalous communication as well as the ability to influence the physical world through non-normal means.

Strikingly, the historic accounts of psi-like events are similar across cultures; it is the explanation based on whatever supernatural belief is considered appropriate in that time and place that change. The problem with this type of testimony is that it is reliant on reports that are unable to be verified in person. The recollection of the event is obviously open to interpretation, re-interpretation and accidental or intentional bias. The element which makes such testimony plausible is that humans continue to report similar occurrences, across time and cultures, that accord with these historic accounts. This is what gives the historic testimony an extra epistemological edge.

Psi events have continued to occur regardless of the explanation ascribed to them; thus anecdotal catalogues of psi phenomena have attempted to provide another, if similar, form of testimony for psi.

2.2.2 Anecdotal

A change occurred in Western Society in the 18th century and inquiries commenced into the possibility that psi events, previously considered of supernatural origin, were in fact natural even if the mechanisms that accounted for them were as yet undiscovered. Among the most commonly cited causes mentioned as responsible for the change in approach are: the debates regarding Anton Mesmer's theories of animal magnetism; the effects of the publication of Darwin's *Origin of Species* on religious authority; and the questioning of previously strongly held religious tenets. The advent of the industrial revolution and the ensuing 'scientific age', where science became the dominant mode through which the world was to be understood and explored, is also credited as informing the new, naturalistic approach to psi investigation (Haynes 1982, pp1-2). It is also thought that the initial investigations were driven by the rise of spiritualism in Europe and North America and the consequent concern over mediumistic-related phenomena (much, but not all, of which was exposed as fraudulent by investigators); but the scientific investigation of anomalous phenomena by famous psychics of the day also led to the development of now familiar terms such as ESP, clairvoyance and precognition (Thouless 1972, p7).

A significant date in the change of focus for the understanding of psi was the creation of The Society for Psychical Research which was founded in 1882 by a

group of Cambridge academics whose aim was 'to investigate that large body of debatable phenomena designated by such terms as mesmeric, psychical and spiritualistic without prejudice or prepossession of any kind, and in the same spirit of exact and unimpassioned inquiry which has enabled science to solve so many problems, once not less obscure nor less hotly debated' (Haynes 1982, xiii).

The first project commissioned by the Society's new president, the moral philosopher Henry Sidgwick¹⁶, was for three of its members (Edmund Gurney, Frederic W.H. Myers and Frank Podmore) to compile a comprehensive and well-researched and verified collection of the experience of what is now called 'telepathy' in the general public at the time. The book was called *Phantasms of the Living* and it provided the first collection of anecdotes of a psi event in everyday people's lives which was approached with natural explanation in mind.

Phantasms of the Living – ESP theory

Other publications of paranormal phenomena had been produced in the previous century. For instance the foreword to the 1970 edition of the *Phantasms of the Living* notes that collections of ghost stories and apparitions had been produced as early as 1706 and that discussion regarding the veracity of mediumistic phenomena had taken place in books such as *The Night Side of Nature* by Catherine Crowe (Gurney, Podmore & Myers, 1886/1970 p.ix).

However, what made the *Phantasms* collection of anecdotes unique was its rigorous approach to validating the experiences reported as well as the assumption that if something anomalous is found to be occurring then it will require a natural explanation. Hopes were high at the time that such explanations would be forthcoming quite quickly after the initial evidence for the anomalous phenomena had been gathered. The treatment of the subject matter as the target for scientific investigation was novel and much of the work in categorising and discussing the phenomena prepared the ground for the laboratory experiments detailed in the next section.

¹⁶ Sidgwick is one in a line of philosophers who have held the position of president of the Society for Psychical Research (1882-84, 1888-92). The list also includes William James (1894-1895), Henri Bergson (1913), F.C.S. Schiller (1914), C.D. Broad (1935-36, 1958-60), H.H. Price (1939-41, 1960-61) and C.W.K. Mundle (1971-74). (from Haynes 1982).

The catalogue is a collection of anomalous communication experienced by the general populace. The title, *Phantasms of the Living*, may sound a little archaic to contemporary ears, but terms that are now used to describe psi (the word psi itself did not enter the vocabulary until 1942) were not yet determined and in these two volumes the seeds were sown not just for the scientific/naturalised approach to the phenomena but classification and definition of the phenomena itself as well as words and theories and concepts that would be developed slowly over the next few decades. The word telepathy, for instance, was coined by one of the authors of these volumes (F.W.H. Myers) so in this sense the volumes represent the first attempts to come to terms with the phenomena of anomalous communication. Seen in this light, the *Phantasms of the Living* volumes provide a remarkable foundation for the exploration of psi phenomena which is carried on in parapsychology today.

Volume I of *Phantasms* sets out clearly the process the authors have decided to adopt and how they deal with the problem of making a differentiation between genuine anomalous occurrences from mistaken or fraudulently produced occurrences of the phenomena. Their overall aim was:

To deal with all classes of cases where there is reason to suppose that the mind of one human being has affected the mind of another, without speech uttered, or word written, or sign made; has affected it, that is to say, by other means than through the recognised channels of the sense.

To such transmission of thoughts or feelings we have elsewhere given the name of telepathy; and the records of an experimental proof of the reality of telepathy will form a part of the present work. (Gurney, Myers & Podmore 1886 1970 p2)

And so the phenomena involving anomalous communication that is now covered under the umbrella word psi were first teased out of the even more confounding body of evidence for ghosts, apparitions (of the living and dead), magical influence and spiritualist occult phenomena.

Not surprisingly, the authors of *Phantasms of the Living* encountered criticism about their approach because of the connection between the psi phenomena they investigated with both spiritualism and the religious literature which proclaimed the miraculous nature of some of the very same phenomena. They summarise the accusations made against their approach as follows:

Sometimes we are told that we are inviting the old theological spirit to encroach once more on the domain of science; sometimes that we are endeavouring to lay the impious hands of Science upon the mysteries of Religion. Sometimes we are informed that competent savants have already fully explored the field which we propose for our investigation; sometimes that no respectable man of science would condescend to meddle with such a reeking mass of fraud and hysteria. Sometimes we are pitied as

laborious triflers who proved some infinitely small matter with mighty trouble and pains; sometimes we are derided as attempting the solution of gigantic problems by slight and superficial means. (Gurney, Myers & Podmore 1886 1970, pp.xxxviii-xxxix)

Gurney and the others were quite well aware that they were breaking new ground and would be treading a fine line between critics from both the religious and scientific disciplines. Therefore they realised therefore the necessity to verify and back up the anecdotes and to ensure that their analysis of the anomalous phenomena in their work was sound from both a practical and theoretical point of view. The latter is perhaps a greater legacy than the former because it is from this type of examination of the phenomena that later develops into experimental parapsychology. Catalogues of the phenomena can be made at any point in time, but the realisation that the phenomena require a new response and explanation occurred during this time and is evident in these volumes.

The volumes analyse the anomalous communication phenomena by dividing the phenomena into different categories: Thought transference, spontaneous telepathy, dream telepathy, hallucinations, and apparitions. More importantly however there are chapters that deal with how to differentiate regular dream information from telepathic dream information. The books provide both the anecdotal evidence, the back up they procured to verify the evidence, as well as transparent attempts to determine the validity of the evidence in order not to be taken in by fraud or self-delusion. Here is one example from *Phantasms of the Living* of a case of apparent telepathy between a husband and wife. The story is recounted from the perspective of the wife:

I woke up with a start, feeling I had had a hard blow on my mouth, and with a distinct sense that I had been cut, and was bleeding under my upper lip, and seized my pocket-handkerchief, and held it (in a little pushed lump) to the part, as I sat up in bed, and after a few seconds, when I removed it, I was astonished not to see any blood, and only then realised it was impossible anything could have struck me there, as I lay fast asleep in bed, and so I thought it was only a dream! – but I looked at my watch and saw it was seven and finding Arthur (my husband) was not in the room, I concluded (rightly) that he must have gone out on the lake for an early sail, as it was so fine.

I then fell asleep. At breakfast (half-past nine), Arthur came in rather late, and every now and then put his pocket-handkerchief furtively up to his lip, in the very way I had done. I said ‘Arthur, why are you doing that?’ and added a little anxiously, ‘I know you have hurt yourself! But I’ll tell you why afterwards.’ He said, ‘Well, when I was sailing, a sudden squall came, throwing the tiller suddenly round, and it struck me a bad blow in the mouth, under the upper lip, and it has been bleeding a good deal and won’t stop.’ I then said, ‘Have you any idea what o’clock it was when it happened?’ and he answered, ‘It must have been about seven.’

I then told what had happened to me, much to his surprise, and all who were with us at breakfast...’ (Gurney, Myers & Podmore, 1970 1886 p188)

The case serves as a fairly illustrative example of the type of anecdotal evidence collected in the works. A more recent collection was made by Louisa E. Rhine and I present details of her work below.

Hidden Channels of the Mind – ESP and precognition

Another notable collection is the work of Louisa E. Rhine who was concerned with collecting anecdotal evidence at the same time that her husband, J.B. Rhine, was examining evidence for psi in long-run trials at Duke University (more on this shortly). She believed that the anecdotal evidence could provide avenues to explore for the more sophisticated (in terms of ability to control the sensory leakage problem and replication) experimental evidence. She maintains that aims to find ‘proof’ for psi in anecdotal collections alone are futile because ‘in none of them did the evidence prove sufficiently convincing for a final decision. It was impossible to so substantiate and verify this kind of material that it would give final proof of anything’ (Rhine 1967, p5). However, she sees that they are important because ‘even, so, the study of actual experience today can have a value for the student of ESP, because of the other line of study already mentioned, that of experimentation’ (Rhine 1967, p5). So the collection of the anecdotal evidence served a similar purpose to the original aims of the authors of *Phantasms of the Living*.

As the Duke University’s fame as a research institute for psi spread, Louisa E. Rhine had a remarkable source of anecdotal stories. People would write to her unprompted because she was associated with the experimental laboratories. Rhine was not as concerned as the *Phantasm* researchers with making further verification of the material. Her belief was that the anecdotal evidence would serve to encourage future experiments and was in the latter where the real ‘proof’ for ESP would lie. Her method was as follows;

In studying the mass of material that was available... the first thing was to separate those experiences that could have involved ESP from those that could not. Possible ESP experiences were taken to be those that bring concrete information not supplied either directly or indirectly by the senses. The accounts must therefore state explicitly what the experience was like, and also, just as clearly, the real happening and attendant circumstances. With these items to evaluate, one had a basis for deciding the likelihood that new information had been acquired and whether or not a sensory channel could have operated. The information however, could be a complete idea, or only a fragment of one. (Rhine 1967, p10)

Here is one particularly interesting example because it involves a precognition of an event that was acted upon and resulted in saving a baby from harm:

In Washington State a young woman was so upset by a terrifying dream one night that she had to wake her husband and tell him about it. She had dreamed that a large ornamental chandelier which hung over their baby's bed in the next room had fallen into the crib and crushed the baby to death. In the dream she could see herself and her husband standing amid the wreckage. The clock on the baby's dresser said 4:35. In the distance she could hear the rain on the windowpane blowing outside.

But her husband just laughed at her. He said it was a silly dream, to forget it and go back to sleep; and in a matter of moments he did just that himself. But she could not sleep.

Finally, still frightened, she got out of bed and went to the baby's room, got her and brought her back. On the way she stopped to look out the window, and saw a full moon, the weather calm and quite unlike the dream. Then, though feeling a little foolish, she got back into bed with the baby.

About two hours later they were wakened by a resounding crash. She jumped up, followed by her husband, and ran to the nursery. There, where the baby would have been lying, was the chandelier in the crib. They looked at each other and then at the clock. It stood at 4:35. Still a little skeptical they listened to the sound of rain on the windowpane and wind howling outside. (Rhine 1967, p198-199).

This is a striking account of apparent anomalous knowledge of a future event.

If this is a genuine case of a precognitive dream then it makes for a very interesting theoretical investigation because action was taken to avert a disaster which, apparently, would have befallen the family. However, accounts in catalogues of anecdotal evidence like this raise many questions about the strength of personal testimony: was the dream and the time and action confabulated after a stressful event? Was this merely a case of coincidence? And memory can be faulty after traumatic events. However, certain elements of the story are verifiable by a second witness as the husband can confirm that his wife told him the details before the event and the fact remains that the chandelier did fall and the baby was not in the cot underneath. But we must also question whether his memory of the events was correct. Then there is always the case that they might be prone to delusional belief or, are tricksters and we must have trust that the editor of the collection of stories has been faithful to the initial rendition of the story. I will take up this issue further in regard to anecdotal evidence at the end of this section.

The collations of both the *Phantasms of the Living* and the *Hidden Channels of the Mind* focussed in the main on ESP and precognition. They indicate that the experience of acquiring information without the use of the regular five senses is reported at a significant rate amongst the general population in both the British Isles and the USA. Similar accounts continue to be reported by people and are more often

than not in these times collected either by sociologists or anthropologists as part of academic assessments of the experience of psi. What to make of them is another question all together. Concerns about how to judge whether the apparent psi events were perhaps due to coincidence or the result of faulty memories have inspired some researchers to attempt replication of the phenomena in more controlled settings. I will outline these experiments shortly. But first I will examine the anecdotal evidence for the other type of apparent psi - psychokinesis.

W.G. Roll – PK

I turn now to a collection that extends over time involving the phenomena anomalous action at a distance associated with poltergeists incidents. I note briefly that in the psi-oriented literature the PK displayed by mediums is also cited and examined (such as the discussion of the PK feats of D.D. Home and Eusapia Palladino—amongst many others—in the work of the philosophers David Ray Griffin and Stephen E. Braude). However, in this thesis I do not wish to include the mediumistic evidence that is often discussed in the survivalist psi literature. The evidential, ontological and philosophical complexities are worthy of a study to themselves and are beyond the scope of this thesis.¹⁷

A comprehensive compilation of poltergeists occurrences from 1612 to 1974 was undertaken by W.G. Roll and published in the book *Handbook of Parapsychology* in 1977. Roll had also investigated some modern poltergeists incidences himself and his added first-hand testimony to some apparently unexplainable events is strengthens the presentation of the evidence. The scope of the survey was quite large and included 116 cases with representations from Britain, America, Europe and a smaller number from Asia, as well as one from Mauritius. It commonly occurred (in 92 cases) that one person appeared to be the focal point. The median age of this person was 13 for both males and females, although there were two people aged over 70 (one male and one female). The following is an example of a typical incident reported by Roll who had undertaken the investigation himself:

¹⁷ The survivalist literature has recently been covered by the philosopher Stephen E. Braude (2003) in his book *Immortal Remains*, which is an examination of the evidence for survival and is a thorough analysis of the null, super-psi and survival hypotheses.

Several objects had moved when Roger, a 12-year-old boy was near, but it had happened out of my sight. This was in his home in Kentucky, December, 1968. I therefore stayed as close to Roger as I could. One time he went out to the kitchen while I followed a few feet behind. When he came to the area between the sink and the kitchen table he turned around facing me. At that moment the table jumped into the air, rotated about 45 degrees, and came down on the backs of the four chairs that stood around it, its four legs off the floor. No one else was in the area, and I was unable to discover any ordinary explanation of the event. (Roll 1977, p387)

Roll then analyses other similar occurrences of objects moving in a seemingly deliberate way (that is, by objects hovering, fluttering, revolving or turning corners) which were reported in 43 of the 105 instances in which movement of objects was recorded. Sounds accompanied 63 of the cases. In 10 of the cases the phenomena included light flashes. Other occurrences were the showering of stones on the roof, the appearance of water and, probably the most bizarre of all and most challenging to explain by non-fraudulent explanations, the teleportation of objects. An investigator in the famous Rosenheim case witnessed such an event. After being told that objects that had disappeared from the house had been seen falling outside, 'he put bottles containing perfume and tablets on the kitchen table, asked the inhabitants of the house to go outside, closed all the windows and doors and then left himself. After a short time, the perfume bottle appeared in the air outside the house, and a bit later on, the bottle of tablets appeared in the air at the height of the roof and fell to the ground in a zigzag manner.' (Roll 1977, p391)

To increase the strength of testimony to such anomalous events, Roll focuses on investigations by qualified and aware people. He reports events that are well documented and often witnessed by many people including police officers (who are sometimes called in to investigate before the paranormal nature of the event becomes apparent), clergy (who are also called in if the family of the apparent target of the phenomena ascribe a supernatural explanation for the phenomena) as well as professional investigators (such as parapsychologists or other field researchers). If the studies of these cases are to be believed, the field of PK anecdotal studies may hold some information particularly pertinent to PK in general. The only trouble is that the occurrence is not produced on demand and seems to be uncontrolled by the person who appears to be the instigator of the PK effects, the cause of which remains a mystery, as are the mechanisms which might be responsible for the physical effects that have been witnessed.

Summary of anecdotal evidence

The testimonial issues involving anecdotal evidence are debated in the psi literature. Despite the best intentions of the people who have collated the anecdotal evidence for psi into catalogues, people are left to wonder if what the people thought occurred really did occur, especially when the nature of the evidence is so counter to what current science leads us to expect as possible. It might be a case of seeing is believing, but even then one can doubt one's own senses and investigative skills. Also, for the purposes of further theoretical and experimental investigation, the spontaneous cases prove problematic, although poltergeist cases provide an opportunity for controlled conditions as the anomalous events sometimes span months.

Furthermore, in cases of ESP, there is always the question of chance being accountable for the correlation between the apparent acquisition of anomalous information and the event to which it pertains. For instance, at any one time there are people dying in the world, there are also loved ones thinking of their family or friends, so how could the chance expectation ever be calculated accurately in order to assess whether the phenomena is anything more than a coincidence? Problems such as these have led to the development of laboratory controlled experiments, a discussion of which is set out in the section below.

All of these possibilities must be taken into consideration when one is dealing with anecdotal evidence for an account of psi. Stephen E. Braude makes mention of the problem when he makes a case for the importance of anecdotal evidence:

One notorious problem with evaluating the semi-experimental and anecdotal evidence of parapsychology – especially the more bizarre reports – is that many cases have fallen victim to the gnawing tooth of time. We can no longer interrogate witnesses or study the ostensible psi agents for ourselves. We cannot determine first-hand that all reasonable precautions were taken against trickery on the part of mediums, or see for ourselves whether investigators of poltergeist disturbances overlooked some means of fraudulently (or unwittingly) producing the phenomena. We are forced to rely on eyewitness accounts at best (some written considerably after the event) and follow-up investigations at worst – not to mention numerous assumptions concerning the integrity and reliability of those whose depositions serve as evidence...Can there really be anything here for the serious researcher to sink his teeth into? (Braude 1986, p25)

The answer to the question Braude poses is important and involves issues regarding the strength and legitimacy of human, eye-witness testimony and issues of memory. Braude makes a case that testimonial evidence for spontaneous psi events in the form of anecdotes should be considered legitimate evidence for apparent psi events. He differentiates between authentic and evidential evidence as follows:

- (D1) A report of an ostensibly paranormal event is *authentic* if and only if the reliability of the testimony is such that the event probably occurred as reported.
- (D2) A report of an ostensibly paranormal event is *evidential* if and only if the report is authentic and the event is plausibly interpreted as paranormal.
(Braude 1986, p26)

I take this to mean that anecdotal evidence for psi must first be as verifiable as possible and also all normal means of explaining the occurrence of the phenomena must have been analysed and investigated thoroughly. There are some ways of ensuring that what one is dealing with is testimony that fulfils the first definition, for instance if more than one reliable witness experienced the event first and if witnesses concur on the essential elements of the apparent psi event. Testimony can be considered further strengthened by looking at the reporting mode of the event (reports made closer to the time the event was experienced would be less likely to have suffered from confabulation or memory distortion) and physical evidence such as photographs or film of events can provide back up to the personal testimony of the anecdotal evidence.

Further strength is added to the spontaneous cases by the use of the anecdotal evidence as a basis on which to attempt replication of the phenomena in controlled laboratory settings; a brief overview is given below. I turn now to the experimental evidence for psi.

2.2.3 Controlled experimental evidence

This section will outline the laboratory experiments that have developed since the 1920s and which, to others, are where evidential proof for ESP and PK are to be better explored.

I recounted before that as early as 550BC there is record of a King who attempts to ascertain the veracity of psi. And as Louisa E. Rhine points out, experimental evidence for anomalous phenomena stems back prior to the founding of the Society for Psychical Research in the form of Mesmeric-inspired parlour games as well as more formal experiments some of which are detailed in *Phantasms of the Living*. The inspiration for the early experiments came from the realisation that some patients under hypnosis or who were 'mesmerized' showed the ability to perceive information that they should not otherwise know (Forrest 1999, p96) Deliberate attempts to produce the anomalous acquisition of information were forthcoming both

in staged shows as well as by investigators who would set up experiments by sealing a picture in an envelope and asking the subject to replicate a drawing of it.

However, it is not until the early decades of the 19th century that experimental psi research became the main means by which evidence for psi was explored. Joseph Rush comments in *Parapsychology: a historical perspective* that:

Lighting, the aurora, even sunlight are all electromagnetic phenomena. Yet electromagnetic science grew from investigations, not of these marvels, but of strange forces exerted by the lodestone (a natural magnet) and by rubbed amber. These phenomena were weak and apparently trivial, but they could be subjected to controlled experiments. Similarly, the predominant concern of psychical research has shifted gradually from unmanageable marvels to relatively minor but more controllable phenomena. (Rush 1986a, p25)

Experiments were consequently developed that ensured that there was no sensory leakage in the case of ESP, or possible regular forces used in the case of PK. Memory failure or confabulation of a story after the event could therefore also be ruled out. One of the biggest questions regarding anecdotal evidence for telepathy is how to take into consideration the possibility that instances of telepathy are not occurring by chance. Hence many of the early experiments involved forced choice experiments in which the participants of the experiment had limited options to choose from (a deck of cards for instance) so that statistical analysis could work out above (or below) chance expectations for the results. Below I briefly summarise the development of experiments for ESP, PK and a small section on time-displaced psi.

Early ESP experiments

Although both Stanford University and Harvard University can lay claim as hosts of early 19th century ESP experiments, it is not until the 1920s that more permanent laboratories were designated the task of attempting to replicate telepathy under controlled conditions. J.B. Rhine (considered as the ‘father’ of modern parapsychology) was responsible for overseeing these early experiments and developing the methodology of long-run experiments with multiple trials in order to accrue enough data that could then be used to ascertain if there was an overall psi-effect apparent.

Early telepathy experiments conducted by J.B. Rhine consisted of runs of experiments using a pack of 25 cards (5 sets of 5 cards, with the patterns of a circle, square, cross, star and waves in each set). These had been created by Dr. K.E. Zener, a colleague of Rhine’s in the 1930s (Rhine J.B. 1964, p47). The subject would make a

guess as to which card was the target. The results were recorded and statistical analyses undertaken. Many trials were undertaken with the same cards as targets. By 1934 when he published his now famous monograph, *Extra-sensory Perception*, Rhine had over 90,000 trials to perform analyses on (Rhine J.B. 1964, p46).

The publication raised interest in the phenomena and other laboratories attempted replication. Some were successful and others not so. It also initiated the ongoing discussions between those outside of parapsychology who remained skeptical about the phenomena and methodology. Discussions were often productive and resulted in changes to parapsychological experimental methodology. Theories about the production of ESP developed and now the main source of ESP experimental data comes from what is known as the 'Ganzfeld' experiments.

Ganzfeld experiments

In 1994 Daryl Bem and Charles Honorton published an article in the *Psychological Bulletin*, in which they maintained that:

We believe that the replication rates and effect sizes achieved by one particular experimental method, the ganzfeld procedure, are now sufficient to warrant bringing this body of data to the attention of the wider psychological community.
(Bem & Honorton 1994, p4)

In this article they detail the ganzfeld series of experiments which commenced in the mid 1970s almost simultaneously by three different researchers: William Braud (University of Houston), Adrian Parker (University of Edinburgh) and Charles Honorton, the co-author of the article.

Ganzfeld is a word first used in the 1930s in experimental psychology to 'test propositions derived from gestalt theory' (Bem & Honorton 1994, p5). The procedure was developed for parapsychology on the supposition that previous ESP experiments (such as those run by J.B. Rhine at Duke University involving long runs of forced-choice experiments) were not conducive to psi as it would be found in more natural circumstances outside the laboratory. The three original researchers who developed this technique were also inspired by the idea that psi was often associated with altered states of consciousness, particularly ones in which the regular senses were dulled and the focus was on internal imagery such as dream or meditative states (Bem & Honorton 1994, p5). Psi, they thought, might be filtered out by other senses in ordinary situations and accordingly the ganzfeld procedure developed as follows.

The subject is placed in a soundproof room in a comfortable reclining chair. Halved ping-pong balls are taped over the eyes and the light shining through is red. White noise plays on headphones. The subject is asked to perform some relaxation exercises. This technique of creating a blanket of unobtrusive sensory experience which is unstimulating to the senses is what gives the ganzfeld its name ('whole field' in German). The hope was that if telepathy was occurring it would be more likely to be recognised by the subject whose regular sensory input is numbed to a certain degree by the red light and white noise (Rao 1984, p197). In another room, the sender is given the target which has been randomly selected from a large pool of pictures or short videos (or in some earlier experiments View-Master slides). The sender concentrates on the target at a designated time while the subject in the reclining chair is asked to verbally describe any images, feelings or thoughts out loud. These are taped (or in the early days transcribed). After 30 minutes (usually), the subject is shown four randomly selected pictures (or video clips, or View-Master slides) which include the target and asked to rate them according to how strongly each of them correlates to the thoughts and images previously recorded and experienced. The experimenter carrying out this part of the experiment is not aware what the target is either, so there is no chance of the subject being discreetly lead to a correct hit. A 'hit' is scored if the subject correctly identifies the target as the highest rating. Independent judging can also be carried out by giving the judge the four possible stimuli and the tape record of images from the half-hour 'sending' period (Bem & Honorton 1994, pp5-6).

An early ganzfeld experiment performed by Charles Honorton and published in 1976 was undertaken at the Maimonides Medical Center (Terry & Honorton 1976). The subjects were undergraduate students divided into six teams. Each team had three members designated as a 'sender', 'receiver' or 'monitor'. The targets were View-Master reels with pictures on each reel similar in content. After the session was over the 'receiver' was asked to rank a possible four reels according to how strongly they corresponded to the images gained during the ganzfeld period.

The results were promising: 'A hit was defined as a correct first or second choice out of a packet of four slide reels... Overall, the five supervised teams obtained a scoring rate of 78%, with 21 hits in 27 sessions' (Terry & Honorton 1976, p210). Pure chance would expect a hit rate of 50%. The success of these early experiments encouraged other laboratories to undertake their own ganzfeld studies.

In 1982 Charles Honorton presented a paper in which he concluded that 'the experiments at that time provided sufficient evidence to demonstrate the existence of psi in the ganzfeld' (Radin 1997, p78).

By 1985 'ganzfeld experiments had appeared in thirty-four published reports by ten different researchers. These reports described a total of forty-two separate experiments. Of these, twenty-eight reported the actual hit rates that were obtained. The other studies simply declared the experiments successful or unsuccessful' (Radin 1997, p78). These 28 studies which did provide the hit rate were used by Honorton and Ray Hyman, a psychologist who was vocally sceptical about the existence of psi, to independently perform two meta-analyses on the data at hand. The results they obtained indicated that the chances of the hits being coincidental were ten billion to one (Radin 1997, p79). These results were published in the *Journal of Parapsychology* during 1985 and 1986. They included the original meta-analyses as well as ongoing communication and rejoinders by the individuals involved as well as by outside observers (Hyman 1985). In a joint communiqué Hyman and Honorton stated that:

We agree that there is an overall significant effect in this data base that cannot reasonably be explained by selective reporting or multiple analysis. We continue to differ over the degree to which the effect constitutes evidence for psi, but we agree that the final verdict awaits the outcome of future experiments conducted by a broader range of investigators and according to more stringent standards.
(quoted in Bem and Honorton 1994, p9)

Accordingly, the ganzfeld procedure was refined to accommodate the 'more stringent' requirements which were detailed in this same communiqué. These included more secure protection against sensory leakage, not only when the participants were in the ganzfeld but also afterwards when the 'receiver' was shown the four targets to rank. It was pointed out that when the same target was used by the 'sender' the possibility of sensory clues such as finger prints or smudge marks could indicate which picture had been the target picture. Other requirements involved the 'documentation of randomisation methods ... statistical correction for multiple analysis, advance specification of the status of the experiment (e.g., pilot study or confirmatory experiment)' (Bem & Honorton 1994, p9).

Subsequent to this publication, a new series of experiments was devised which were christened 'autoganzfeld' experiments. In order to ensure that no sensory cues were to be given and to ensure randomisation of the target pictures, a computer was

used to select and present the target pictures or videotapes. The randomisation and presentation of the targets was now fully automated. The verbal exchanges between the participants were collected on audiotape (Bem & Honorton 1994, p10). A subsequent meta-analysis of these experiments was undertaken and a 32% hit rate recorded where chance would expect a 25% hit rate (since the subject chose one from four possible targets) (Bem & Honorton 1994, p10-11). Although more laboratories would need to perform similar experiments to confirm these findings, it appeared promising that at last parapsychology had found an experimental procedure that consistently produced positive results (Radin 1997, p87). In 1996, other laboratories still undertaking autoganzfeld-like experiments were the University of Amsterdam, the University of Edinburgh, Gothenburg University in Sweden, and, in the United States, Cornell University and the Rhine Research Center in Durham, North Carolina (Bem 1996, online). Today the situation remains similar.

The results of the ganzfeld experiments continue to be collated and have created discussion amongst the parapsychology community. A relatively recent meta-analysis by Julie Milton and Richard Wiseman was published in the *Psychological Bulletin* (Milton & Wiseman 1999) which provided a 'follow-up meta-analysis of 30 additional ganzfeld studies that had been conducted from 1987 through 1997. They concluded that these studies did not yield an overall significant effect, thereby calling into question the replicability of the ganzfeld procedure' (Bem, Palmer & Broughton 2001, p208). Following the publication of this article much debate ensued as to the validity of the Milton and Wiseman meta-analysis, on the grounds that it used ganzfeld experiments that differed significantly in procedure to the original experiments used in the Bem and Honorton (1994) meta-analysis.

A paper published in 2001 by Daryl Bem, John Palmer and Richard Broughton, 'Updating the ganzfeld database: A victim of its own success?', addressed the issue. In this paper they argued that the insignificant result of the meta-analysis performed by Milton and Wiseman was due to two major considerations. The first was that 10 new studies that were published shortly after the Milton and Wiseman paper was published were not included in the meta-analysis. A subsequent meta-analysis, reported in the paper, including these studies did produce a significant result. They concluded: 'The 10 new ganzfeld studies yield an overall hit rate of 36.7%... All 40 replication studies combined yield an overall hit rate of 30.1%. This latter set of figures thus represents the current status of ganzfeld studies published after those

summarised in Bem and Honorton (1994)' (Bem, Palmer & Broughton 2001, p214).

The subjectivity of the meta-analysis as a method for evaluating large amounts of data was brought to the fore in the discussions. Meta-analysis involves specification of which experiments will or will not be included in the analysis. The setting of the criteria and the subsequent selection of which experiments fit the criteria is a subjective process and it can be seen from these two different meta-analyses that two very different scores have been obtained. This sort of dispute indicates to some observers that this approach to procuring testable evidence for psi might not be the best method. (This will be discussed further in the next section.)

Despite this dispute, the ganzfeld and autoganzfeld experiments are generally considered the strongest series of studies that have attempted to replicate psi (either telepathy or clairvoyance) under controlled conditions in laboratories and to have produced well documented data that is analysable in terms of current statistical and probability theory. They are, however, still the subject of debate and ongoing analysis and there is no consensus even from within the parapsychological community as to the strength of the overall data.

Remote viewing

The modern series of remote viewing experiments were initially created and carried out by two physicists, Russell Targ and Hal Puthoff at the Electronics and Bioengineering Laboratory of the Stanford Research Institute (Targ & Puthoff, 1977). In the remote viewing experiments the procedure generally consists of 'having an experimenter visit a randomly selected target site and having the subject, sensorially unaware of the location, describe to a second experimenter the place which the first experimenter is visiting during the same time' (Rao 1984, p225). However, sometimes the subject of the experiment was only given latitude and longitude coordinates of a site and they were asked describe what was to be found there. Judging was usually performed by getting an independent judge to match the pictures or transcripts of the descriptions made by the subject with the a pool of pictures, one of which was the correct target known as 'the target pool' (Uttis 1996, p8).

Similar experiments had been carried out before. For example, one series of such experiments was written about by the novelist Upton Sinclair in a book published in 1930 called *Mental Radio: Does it Work and How?* In it Sinclair details a

series of telepathic experiments that his wife, Mary Sinclair, had taken part in. For example, she would relax on her couch while at a distant location a 'sender' (in this instance, Upton Sinclair's brother-in-law) would draw a picture at an assigned time. She would then make a note of the image that appeared to her and they would later compare the two. At one stage he drew a fork and she wrote: 'See a table fork. Nothing else.' (Sinclair 1930, p13). Targ and Puthoff were aware of such anecdotes but their contribution to the field was to oversee such experiments being performed in a respectable laboratory under controlled conditions, by physicists who were able to publish their findings in peer-reviewed journals.

The series of experiments that were performed in remote viewing by the Stanford Research Institute became known as the 'SRI experiments'. They were carried out by Targ and Puthoff at the SRI from 1973 until 1988, at which time an analysis was undertaken by Edwin May. This involved 'all 154 experiments conducted during that era, consisting of over 26,000 individual trials. Of these 20,000 were forced choice and over a thousand were laboratory remote viewings.' (Utts 1996, p8). The early work by Puthoff and Targ had been criticised for methodological flaws in the target pool selection and presentation of the material for judging. The main concerns were primarily to do with the judging procedure and the availability of extra information in the transcripts (such as dates and times) that could possibly be used to match the targets (Marks 1986, p113). However, the results were significant and well accepted enough for further experiments to take place. Edwin May became the principal investigator of another series of experiments based on the SRI experiments and overseen by a committee of academics from a variety of disciplines including 'statistics, psychology, neuroscience and astronomy' (Radin 1997, p101). These became known as the SAIC experiments as they were undertaken by the Science Applications International Corporation.

Once again the results of the experiments created controversy. Both the SRI experiments and the SAIC experiments were reviewed by independent researchers in papers commissioned by the CIA. Ray Hyman (a psychologist with Oregon University) and Jessica Utts (a statistician with University of California, Davis) were chosen for the task. They came to different conclusions. Utts concluded:

It is clear to this author that anomalous cognition is possible and has been demonstrated. This conclusion is not based on belief, but rather on commonly accepted scientific criteria. The phenomenon has been replicated in a number of forms across laboratories and cultures. The various experiments in which it has been observed have been different

enough that if some subtle methodological problems can explain the results, then there would have to be a different explanation for each type of experiment, yet the impact would have to be similar across experiments and laboratories. If fraud were responsible, similarly, it would require an equivalent amount of fraud on the part of a large number of experimenters on an even larger number of subjects


What is not so clear is that we have progressed very far in understanding the mechanism for anomalous cognition. Senders do not appear to be necessary at all; feedback of the correct answer may or may not be necessary. Distance in time and space do not seem to be an impediment. Beyond those conclusions, we know very little. (Utts 1996, p16)

Hyman on the other hand states:

My report argues that Professor Utts' conclusion is premature, to say the least. The reports of the SAIC experiments have become accessible for public scrutiny too recently for adequate evaluation. Moreover, their findings have yet to be independently replicated. My report also argues that the apparent consistencies between the SAIC results and those of other parapsychological experiments may be illusory. Many important inconsistencies are emphasized. Even if the observed effects can be independently replicated, much more theoretical and empirical investigation would be needed before one could legitimately claim the existence of paranormal functioning. (Hyman 1996, online)

The conclusions drawn are once again disputed by those who are actively working in the field. However, because one of the findings in the CIA-commissioned report was positive about the results, as well as the fact that Targ and Puthoff actively encouraged skeptics to take part in their remote viewing experiments, the remote viewing series of experiments and the subsequent SAIC experiments are often listed in support of evidence for psi. Remote viewing experiments are still undertaken today.

PK experiments

Early PK experiments performed in the laboratories of J.B. Rhine were usually in the form of dice-rolling. Once again, many long runs were performed in the anticipation that results would show above-chance findings that could not be explained by fluky runs without statistical significance. These early experiments in which subjects were asked to hand-throw dice and attempt to 'will' a desired outcome produced results 'significantly above chance, with a probability of over a billion to one.' (Reinsel 1990, p192). Early methodological concerns were addressed by the introduction of a mechanical dice thrower and the random selection of targets were introduced. There was still the possibility that the dice themselves were not as random as they could be, because (for instance) on the sides of a regular die, the dots that represent numbers have a small scoop out of them. This would mean that the figure  on the die would

show more often than the expected one out of six times over long runs because it would be lighter than the other sides of the die; consequently this discrepancy could skew the data in favour of hits. However, a meta-analysis performed by Dean Radin and Diane Ferrari in 1989 concluded that even after taking out studies where this was a problem, 'there was still highly significant evidence for mind-matter interaction, with odds against chance of greater than a trillion to one' (Radin 1997, p137).

The means of testing for PK was refined when Helmut Schmidt developed a random number generator (usually referred to as an RNG) in 1960s. This type of machine is used in both ESP and PK experiments today as the best means of achieving a random selection of targets and as a target for PK interaction itself. The machines 'operate by generating random binary electrical pulses that serve as targets, in the manner of an electronic coin flipper.' (Reinsel 1990, p197). They are generated by either 'electronic noise or radioactive decay times. Both of these are physical sources that, through proper circuit design, provide electronic spikes at unpredictable times' (Radin 1997, p138). These spikes interrupt a clock which is in a one of two possible states (usually represented by the binary numerals '1' or '0'). As each numeral has a 50% chance of appearing, a run of the RNG is expected over time to produce the same number of each, just as in a coin tossing experiment, but more accurate. The information is often displayed on a computer, or in the early days in terms of light bulbs glowing on or off. I note that not all RNGs are binary, however this example serves to indicate the basic experimental procedure.

A hypothetical experiment based on real ones might consist of the subject attempting to make one light bulb of a possible two light bulbs light up more often than the other one. The lights are being turned on and off by the results of the RNG but if PK is possible, and intention can produce a desired result at a distance, then the results can be analysed according to the amount of times the intended light turned on compared to what would be expected by chance alone (50%). Once again, many runs of experiments would need to take place and the data analysed in order to show that a successful run was not the result of a once-off coincidence. The advantage of an RNG PK test is that, like the autoganzfeld procedure, the randomisation and data collection is performed without human intervention, thus limiting the possibility of normal means affecting the experimental data or experimental error in transcribing the data (Radin 1997, p139; Reinsel 1990, p197).

Precognitive/retrocognitive experiments

The remaining psi category is that of time-displaced psi—more specifically, precognition and retrocognition. Because precognition is viewed as a possibility through the use of ESP or even potentially PK, experimental evidence for precognition is usually carried out using the same experimental procedure as the above experiments in ganzfeld, remote viewing and PK. For instance, in the cited remote viewing experiments, precognitive ESP was tested by selecting the target place *after* the remote viewing was performed. Earlier experiments also tested for precognition—for instance, a subject would be asked to guess the series of cards in a pack of cards *yet to be shuffled*, the guesses were recorded, the cards then shuffled and the results analysed. Schmidt used his RNGs to test for precognition and in a trial with three subjects selected because of their apparent success in previous trials: ‘Over a total of 63,066 responses, the results from these three subjects were highly significant, with odds of 2000 million to 1 against chance.’ (Reinsel 1990, p198). Precognition is one of the most interesting and baffling of psi phenomena but, because it involves ESP or PK, it is tested for under the same experimental conditions as those discussed above so I will not go into great detail here. A similar situation obtains for retrocognition, which has tended to dominate the literature less, but which is no less intriguing. I focus on precognition in this thesis.

Scientific evidence as testimonial evidence

Further to the discussion regarding testimony that occurred in the last chapter, I will note here that scientific evidence is itself a type of testimonial evidence. However, as I mentioned in the discussion of the Modern Miracle Argument, it is of a different kind than that of historic testimony. It would be impossible for one person (such as the interested philosopher) to attend and personally attest to every single scientific experiment ever performed on psi. At some point we must rely on the publication of the a scientist’s data and theory represented in journals, books and conference presentations. As with anecdotal or historic evidence, scientific testimony can be vulnerable to human error, fraud, sloppy experimental procedure and ignorance. Scientists hold views that will inform their assessment of data and theory and these

could be guiding the interpretation of results or set up of investigative methodology (Brewer & Cline 1994, pp309-310).

As I suggested in the earlier account of the Ribena investigation, there is a point at which we, as a society, determine when valid testimony has been procured, just as there is a point at which we rely on eyewitness testimony in a court of law. It is not a perfect system but it is the best guess at any one time. With special attention to experimental procedure and method a consensus can be reached regarding results. There are also checks and balances in the scientific process and recourse to analysis data with regard to such concepts as repeatability and replication of results in other laboratories.

I suggest that the experimental evidence for psi is reasonably solid on these grounds. This is based on length of time that psi experiments have been carried out (almost a century); and that studies have been undertaken and repeated in various laboratories to such an extent meta-analyses can be undertaken. The results have been published in peer-reviewed journals and discussed in professional forums. Questions raised about how strong evidence must be in order to be accepted by the scientific establishment are also relevant. It can be shown that the overall meta-analysis significance rates are equal to or higher than those accepted by mainstream science. (Radin 1997, p55-56).

It should also be borne in mind that any discussion regarding the testimony of scientific evidence and consequent suggestion that psi experiments are questionable in their methodology or use of statistics must also be applied more widely to the scientific method in general and epistemological issues in science in particular. I discuss some psi-specific issues later in Chapter 5 when I discuss the article in *Nature* by which challenges the use of statistics in psi experiments.

Contemporary research projects

The sections above detail the three types of evidence that together comprise the experimental body of evidence for psi: historic, anecdotal and laboratory.

Contemporary summaries of the state of play for psi research indicate that all three are still being compiled. There is still interest in the historical representation of psi-like phenomena, anecdotal evidence and spontaneous psi occurrences are still

reported and investigated, however, it is the results from the controlled laboratory experiments that are most often discussed in parapsychology journal.

Currently there are at least 19 laboratories or research institutes associated with high-level (academic) research into psi phenomena. These are either research laboratories within already established mainstream disciplines within universities (such as the Koestler Research Unit) or institutes in their own right. The main ones are:

Abteilung für Psychologie und Grenzgebiete der Psychologie (A.P.G.P.)
University of Freiburg, Germany

Cavendish Laboratory and the Mind-Matter Unification Project of B. D. Josephson
Cambridge Univ., U.K.

Cognitive Sciences Laboratory and the STARGATE program
Palo Alto, CA, U.S.A.

International Consciousness Research Laboratories
Princeton, U.S.A.

Institut für Grenzgebiete der Psychologie und Psychohygiene
University of Freiburg, Germany

Koestler Parapsychology Unit at the Department of Psychology
University of Edinburgh, Scotland, U.K.

Perrott-Warrick Research Unit at the Psychology Department
University of Hertfordshire, Hatfield, U.K.

As an indication regarding the research content of psi-oriented laboratories and units, the Institut Für Grenzgebiete der Psychologie und Psychohygiene at Freiburg University reports the following summary of their activities in their Biennial Report 2002/2003:

The activities of the new Institute focus on interdisciplinary exploration of anomalous phenomena, such as extrasensory perception, psychokinesis, altered states of consciousness, extraordinary experiences, and the crossing of frontiers. The common denominator of current research centres on an improved understanding of psychophysical interactions from the perspectives of the natural sciences, social sciences and the humanities. (Vaitl 2004, p3)

Other institutes tackle a specific phenomenon, such as the PK RetroPsychoKinesis Project (R.P.K.P.) at the University of Kent, Canterbury, U.K. or some study psi within an interdisciplinary environment such as in departments of consciousness or cognitive studies. There is one anomalous research unit in Australia which is attached to Adelaide University. It is called the Anomalistic Psychology Research Unit and is run by the psychologists Dr Michael Thalbourne and Dr Lance Storm. (Unfortunately, as I write this I have been informed that the unit will most likely be dissolved next year).

There is a lively, if small, international research culture that investigates psi phenomena and which produces peer-reviewed journals in which parapsychological research is published. The main journals are the *Journal of the Society of Psychical Research*, *The Journal of Parapsychology* and the *European Journal of Parapsychology*. There is one Australian journal which is produced by the Australasian Institute of Parapsychological Research, called the *Australian Journal of Parapsychology*.

The study of psi is ongoing and it is through these non-mainstream research laboratories and institutes that the bulk of the research is carried out. Below I show that the evidence requires a response.

2.3 Response to the evidence

I have shown that there is a compelling and comprehensive body of evidence to draw on, one that has been gathered throughout history and continues to be examined and gathered in both laboratories as well as in the form of anecdotal collections.

Firstly, the historic body of evidence indicates that the phenomena has been experienced and variously explained in both oral and written cultures for as far back as we can ascertain. The phenomena is similar across cultures, even if the explanation for the phenomena differs. The phenomena associated with these accounts therefore require a contemporary understanding.

Secondly, the anecdotal accounts indicate that the phenomena is not some kind of historic anomaly due to human misunderstanding in pre science-dominated times. As the outline of the body of evidence for psi shows, the phenomena still occur to people across cultures and there is a prevalent belief in the phenomena which is studied by psychology, sociology and anthropology. Anecdotal compilations of paranormal experience are still being compiled – reports of the phenomena have not diminished as one would expect of a fad or episode of cultural-driven hysteria.

Finally, the laboratory evidence appears to confirm on a small scale similar phenomena to that which is reported in everyday life. This further indicates that the phenomena is something actual rather than imaginary or mistaken. The anomalous nature of the phenomena produced in the laboratories and its potential to impact on theories of mind, time and causation also indicates that the body of evidence for psi requires a response.

What response is most appropriate is not always clear cut. In his discussion of testimony of 'astonishing reports' Coady concludes that '... lack of suitable explanation of reports, other than their truth, is a consideration against rejecting them, but it is only one consideration and it is defeasible in various ways. The explanatory requirement is an ingredient in the overall verdict, along with the internal and external circumstances...' (Coady 1992, p198). So an apparent lack of a normal explanation should not automatically count against the veracity of the testimony. I hope that my brief overview of the historic, anecdotal and experimental testimony that constitute the body of evidence for psi shows that there is a substantial amount of evidence for the anomalous phenomena and it requires some kind of assessment. I agree with Coady that fraud or self-delusion is one possible explanation for anomalous phenomena. But I hope that I have shown that the body of evidence is substantial and a significant amount of investigators have attempted to replicate the phenomena. Stringent adherence to scientific methodology is also apparent, which reduces that changes that fraud has occurred in the production of the results. Any potential charges of such an ascription to explain the data also requires further analysis as an explanation for the phenomena. Fraud, as a blanket explanation for psi, should not be employed without some justification as to how they appropriately explain the body of evidence for psi. I suggest that accounts for the evidence should be compared to other attempts to explain the anomalous phenomena associated with apparent psi events. I consequently now turn the attention to the theories that support the hypotheses which have been put forward to account for psi.

2.4 Compilation of hypotheses

This section commences the second stage of the three-state IBE re-analysis; the compilation of hypotheses stage is reviewed and re-compiled. Before I recouch the psi debate as a psi hypotheses discussion, I will explain why it is important to allow for the comparison of hypotheses that explain psi. Both the MMA and the EFA contend that there are two possible hypothesis that can explain the evidence for psi:

- 1) that the evidence is produced by fraudulent means

or

- 2) that the evidence is produced by psi.

In the last chapter I criticised this response as being insufficient because it did not take into consideration other hypotheses that have been proposed. I will now outline in more detail the theories that support other possible explanations for psi. I subsequently use the theories to compile a more thorough list of hypotheses.

Because my concern is to securely ground the discussion of psi in philosophy, I will perform this analysis by comparing problem of compilation of psi hypotheses to another similar philosophical problem, that of the hard problem of consciousness. I will then use the various philosophical approaches as a template in order to compile the psi hypotheses.

2.4.1 The hard problem of consciousness - a similar philosophical problem

The problem of consciousness as it is understood in current philosophy is that humans have an experience of consciousness, that is we believe we exist, think we think, interpret our surrounds etc. and conceive of ourselves as a unique 'I' with our own history, beliefs, desires, moods and personalities. The hard problem of consciousness is, according David Chalmers who is credited with re-introduces the problem into contemporary philosophical discussion, 'the problem of *experience*. When we think and perceive, there is a whirl of information-processing, but there is also a subjective aspect' (Chalmers 1995, online). The problem is summed up as a modern version of the old mind/body problem and is now known as 'the hard problem' of consciousness. In its simple form it is 'the difficulty of understanding how physical processes in the brain can possibly give rise to subjective experiences.' (Blackmore 2005, p3)

A solution to the hard problem of consciousness has remained unresolved. Under the dominant current materialist view of mind, consciousness poses a problem because although there is general consensus that consciousness has something to do with the brain, empirical attempts have failed to ascertain what processes account for the experience of consciousness, nor do they reveal how the brain allows for subjective experience of the world.

Phrased in these terms, the problem of consciousness can be seen to be similar to the psi debate. As with psi, there is a human experience of an event, thought also to have something to do with the brain, that is unable to be explained in terms of current science. In current consciousness theory there are various approaches that compete for

dominance, but no theory has resolutely solved the problem of consciousness. Responses to the problem are debated widely in current literature on consciousness and certain approaches are evident.

The eliminativist position is strong. In regard to contemporary thought on consciousness, John Searle points out 'the most common move is to insist that materialism must be right and that we must eliminate consciousness by reducing it to something else. (Searle 1997, pxii-xiii). The eliminativist denies that there is a problem—there is nothing to solve because there is no such thing as consciousness, it just happens that it appears as if there is.

On the other end of the spectrum, the direct realist approach introduces another ontology in order to solve the problem of consciousness. Dualist theories, would be an example of such an approach to mind theory. David Chalmers, for instance, argues that consciousness is unable to be explained in physical terms: 'The existence of consciousness will always be a further fact relative to structural and dynamic facts, and so will always be unexplained by a physical account. For an explanation of consciousness, then, we must look elsewhere. We certainly need not give up on explanation; we need only give up on reductive explanation' (Chalmers 1996, pp121-122).

The reductive realist approach, on the other hand, does not eliminate the problem of consciousness, nor introduce other ontological categories, instead proponents maintain that the problem is best addressed using theories derived from current scientific knowledge. Quantum-based theories of mind, such as those of Roger Penrose, are representative of theorists in this category. For instance, when addressing the hard problem of consciousness, Penrose maintains that in order to find 'where subjective experience might find a physical home... we must look to phenomenon of quantum-state reduction to see where our present picture of physical reality must indeed be fundamentally changed' (Penrose 1995, p406). Although radical, Penrose does not argue for a new ontology as such, more a revision of concepts using existing scientific theory.

I will shortly outline the main tenets of the proponents for each of these responses with specific reference to psi theory, but first I will make clear the connection between the status of psi theory and current work in consciousness theory. There is no agreement as to how to solve the hard problem of consciousness,

however, there are at least three distinct approaches related which address the problem:

- 1) The eliminativist – denies the problem
- 2) The Direct realist – introduces a new ontology to solve the problem
- 3) The reductive realist – reduces the problem using current scientific theory

I show in the sections that follow that the current state of psi theory mirrors the various approaches to the hard problem of consciousness. My aim in this thesis is to provide a platform for constructive dialogue between the competing hypotheses that deal with psi phenomena in philosophy, so I will therefore use the philosophical approaches to the hard problem of consciousness as a guide to compiling the new set to psi hypotheses.

2.4.2 Psi theory

I have already shown that there is a substantial body of evidence for apparent psi effects and in this section I will show that there has been a lively discussion of psi theory in the psi literature as well as attempts to test the theory.

There have been numerous attempts made to explain psi. I do not discuss the various merits of the actual theories themselves. Rather, I want to give an overall brush stroke summation of the types of theories that are currently proposed for psi.

The aim is to show that:

- 1) there is rich literature on psi theory, and
- 2) that they compare in approach to theories that attempt to address the problem of consciousness.

I will summarise the theories as general theories that explain psi, rather than break psi down into its three components (ESP, PK and time-displaced psi). This is because the presentation of theories here is to indicate that there is an array of theories that attempt to explain psi in general, rather than an analysis of the theories in relation to specifics of the phenomena in particular. I will deal with the skeptic theories in a separate section.

An overview of psi theories

Dean Radin, a parapsychologists and psi theorist, summarises the broad range of psi theories that have been developed. Psi theories, he says:

Range from serious speculations in physics about the possibility of “advanced” electromagnetic waves carrying precognitive information, to how enhancements to quantum mechanics would allow an observer to mentally alter the physical probabilities of events. There are psychological speculations about how some aspects of the world may be driven by mental concepts like goals and purpose. There are theories based on Eastern philosophical concepts in which the world is primarily composed of Mind, which gives rise to matter.

And there are dozens of other theories, including ideas based on the evolutionary value of psi, on teleological (purpose-driven) concepts, and on metaphysical, occult, religious, mystical, holographic, and other ideas. (Radin 1997, p278)

There is a wide range of theories that have been postulated to explain psi. Sometimes they are part of other ontological or belief systems, such as those that fall into the supernatural category. Others are based on scientific theory, some of which are new and speculative, others extend existing scientific theory to explain psi. Metaphysical theories based on non-western philosophy belief systems, such as Buddhist idealism also feature.

In an attempt to make the categorisation of the theories less unwieldy, I will separate the scientific theories from the supernatural theories. The supernatural theories need not be outlined separately as they all propose the same basic theory, namely, that psi is explained by supernatural entities and that some kind of otherworldly or divine agent is called for. For the purposes of this thesis it is not significant which particular supernatural entity is used. I treat the dominant skeptic theory as a separate category because this approach does not require further explanation of psi in either scientific or religious terms.

I will not include theories based on eastern philosophical belief systems as they are beyond the scope of this thesis. As are phenomenological theories, such as those that use ‘alternate realities’ to account for psi (such as those of Lawrence LeShan or Charles Tart). These theories are interesting, but involve a philosophical tradition that is too complex to be contained in this thesis.

The supernatural and skeptical theories are both prominent in non-psi literature. This is because the skeptical theories are the dominant mainstream theories in philosophy and science; and the supernatural theories are the dominant popular explanation for psi. Furthermore, both the supernatural and skeptical theories are dealt

with in some detail in other sections of the thesis¹⁸. Therefore I will focus most of my attention in this section on outlining other theories that are proposed to explain psi. In the main these theories are found in the psi-oriented literature and thus are less well known.

Psi theories

The psi theories can be broadly divided into the following categories: physical, and non-physical. I will briefly outline representatives of each below.

Signal theories have long been proposed as a means by which the psi signal is carried. Electromagnetic theories have dominated this realm of theory development and in recent times the theorist Michael Persinger has proposed that 'psi signals are carried by extremely low frequency [ELF] radiation' (Stokes 1989, p114). According to this theory, in cases of ESP, the psi signal is carried on an ELF wave to the percipient where the 'brains of the agent and percipient would resonate with an existing geophysical wave, producing a similar state in both (Stokes 1989, p114).

Many signal theories, such as Persinger's, use already known forces to explain psi as a signal, but there are other theorists who have proposed new carriers or forces in order to explain psi. These are variously called psi fields, psychical waves, psychical fields, biogravity, bioplasma, orgone energy and, going even further back in history, animal magnetism (Stokes 1989, p119). Some carry ontological implications or pose ontological problems that are yet to be resolved, such as: what is the ontological status of a 'psychical wave'? How is it measured? What is it comprised of? These theories tend to be problematic as a result.

Another category of physical theories are those that tie psi into quantum mechanics, especially into the problem of non-locality. A major current proponent for this type of theory in parapsychology is Dean Radin who outlines his theory in a recent book *Entangled Minds*. He writes that there are five major psi theories that have been developed using quantum theory. These are: the observational theory, the model of pragmatic information, weak quantum theory, Bohm's implicate/explicate order theory and the Stapp-von Neumann theory (Radin 2006, pp250-260). Radin explains his theory in relation to ESP as follows:

¹⁸ The supernatural hypothesis is covered in more detail in Chapter 3, when a case is made against it, and the skeptic hypothesis features prominently in Chapters 4 & 5.

The brain, like all other objects, is part of the entangled fabric of reality. As such, brain functioning is not just ruled by classical physics and biochemistry, but also participates in events distributed throughout space and time. Events may be thought of as ripples reverberating throughout an immense pool, and the brain as an object bobbing along the surface like a cork. Nonsensory perceptions are occasionally evoked in the brain because, as an exquisitely sensitive pattern recognizer, it responds to ripples resembling similar undulations associated with previous events. So similar memories arise. If the unconscious mind deems those memories to be sufficiently interesting, then information will arise to awareness in the form of imagination of fleeting thoughts.
(Radin 2006, p266)

Theories such as Radin's are controversial in the same way that Penrose's theories are in mainstream mind theory. In Chapter 4 an examination of a similar quantum-based theory is undertaken in relation to the skeptical hypothesis, so I won't go into more details in this section. I note that it is evident that if the problems regarding the use of quantum theory in general mind theory are resolved then there is prospect that at least one of the physical theories currently proposed to explain psi would perhaps become more acceptable to mainstream science.

The main theory that has been proposed to explain psi that involves a non-physical ontology is dualist in nature. John Beloff, the psychologist responsible for setting up the Koestler Parapsychology Unit at Edinburgh University, thought that acceptance of psi entailed a dualist explanation for psi. He claims psi events 'mark the boundary conditions beyond which we can no longer treat the individual as a psychophysical atom.' (Beloff 1963, p365). Explanations for psi will, in his view, be weaker than the physical explanations of the harder sciences; and theory development for psi will therefore entail 'essentially to conceive of it, not as an isolated fact, but in terms of some broader perspective' (Beloff 1963, p366). It is the psi data that have lead Beloff into proposing a dualist ontology in order to account for the phenomena. Other non-physical theories are Thouless and Wiesner's 'Shin theory' which is an "'internal psi" model of mind-brain interaction' in which 'the mind becomes aware of brain events by "clairvoyantly" monitoring neural states. Volitional activity is accomplished through the "psychokinetic" influence of neural events. Psi phenomena such as ESP and PK are simply rare, externalised forms of the mind's normal internal interactions with the brain.' (Stokes 1989, p 171). Psi theories that require another ontological category are well-represented in the psi literature. I suggest that this is because, like consciousness, the mechanisms are not readily reducible. Some sound far-fetched and can be accused of merely introducing new terms that are ill-defined.

They are problematic to mainstream science as a result. Nevertheless they are important because they show that for some scientists the data for psi is indicative that additional explanatory schemes are required to account for the phenomena. Further work in developing psi theory in conjunction with mainstream science could help ameliorate this problem.

Supernatural theories

There are many people and religious organisations who ascribe a supernatural theory to explain psi events. This is the most dominant popular theory that is proposed to explain the phenomena. The type of supernatural theory will vary across cultures and times, it might be variously a God or Gods, a nature spirit or biblical demon. Supernatural accounts for psi were mentioned earlier in this chapter when I outlined the historic evidence for psi, therefore I won't go into any more detail here. In the next chapter, the history of the supernatural explanation for psi is shown to be important as it has informed current assessment of the explanatory situation.

Skeptical theories

Skeptical theories that account for psi either propose that fraud is the most appropriate explanation for the phenomena. In Chapter 1 examined two philosophical arguments that advocate such an approach. However, I critiqued both of the arguments and showed that in order to maintain such an explanation further justification as to how fraud can account for the phenomena must be shown.

Some psi commentators have proposed more sophisticated accounts of how psi phenomena can be explained, not just by appealing to the fraud explanation, but to other 'normal' means of explaining the phenomena. I therefore draw on the work of a prominent contemporary anti-psi psychologist (James E. Alcock) who has given a detailed account of why he considers psi phenomena can be explained through 'normal' means.

James E. Alcock, mentioned in the introduction to this thesis, maintains that parapsychologists are mistaken in their belief that psi research has provided any indication of genuinely anomalous phenomena. Instead he argues that he 'remains doubtful about the existence of paranormal phenomena' and advocates instead the

'Null hypothesis' which understands that 'the observed results came about naturally, and have 'nothing to do with psi' (Alcock 2003, p31). In support of his claim he maintains that the evidence for psi is problematic on a number of counts. His main concerns are: that psi theory is lacking; it hasn't progressed; there are still problems with replication of the phenomena in experimental conditions; that the convincing evidence relies heavily on statistics; and that parapsychology 'fails to jibe with other areas of science' (Alcock 2003, p45). Alcock maintains that the evidence for psi is lacking, and most likely able to be explained by fraud, the product of self-delusion or sloppy science rather than indicative of genuinely anomalous effects. He suggests that the reason the mainstream continues to reject parapsychology is 'not because of some unfair bias, but simply because parapsychologists have not been able to produce data that persuade the larger scientific community that they have a genuine subject matter to study.' (Alcock 2003, p47). Therefore from this point on in the thesis I ascribe to the Skeptic hypothesis the notion that fraud, or flukes or coincidence or flaky experimental methodology are able to account for psi phenomena. The shorthand I use for this explanation is the 'fraud, fluke or flaky methodology' explanation. This is a more comprehensive explanation for the body of evidence for psi, rather than just appealing to fraud, and does more justice to the Skeptic hypothesis than the philosophical arguments that I critiqued in the last chapter.

Summary of theories

I have undertaken a very brief overview of some of the main theories that are represented in the literature. Some have been more thoroughly developed than others (like some of the current quantum physics theories) and some are modern developments on an old theme (like Persinger's signal theory). And I have shown that skeptic theories are concerned with 'normal' explanations for psi that are more complex than the fraud arguments. I don't want to go into too much detail about the actual theories themselves as the particulars are not pertinent to the analysis undertaken in this thesis. Instead it is my intention to provide an indication that there are psi theories that are being developed and that the skeptic theory is represented in some detail in the psi literature. I outline in the section below how the psi theories are similar to those in philosophy that address the hard problem of consciousness.

2.4.3 Psi hypotheses discussion

I showed that the discussion regarding the hard problem of consciousness can be represented by the three contrasting approaches:

- 1) The eliminativist – denies the problem
- 2) The Direct realist – introduces a new ontology to solve the problem
- 3) The reductive realist – reduces the problem using current scientific theory

The various psi theory proponents' contrasting theories can also be categorised in a similar fashion:

Eliminativist skeptical theories that claim psi is explained by 'normal means' who thus 'eliminate' the problem of explaining psi as genuinely anomalous

Direct realist theories that require additional ontological commitment—
1) non-physical scientific theories
2) supernatural theories

Reductive realist physical scientific theories that use current science to explain psi.

I will now take each in turn and define the hypothesis and detail the supporting theories for the hypothesis based on the outline of psi theory in the above section.

I summarise the various approaches with the new names in a grid at the end of the section. I introduce new names for each of the psi hypotheses that will be subsequently used in the remainder of the thesis.

Eliminativist: Skeptic hypothesis

The psi Skeptic hypothesis is represented by those who maintain that the most reasonable theory to explain psi is that fraud, flukes of chance, flaky experimental methodology. It is similar to the 'eliminativist' stance in the consciousness discussion because it denies that there is any further issue that requires explanation. So, in a similar fashion the problem of psi is 'eliminated'.

Direct realist 1: Big Change Natural hypothesis

Direct realist theories understand the phenomena to be in genuine need of an explanation and they introduce additional ontological categories in theories that explain the phenomena. Theories that require dualism or other ontological commitments that cannot be accounted for in physical terms fall into this category. I call these Big Change Natural hypotheses because, if accepted, they require substantial revision of currently accepted scientific theory.

Direct realist 2: Supernatural hypothesis

The Supernatural hypothesis is also representative of the direct realist approach. The theories that support a supernatural explanation for psi propose that a divine agent or being intervenes on the natural workings of the world in order to create a psi effect. This is the most prevalent popular theory that is ascribed to psi, however, I show in the next chapter that it is problematic on two counts. I will save further discussion of this hypothesis until then.

Reductive realist: Small Change Natural (SCN) hypothesis

The Small Change Natural hypothesis is related to the reductive realist position in the consciousness literature. Theorists that are represented here are those that promote the quantum theory explanations for psi, those like Persinger who use an existing known force to explain psi as a signal as well as those that believe that psi will eventually be explained using accepted scientific theories. The features of the Small Change Natural hypothesis are therefore to accept that psi is anomalous and real¹⁹ and requires an explanation but that current theories of known forces will eventually be able to account for the phenomena, regardless of how surprising as they appear to us now.

¹⁹ The word 'real' is philosophically loaded word. Here I mean it to indicate that the apparent psi effects are interpreted as indicative of 'something' and that that 'something' requires an explanation as a phenomena that is genuine. This view can be contrasted to the skeptic hypothesis that does not think apparent psi effects are 'real' as they can be explained by fraud or self-delusion and thus do not require further explanation.

Occasionally I will use the umbrella term 'psi realist hypotheses' when referring to the BCN and SCN hypotheses together, as they both advocate that some natural theory be employed to account for the phenomena.

The reworking of the psi hypotheses has been undertaken to provide a more thorough selection of competing hypothesis regarding explanation of psi. It will be drawn on substantially throughout the remainder of the thesis. In order to make the reworked hypotheses as clear as possible, I have placed them in the grid in below. The chart indicates how the renamed psi hypotheses are related to the philosophical approaches of the hard problem of consciousness, it and gives a summary of the theoretical approach and explanatory entailment of each newly names psi hypothesis.

Philosophical approach based on the hard problem of consciousness	New name of psi-related hypothesis	Theoretical approach	Explanatory commitment in relation to psi	Example theories
Eliminativism	Skeptic hypothesis	Body of evidence for psi is mistaken as anomalous	Psi events are best explained by normal means (fraud, fluke, flake)	Fraud Coincidence Slack method Mistaken data
Direct realism 1	Big Change Natural hypothesis	Body of evidence for psi indicates a genuinely anomalous phenomenon	Theories that require additional ontological commitments than those currently acceptable to science are required in order to account for psi.	Dualist accounts Signal theories that use unknown forces theories that require multi-dimensions
Direct realism 2	Supernatural hypothesis	Body of evidence for psi indicates a genuinely anomalous phenomenon	Ontology containing a supernatural entity is require in order to explain psi	Supernatural belief systems e.g. Christianity, animism
Reductive realism	Small Change Natural hypothesis	Body of evidence for psi indicates a genuinely anomalous phenomenon	Psi events are best understood and explained using theories acceptable to current science.	Signal theories that use known forces Quantum accounts Evolutionary advantage accounts

The four hypothesis—Skeptic, Small Change Natural, Big Change Natural and Supernatural—will form the basis for the analysis in the following chapters.

Chapter 2 has commenced the process of legitimising the Inference to Best Explanation process for psi. I have provided an outline of the body of evidence along with theories that have attempted to explain the phenomena. Then I compiled a group of hypotheses by comparing the evaluation of psi to a similar philosophical problem. The psi debate has now been reframed as a discussion between all currently plausible hypotheses. Therefore instead of referring to the psi debate I will call it a ‘psi hypotheses discussion’.

The task that remains is Stage 3 of the IBE process. This requires the selection of one of the competing hypotheses as the ‘loveliest’ explanation taking into consideration background beliefs that might be guiding the selection. The evaluation of the various hypotheses is undertaken during the course of the rest of this thesis. I commence the process by examining the history of the explanation for psi, which I show informs currently explanatory issues.

Chapter 3: **Shifting sands**

The location of the shifting sands of the supernatural is thus obviously affected by the power of our explanatory systems.

Michael Scriven

The thesis now commences Stage 3 of the IBE re-analysis of psi. The task is the most complex of the three stages undertaken; the process of evaluating the competing hypotheses concerns the remainder of the thesis. During the course of discussing inference to the best explanation in Chapter 2, it was pointed out that it is important to take into consideration background beliefs when selecting one hypothesis from the list of compiled hypotheses. Therefore I commence with an examination of background beliefs that I show inform the psi hypotheses discussion, but which are rarely made explicit in the mainstream literature.

Firstly, I present what I have called the historic account. I draw on the work of David Ray Griffin and outline his argument that it is the explanatory history of psi which informs its status as paranormal in contemporary mainstream scientific and philosophical thought. I show that the explanatory history of psi as once generally accepted as supernatural informs the mainstream assessment of psi today, and therefore impacts on the psi hypotheses discussion.

Then I outline a subcategory of the Skeptic hypothesis—called hardcore skepticism—and I show that for some skeptical psi commentators, it is assumed that explanation of psi as produced by any other than fraudulent means, entails a reversion to supernatural explanatory schemes. I subsequently make a case against the Supernatural hypothesis and I use this analysis to two-fold effect: firstly, to show that the hardcore skepticism is based on a false dichotomy; and secondly, to eliminate the Supernatural hypothesis from the psi hypotheses discussion.

The remaining three hypotheses—the Big and Small Natural Change hypotheses and the Skeptic hypothesis—then become the focus of further analysis in Part II of the thesis, in which further explanatory issues are examined.

3.1 Historic account

The historic account is an assessment of the explanatory history of psi which shows that psi was once considered, by the mainstream, as supernatural. The account argues that there have been two transitions in the history of science that have informed the explanatory status of psi:

- 1) Middle Ages to the Modern world view
(roughly the 14th-18th centuries)
- 2) Modern world view to the Materialist world view (roughly mid 18th and 19th centuries)

According to the scientific and religious scope of the time, the first transition placed psi-like events in the supernatural category of explanation. Currently, due to the second transition, psi is considered paranormal. The historic account maintains that it was the limits of mechanistic science that determined the scope of scientific explanation at the time the Modern world view was formed. At this time apparent psi events were considered supernatural in origin. Subsequently, with the rise of the materialist world view²⁰, the supernatural category became obsolete as an explanatory category within the framework. Therefore, under the materialist view, psi-like events are unable to be explained as supernatural, but nor can current scientific theory account for the phenomena. The historic account suggests that science is currently unable to conceive of how to account for psi because the limits of scientific explanatory scope regarding action at a distance were set during the end of the first transition, when scientific theory was influenced by mechanism.

²⁰ For the purposes of this section, in which I introduce the historic account, I understand the kind of materialism that Griffin refers to as the kind dominant in science today. More specifically, as I understand it, materialism represents the view that everything that exists is material and that what exists is best explained by reducing it to its most basic physical components. (Armstrong 1980, p65). In philosophy, however, there are opposing views that do not exclude the potential of supernatural explanation, and it is evident that for some theorists, such as deists, the supernatural category of explanation is still currently tenable. I deal with related issues regarding psi and naturalism in section 3.4.1 before discussing the Supernatural hypothesis further.

In this section I outline in more detail the argument for the historic account. I draw in the main on the work of the philosopher David Ray Griffin²¹, who is the most major proponent of the account in philosophical literature that also deals with psi specifically. I will also draw on the work of the biologists Rupert Sheldrake and John Randall in order to lend support to Griffin's analysis.

First of all I outline the two transitions which, according to Griffin, have significant impact on the explanatory assessment of psi. Then I show that Randall and Sheldrake make similar points in the course of their discussions of psi and biology. I subsequently examine further the effect that the transitions have on psi's current status as paranormal. Finally I present a chart of the historic account which ties the transitions and the explanatory history of psi together in graphic form.

3.1.1 Two transitions

Griffin presents a case that there have been two relatively recent traditions that inform the contemporary assessment of psi phenomena. The first transition started in the 14th century and was ongoing for four centuries, and the second occurred in the mid 18th century and continued through the 19th century. I will outline them each in turn.

First transition

According to Griffin from the 14th to the 17th centuries a gradual transition occurred in Western society that resulted in a situation whereby there were two explanatory categories: that of a law-abiding mechanistic physical category; and a supernatural, intangible category. Known as the mechanistic view of nature, science determined how the former operated and religious ideology the latter (Griffin 1997, p17). The change coincided with the developments in scientific understanding and the founding of the modern world view by scientists such as

²¹ David Ray Griffin is a process philosopher and theologian who has made a valuable contribution to analysing psi in relation to process philosophy. I realise that, controversially, he has recently gained some fame as a retired professor who is an advocate for 9/11 conspiracy theories. However, this thesis focuses on his early work in relation to psi phenomena, which is rigorous and thoughtful.

Isaac Newton. The view promoted the notion that God provides the mechanistic world with impetus. Griffin spells this out:

The mechanistic view of nature was also used, for example by Boyle and Newton, to argue for the existence of God: if nature was devoid of self-motion, there had to be a supernatural being to have put it into motion and also to have imposed laws of motion upon it. Newton also argued that the mechanistic materialistic conception of matter, according to which it has no hidden powers and acts only by contact, shows the need for a cosmic spiritual being to explain the mutual attraction of bodies (gravitation) and the cohesiveness of atoms in solid bodies. (Griffin 1988, p10-11)

It is not surprising that the division of explanatory categories at this time impacted on psi and placed them firmly in the supernatural category of explanation. Psi events do not appear to have any known mechanistic explanation and in the past, prior to the time the modern world view was formed, psi events were generally considered supernatural in origin²². However, subsequent developments in science and explanation impacted on this initial assessment of psi in relation to the explanatory scope of science.

Second transition

After the modern world view became dominant and explanation for psi was firmly grounded in the supernatural category, a second transition then occurred. The result changed the category in which explanation for such anomalous phenomena is sought. Griffin makes a case that from the mid-18th century and during the 19th century supernaturalism and dualism were gradually replaced by the now currently dominant materialist worldview. The materialist worldview is underpinned by the notion 'that reality consist of nothing but a single all-embracing spatio-temporal system' (Armstrong 1980, p65). Furthermore explanation of reality is undertaken by reduction in terms of the four known forces electromagnetism, gravity and the strong and weak nuclear forces. Therefore under the materialist view, the supernatural category of explanation is obsolete.

According to Griffin, the result of this second transition was that 'the supernaturalistic theism of early modernism transmuted into the naturalistic atheism of late modernism. Accordingly the mechanical philosophy's implication

²²For instance, in Chapter 2 I outlined the historic evidence for psi and mentioned the early experiment of King Croesus who tested the oracles which were thought to use supernatural means to obtain precognitive information. I also mentioned that examples of psi-like events could be found in the Bible.

that events not understandable in terms of action by contact cannot happen *naturally* came to mean that they cannot happen *at all*' (Griffin 1997, p23). In Griffin's analysis then, psi phenomena are currently difficult to explain, as they appear to resist mechanistic explanation in terms acceptable to current science, but nor can they be explained as supernatural as they have been in the past.

However, a new explanatory category has emerged which is now commonly ascribed to psi. Paranormal phenomena are considered to be 'any phenomenon which in one or more respects exceeds the limits of what is deemed physically possible on current scientific assumptions' (Thalbourne 1982, p.50). The combined effect of the two transitions thus places psi phenomena into this category because without recourse to the supernatural category of explanation and without any known explanation in science, psi is considered unexplainable.

The phenomena from spontaneous instances of psi such as in the catalogues described in the last chapter as well as biblical, historical and early Greek reports of psi-like phenomena indicate that the phenomena themselves are not new to human experience. However, if Griffin's analysis is valid, then the two major transitions are pertinent to how the phenomena are received by mainstream scientists at any particular epoch. The assessment impacts on what realm of explanation (supernatural or paranormal) is considered appropriate for psi phenomena at different times. Griffin summarises the situation that obtains for psi as follows:

The late modern worldview, with its materialism and atheism, has no room for the phenomena, period. The early modern worldview, with its dualism and supernaturalism, can allow that such phenomena do occur; indeed, it usually insists on the reality of such phenomena under the name of "miracles." (Griffin 1997, p2)

Griffin's resolution is to introduce a 'postmodern theism' with a naturalistic bent. (Griffin 1997, p3). I find Griffin's work thoughtful and provocative, but I have a different solution, which is to make a case against the supernatural theories of psi on the basis that most of the phenomena are mundane in nature. I present these arguments a little later in the chapter, as first I will outline some support for Griffin's analysis regarding psi's current status of paranormal.

3.1.2 Support for the historic account

To lend support to Griffin's claims about the history of explanation of psi, I outline similar accounts by two biologists who are also interested in the historical explanation of psi: John L. Randall; and Rupert Sheldrake.

John L. Randall's account of the mechanistic/vitalist debate

John L. Randall's account is slightly different, but it makes similar points to Griffin's about two transitions in the history of science which are relevant to the explanation of phenomena like psi. Randall traces a mechanistic/vitalist debate back to the times of Ancient Greek philosophers. He claims that Aristotelian theories of the soul were taken up by the major religions that subsequently dominated western thought on these matters (Randall 1977, p22). The effect was that 'such was the domination of thought by religion during the Middle Ages that few people stopped to ask themselves whether, in fact, the soul existed at all' (Randall 1977, p22). That is, until there was a resurgence of the mechanistic view instigated by the works of Rene Descartes. The mechanistic view consisted of a law-abiding natural, mechanistic world combined with a 'soul implanted by God' (Randall 1977, p23). As with Griffin, Randall argues that it is important to consider the ramifications of the mechanistic view on subsequent developments in science.

Randall maintains a second transition occurred. During the late 17th and much of the 18th centuries the vitalist/mechanistic debate was again a matter of contemporary concern with advocates for both sides. Gradually though, as scientific thought progressed previously vitalistic disciplines such as chemistry and biology were explained without the need to postulate the 'vital force'. The materialist view thus became dominant and 'by the end of the nineteenth century those who believed that life was more than a mere 'fortuitous concourse of atoms' were in full retreat' (Randall 1977, p26).

J. L. Randall is a biologist and the overall project in his book involves a criticism of current molecular biology which asserts that the origins of life can best be explained in reductive, mechanistic terms. He covers this ground in subsequent chapters. Obviously, his project is not the immediate concern of this thesis.

However, his account of the mechanistic/vitalist developments in science is pertinent because it gives support to the assertions made at the beginning of this section, namely, that two important transitions occurred in science which have impacted on the ontological explanatory categories of phenomena, such as psi, which are problematic to current materialist scientific orthodoxy.

Rupert Sheldrake's account of the two transitions

Rupert Sheldrake is another biologist whose research extends to parapsychology and who has written on the topic of psi. He presents another version of the historic account and, in the same vein as Randall and Griffin, presents a summary of the changes over the course of time in order to explore the ramifications of the current dominance of the mechanistic approach to explanatory problems encountered by psi. The first change occurred gradually from the time of the Middle Ages:

One way of understanding this crucial transition is in terms of a distinction, originally made in the Middle Ages, between *natura naturata* (natured nature), and *natura naturans* (naturing nature). The former refers to nature in the sense of that which is produced, the phenomena we observe with our senses. The latter refers to the unseen productive power which gives rise to the phenomena. In the animistic physics of the Middle Ages, souls played the role of naturing nature; they organized the autonomous development and behaviour of organisms, and motivated them by attraction... When the founders of mechanistic science expelled souls from nature, leaving only passive matter in motion, they placed all active powers in God. Nature was only *natura naturata*. The invisible productive power, *natura naturans*, was divine rather than physical, supernatural rather than natural. (Sheldrake 1990, p61-62)

The nature/supernatural distinction that Griffin pointed out obtained at the time of the founding of the modern world view is then, according to Sheldrake, due to the demise of animistic physics and the rise of the mechanistic view that divides explanatory categories into physical nature and active, non-physical supernatural. Thus, by the 17th century 'the souls that animated physical bodies in accordance with their own internal ends were exorcised from the mechanistic world of physics. Matter was inanimate and passive, acted upon by external forces in accordance with the mathematical laws of motion' (Sheldrake 1990, p61).

Further to this, Sheldrake believes that science is still informed by the mechanistic legacy, the result being that 'the only valid scientific explanations are mechanistic explanations' (Sheldrake 1990, p84). As with Griffin and Randall, Sheldrake claims that the explanatory history of phenomena that are intangible and

not easily reduced are assessed, perhaps incorrectly, under the current materialist world view as impossible and therefore paranormal.

Summary of the historic account

In summary, the supernatural explanatory category that historically accounted for psi events no longer available under the materialist framework. Furthermore, if the historic account is correct, science is most likely unable to readily account for the phenomena because the limits and scope of science were set when psi was classified as supernatural. With the transition the materialist world view, psi is consequently currently considered paranormal and unexplainable in scientific terms.

The accounts given by Sheldrake, Randall and Griffin rely on a broad sketching out of the trends in scientific and religious theory over many centuries. It could be claimed that they over simplify the scenario. I deal with this possible challenge to the historic account in the section below, before I emphasise the importance of the historic account to the current status of psi phenomena in relation to current scientific theory.

Defence of the historic account against the challenge that it is too broad

The bare bones of the historic account are reasonably uncontroversial. We know that psi-events were once considered supernatural (from historic accounts of psi-events) and we know that psi is currently defined as paranormal (from dictionaries and encyclopaedias). There is also evidence for the two transitions that are thought to have occurred and which have impacted on explanatory issues regarding psi. If one allows that the historic account is a very broad brush stroke account then these claims are uncontentious.

However, accusations could be made that the picture painted is too broad, there has never been a consensus on these issues, and there have been debates and opposing points of view along the way. For instance, one could argue that the sketch of trends and transitions does not do justice to the fact that there are philosophers of a dualist persuasion and there are, of course, scientists and philosophers who have supernatural belief systems, so for them the supernatural or

immaterial mind explanatory category is still an option, despite the apparent dominance of materialism in the sciences.

I am only able to defend the historic account against this challenge by conceding that it is a valid criticism, the fine detail is missing in this sketch and the controversies are more complex than the representation of historic transitions suggest. However, if it can be accepted as a rough indication of mainstream trends which have clear and obvious implications for psi, the historic account seems reasonable. This is because it is readily verifiable that psi is considered paranormal and psi was once considered supernatural by the mainstream authorities, even if there have been opponents to the mainstream assessment at these times. I argue then, that the historic account provides an important insight into the background beliefs that inform the mainstream assessment of psi. The most important assertion regarding psi taken from the historic account is the idea that the scope of science was set to deliberately exclude psi-like phenomena and that this background informs the assessment of psi today. I discuss this further in the next section.

3.1.3 Scope of science and psi phenomena

It is important to realise that the historic account puts the evidence for psi into explanatory context as it helps to explain why psi cannot be accounted for under the current scientific scope of lawful relations. For instance, to explain the influence that the modern worldview still has on the scientific perception of anomalous phenomena like PK Griffin comments that:

In the dominant thinking of the time [Newtown et al], the connection between the desire to exclude action at a distance in physics, on the one hand, and the desire to rule out all paranormal influence on and by human minds, on the other, was evidently something like this: given the dualism between (spiritual) mind and (physical) nature, excluding action at a distance from nature did not, strictly speaking, rule out the possibility that human minds might either receive or exert causal influence at a distance. (Griffin 1997, p20)

Possible explanation of PK phenomena was therefore excluded in order to keep all distant interaction with the world, in the spiritual or mental realm under a supernatural/dualist worldview. More broadly, under the modern worldview the evidence for psi, whether anomalous action at a distance or anomalous communication, was to be explained as supernatural and therefore outside of the realm of scientific inquiry and without further need to explain mechanistically in

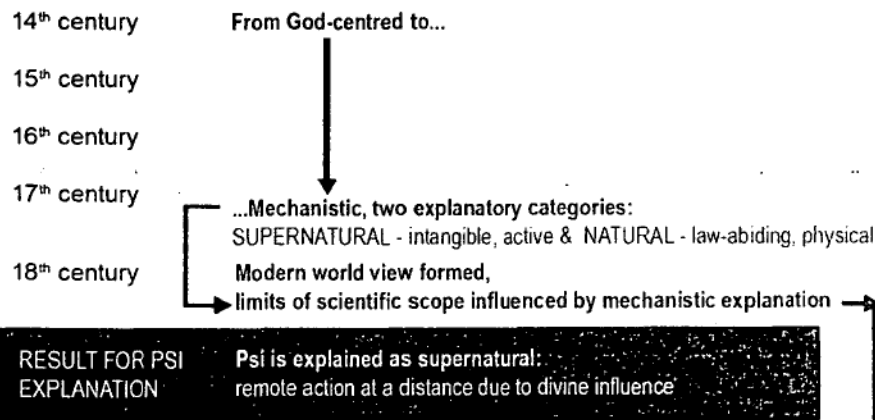
terms of natural laws. The result of this explanatory scheme was to exclude from the scope of science the means by which psi could be explained as natural. And with the subsequent change to predominance of the materialist worldview, combined with the decline of the supernatural/dualist worldview, evidence for psi events such as the movement of an object without any known mechanism or communication without the use of the five senses were left without recourse to either supernatural or mainstream scientific explanation.

The explanatory history of psi has informed some assumptions regarding the phenomena which should be made explicit. I deal with psi, and especially the unlawful nature of the phenomena, in relation to explanation theory in Part II of the thesis, so I will save further discussion of the problematic nature of explanation of paranormal phenomena until then.

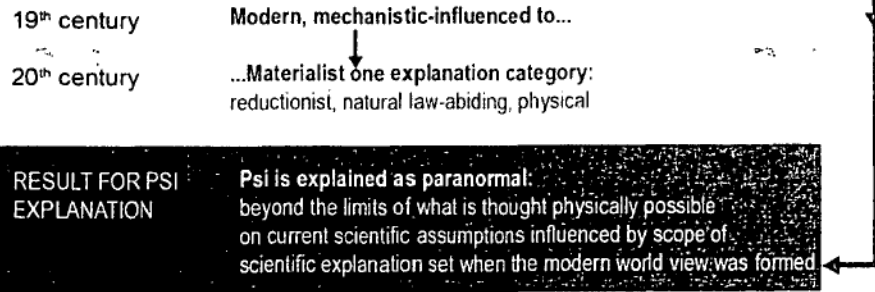
I have constructed a chart which clarifies how the sketch of trends outlined in this section impacts on the explanatory status of psi:

The Historic Account - sketch of trends

Transition 1: Medieval to Modern



Transition 2: Modern to Materialist



The chart is intended to illustrate the notion that the modern worldview was formed under the influence of mechanism when two explanatory categories were available for phenomena. However, the limits on science under the two-category mechanistic view influence the scientific assessment of psi events today thus relegating them to the unexplainable, paranormal category.

The historic account suggests to me that, if the body of evidence for psi is considered legitimate, then it is therefore pertinent to look at the perceived limits of scientific explanation in order to discover how best to approach explanation of the phenomena as natural. However, it can also be argued that, given the history of psi as a once generally considered supernatural phenomena, they should be reconsidered as divine in origin. I challenge this manoeuvre on the basis that psi phenomena are similar to other phenomena that are considered natural, even if one allows for a supernatural category of explanation in one's ontology.

3.2 Arguments against the Supernatural hypothesis

In this section I will make a case that the supernatural account is problematic on two scores. Initially, I will argue that the mundane nature of much of the evidence for psi indicates that even if supernatural accounts were part of one's explanatory scheme, psi events would not warrant such explanation. Some might argue then that some apparent psi events are not mundane in nature in response to this view, so I then show that phenomena of a more dramatic kind falls to the same criticism as the argument for theism based on religious experience. Then I will address the issue of experimental evidence and the anomalous nature of psi phenomena in relation to the Supernatural hypothesis. But first I will discuss psi and philosophical notions of 'naturalism' pertaining to the sciences and methods of inquiry.

3.2.1 Naturalism and psi

Psi, with its supernatural explanatory past and current status as paranormal, is an important bone of contention in this debate. It is important to come to terms with the nature of the body of evidence for psi in relation to naturalism if the realist and supernatural hypotheses are to be compared to the Skeptic hypothesis. I will

therefore now introduce the philosophical definitions of two different types of naturalism and then discuss the status of psi in these terms.

It is reasonably well understood that science deals with only those things that require natural explanation. It does not mean that the only things that require explanation are those that science deals with. For some – *methodological naturalists* – the most reliable method of inquiry is that which is undertaken by the natural sciences by whatever is deemed to be the most appropriate method. But methodological naturalists are not committed to holding that the *only* things that exist are natural. This view allows for natural but unexplainable things (such as some mind theorists hold regarding consciousness) as well as for those who maintain that there are things that require natural explanation along with things that require supernatural explanation. Methodological naturalism is an epistemic stance so there is consequently epistemological debate regarding what phenomena fit into which category. So methodological naturalism is a statement about how we go about explaining natural phenomena, but it doesn't limit the phenomena that require explanation to natural things. However, *ontological naturalism* proponents maintain that the only things that exist are natural. Most proponents of this view also maintain that the natural objects and their relations are to be explained by science and, even more strongly, only those things which are reducible to physical mechanisms are to be considered natural.

Psi is in a peculiar position in relation to naturalism. The historic account shows that psi, in the Western tradition, was considered supernatural at the time the modern world view was formed. The presentation of the body of evidence for psi in the last chapter showed that a small group of researchers has been investigating psi as a potentially explainable natural phenomena since the 18th century. Currently mainstream science and philosophy consider psi 'paranormal'. However, there is a case made for psi as a supernatural phenomenon which is put forward by contemporary theists; others disagree with this approach on account of the mundane, everyday nature of psi phenomena.

Despite the history of investigation of psi as a natural phenomenon by a small body of scientists and philosophers, psi is still associated with the supernatural by some theorists. It should be noted that this discussion is not about the common perception of psi as supernatural by the general populace, but rather the arguments put forward regarding the theological issues involved by current psi

theorists. The following discussion makes a case against the supernatural interpretation of psi events on two counts. First, the mundane nature of much of the body of evidence for psi is used to argue that when psi is mundane, if it is real then it should be considered natural even if it is currently unexplainable in these terms. Secondly, look at more dramatic, potentially supernatural instances of psi and makes a case that the same argument applies here as does the argument for deism based on people's religious experiences.

It could be argued that there it is not appropriate to divide psi into the two types of cases: mundane and dramatic. Instead, it could be maintained that supernatural events could also be mundane, and indeed are so in some belief systems. Conversely some events that are considered natural are also dramatic (such as hurricanes and the like). Discussion of supernatural vs natural categorisation are of concern to much theological discussion and a detailed examination is beyond the scope of this thesis. Instead, I concede that these religious belief based assessments of what types of phenomena are commonly considered supernatural and what natural are open to myriad interpretations.

I acknowledge that other philosophers, such as Stephen E. Braude, have addressed such issues in the past and have convincingly argued a case for psi to be considered ostensibly paranormal rather than supernatural (Braude 1979, p244) without the need to draw a distinction between the mundane and dramatic categories. However, for the purposes of this thesis I take my cue from Swinburne and Williams' discussion of the paranormal vs supernatural distinction because it is the place I have found a reasonably contemporary mainstream theological discussion with specific reference to psi and I am concerned here to address the concerns in current mainstream literature.

3.2.2 Everyday psi

The following discussion will make a case for psi as a natural phenomenon on the basis that most apparent psi events occur in a similar fashion to other events which we currently consider explainable as natural occurrences in science. The case for a natural explanation for psi (debates about the evidence aside) is contrasted with the case for psi as a supernatural phenomenon.

The generic definition for something to be supernatural is reasonably clear. It is a phenomena that has its origins in something that is outside of the normal regular mechanistic, law abiding workings of the world. The explanation of the phenomena is ascribed to a deity or divine intercessor who has the ability to override the regular, mechanistic operation of nature. However, determining what phenomena are supernatural is problematic when one is dealing with phenomena, such as psi, that are also considered paranormal.

Similarly, although some anecdotal incidents of ESP can involve life or death situations, most psi events are also likely to be about more everyday matters that are not so dramatic. Take, for instance the anecdote related in the last chapter regarding the injury of the husband's jaw while sailing. This is hardly an event significant to any body other than the person it occurred to and involves only a minor amount of discomfort for the people involved. Would a divine agent really care to supervene the normal methods of communication in order to pass on such trivial information? Imagine if every scraped knee or cut thumb were to be given such status?

Supernatural explanation might be more warranted if, say, the event involved the wife taking action that saved the husband in some way. But there appears to be nothing more than the communication of a minor discomfort experienced by the husband to the wife at the same time as the incident took place. The apparent knowledge that her husband had injured his jaw did not instigate the wife to somehow help her husband avoid the accident, nor was the information required in order to help the husband return home relatively unharmed.

Amongst theologians the mundane nature of psi and its possible supernatural origins is a matter of debate. Richard Swinburne, a contemporary proponent of fine-tuning, makes the point that 'extraordinary events lacking religious significance are more appropriately characterized as magical or psychic phenomena rather than miracles.' (in Williams, 1990, p52) So for some thinkers the mundane and everyday nature of some instances of psi seem to indicate that even if a supernatural explanation is to be sought for other phenomena, such explanation should not be sought for psi because the events are not 'significant' enough for a divine agent to have the need to intercede. However, the theologian T.C. Williams argues otherwise in *The Idea of the Miraculous*. He argues that it is problematic to separate the potentially natural from the supernatural.

In contemporary times, many religions continue to maintain that psi events are supernatural in origin. In fact most major faiths consider the study of psi as 'natural' to be antithetical to their belief system, as many use psi-like events are used to support the existence of a supernatural being or beings. Christian religions, for instance, understand poltergeist incidents as possession by spirits. Miracles in the Christian tradition or magic in animist traditions are two examples of such beliefs. Williams makes this point explicitly when discussing whether psychical phenomena should be considered supernatural or paranormal:

Thus, in the first place... there is (a) the sense which may be characterized for present purposes as necessarily involving reference to an *invisible realm of 'God(s)'*. Secondly, there is (b) the sense which centres on the basic *phenomenological* characteristic of the miraculous as this is to be found in the idea of a direct *mental* (and with this, *super/para-normal*) control over physical nature. That there is a strong contingent relation between (a) and (b) is obvious enough. It is plainly to be seen in the widely accepted religious assumption that evidence with regard to (b) constitutes a basis for belief in (a). At the same time, it is no less clearly the case that there is no necessary connexion between the two. Sense (a), for instance, might well be accepted without any rider regarding (b)— as, for example, in the view that, though there are 'gods', they— may have neither the interest nor power to intervene in the affairs of men. Again there is no need to assume from the acceptance of (b) that there is necessarily a realm of the supernatural in sense (a). Conversely to postulate (b) is not necessarily to negate (a)... More immediately, however, there is the vital point that the sufficiency of the idea of the miraculous is to be seen as turning, in the last resort, on (b) above rather than (a). It turns, in short, on the (phenomenological) super-normality of the happening itself, as opposed to any presumed supernaturalistic ascription as to cause. (Williams, 1990, pp50-51)

As I understand it, Williams argues that everyday occurrences of psi have been associated with a supernatural explanation of cause, but that this should not necessarily be the case due to the more mundane nature of the events in contrast to 'miraculous' events such as are written of in Christian literature. He goes on to say that:

On the basis of the above, therefore, there is the clear conclusion that the miraculous need not necessarily be conceived in the exclusive terms of the biblical model of such events. What is philosophically most basic to the idea is, not any contingent feature relating to scale or bizarreness, nor any, necessarily speculative, claim as to origin, but, rather, the factor of some kind of super-para-normal willing. That is, more specifically - the phenomenological manifestation of purely mental, that is unmediated, control over physical nature. With this, too, there is the point that, as conceived in this way, there is nothing to negate the possibility of such events being brought about - even though, perhaps, only exceptionally, and not necessarily exclusively - by the direct volitional activity of *embodied* rational, that is *human*, agents. Nor, again, in this connexion, is there any necessity to relegate such events exclusively to the past. It might (conceivably) be the case that they are happening at the present time. Even, indeed, (again, conceivably) that they are, to some degree, repeatable. (Williams, 1990. p51)

In this analysis Williams argues that psi cannot be discounted as a supernatural phenomena on the basis that it is instantiated in the mundane and unexceptional,

but at the same time, he also allows that it is not possible to rule out the possibility that some or all of the events associated with psi are not of human origin. He leaves us confused as to what kind of explanation 'should' be sought for the phenomena, although he gives us a very good account of the problems associated with making this differentiation. His use of the hyphenated super/para-normal to describe the phenomena seem to indicate that he is not sure which he is dealing with in relation to psi phenomena. Despite this confusion in his wording I believe that he is making a case that psi should be treated as supernatural, although he allows that not everyone will want to accept this view.

I contend that if one is to advocate supernatural explanation for psi, as Williams appears to, there must be an additional reason to suggest that psi events are to be treated differently to other mundane events that are currently explained as natural even if the mechanism is, as yet, irreducible to purely mechanistic explanation. Williams himself appears to concede this point, but I think that if mundane instances of psi are to be ascribed to a supernatural explanation then every mundane everyday activity ought to be considered in a similar vein. If this is to be the case then Williams needs to explain why some events can be readily explained and others – like psi – are not. The invocation of a supernatural explanation for everything does not really achieve anything in explanatory terms and Williams is still left with the need to account for how it is that psi phenomena can be accounted for.

3.2.3 Dramatic psi

There are a number of accounts of psi which would not be popularly able to be accounted for under the 'psi is mundane and therefore natural' hypothesis. So, in order to comprehensively advocate a naturalist interpretation of psi events, I now deal with the Supernatural hypothesis as a general hypothesis that dramatic psi events are to be ascribed to a divine agent, the denomination of which is not of concern here. These are events that would not be able to be handled by the argument for a natural explanation on the basis of the normal, everyday nature of the phenomena as presented in the section above.

The types of psi events that I am now referring to are those that have some dramatic impact on a person's life. For instance saving one's own or a loved one's

life would seem to count as an act of significance. If one were to believe in a supernatural being then it would seem that the rescue or prevention of one's self or a loved one from death would be considered a dramatic enough incident to warrant the attention of a deity (broader theological issues as to what this means for people who do not have a deity 'looking over them' are beyond the scope of this thesis). In Louisa E. Rhine's book *Hidden Channels of the Mind* there are some accounts of dramatic events that could lead to death that were precognised and consequently acted upon which resulted in the saving of a person's life. These events are of particular importance to psi research, Rhine says, because they are of religious and philosophical significance due to the question they raise about fate (Rhine 1961, p 198). Earlier I gave an example of a woman who apparently acted upon pertinent information in a nightmare and saved her baby from severe injury or possible death by a falling chandelier. Here is another example of a potentially supernatural psi event because of its dramatic life-saving consequence:

During World War I the husband of a woman in California was chief engineer for a steamship company. He had been out to sea for about three months one time, when she was notified to go to Philadelphia to meet him. She left, and as she recalls, "---on my arrival at Philadelphia I called the company. They notified me he would be at Pier 101 the next morning at four o'clock. I had a bath and shampooed my hair and went to bed at about nine-thirty pm. I dreamed that the ship came in, unloaded, and reloaded without my knowing and sailed for parts in India; and about thirty hours from India what they called a 'tin fish' hit the ship and sank her, and my husband was the only casualty aboard. When I awoke it was three-forty A.M. I tied my head up and had my clothes on in five minutes. In the meantime, I had called the desk clerk to get me a taxi. He took me to Pier 1010 and they were finishing tying up. I handed the taxi a ten-dollar bill, ordered him to wait, ran by a guard at the gate and up on the ship, hysterical and crying, and the guard chasing me. My husband was on deck and I ran into his arms saying 'Don't go, don't go, the ship is going down.'

When I was so very determined that he was to get off, he asked permission to be off. The company granted it. The ship sailed and her destination was India. She was torpedoed and sank. All the men aboard were on a raft for sixteen days, floating around before they were picked up.

When my husband went into the office here three weeks later they told him about the incident. (Rhine 1961, p200)

A case of pure coincidence? Divine intervention to save a man's life? Or anomalous cognition? Some people ascribe the Supernatural hypothesis to explain dramatic case, especially as the experiencers themselves often describe the information obtained as if by a 'message' or 'vision'. These words are akin to words that describe religious experiences. If this is so then an argument could be made for the Supernatural hypothesis on the basis that the experiences of a

supernatural nature and anomalous acquisition of knowledge are due to the existence of divine agents or supernatural beings.

The next section will outline the argument for deism from religious experience as well as the argument made against this by J.L. Mackie. The same criticism will be applied to the Supernatural hypothesis when derived from experiences that seem, to some, as if they had occurred through supernatural means.

It should be noted that arguments for survival based on phenomena derived from mediums are not dealt with in this thesis. Although such phenomena is of interest as, if valid, it may indicate that there is personality existence after death, a discussion of the resulting ontological issues is beyond the scope of this thesis. The psi debate, as outlined in the introduction of this thesis, focuses on regular psi phenomena and though I intend in the future to make an analysis of the survival literature, I am unable to do so now because of the immense literature involved and the controversial problems concerned with validating this particular form of evidence.

3.2.4 The argument from religious experience

In one part of *The Miracle of Theism* J.L. Mackie examines the argument that religious experiences is evidence or proof of the supernatural which, aside from theistic doctrines or teachings, is defined generally as '*something further*, the reality of *some* higher but potentially friendly power' (Mackie 1986, p177).

The original theistic argument was developed because the problem of evil posed an awkward problem for theistic doctrines. Instead, arguments turned to religious experience as proof of a higher being. Regardless of faith or doctrine (sometimes atheists have been converted after such an experience) the event (feeling of union with a divine being, for instance, or communication received from what appears to be a divine agent) reveals to the person a higher, divine being as the source of the significant experience. It is acknowledged that the experience has dramatic effect on the person, for instance, a change from atheism to a belief in a God, but there is also an argument that maintains 'it may be held that the religious experience, as well as being valuable in itself, is also evidence, or even proof, of the objective truth of some associated beliefs' (Mackie 1986, p177).

Religious experiences then are taken to be indicative of proof for the existence of the supernatural, with obvious resulting ontological implications.

A certain category of psi experience can be equated to the religious experience. In these cases people experience access to information that ends up changing their lives (e.g. from a position of scepticism about psi phenomena they become avid believers) or they act on information that they should otherwise not have known and save their own, or a loved one's life (such as in the examples provided previously). Some people experience the acquisition of anomalous information in the form of guidance from a supernatural source or as if a divine agent is speaking directly to them in an anomalous fashion. These are the kind of psi experiences that would not be covered by the argument regarding the mundane nature of psi as warranting a natural explanation. So, the question then is: do some psi phenomena warrant a supernatural explanation?

I argue that they do not for the same reason as the argument for a deity from religious experience is also countered. Mackie makes the point that the argument for a supernatural agent from religious experience is problematic because 'if the religious experiences do not yield any argument for a further supernatural reality, and if... there is no other good argument for such a conclusion, then these experiences include in their content beliefs that are probably false and in any case unjustified. This, it seems, must be scored as a disvalue against them' (Mackie 1986, p186). The case is made on the basis that an analysis of the phenomena involved in various types of religious experience reveals that the phenomena do not empirically require a supernatural explanation, for instance saints who 'hear' God hear voices in their head similar to those of people who hallucinate. In general 'the undeniably real causal source of these impulses may be normally 'unseen' and not understood or articulately reported; but it is eminently understandable, and it belongs well within the same 'dimensions of existence' as other, wholly familiar, mental phenomena' (Mackie 1986, p184). This seems to put paid to the Supernatural hypothesis on the basis of religious experience as there is no evidence that cannot be accounted for in regular empirical terms, regardless of what the person who experiences the phenomena makes of the event. But what of psi?

The experience of psi does indicate that something occurs that is not currently considered possible in the natural workings of things according to

science. If psi experiences are legitimate then information can be acquired through non-normal means and movement of objects takes places without any known cause. Is this sufficient to ascribe the Supernatural hypothesis in the more dramatic cases? For we are not able, as in the case of the argument from religious experience, to maintain that there are already natural mental phenomena that can account for the psi experience.

What can be postulated, however, are normal explanations for the feeling that the information has been given by a supernatural agent. For, as in the case of the religious experience, normal explanations can account for the description of the events as being from a supernatural source. And the question must be raised that why should one life be saved over another? If a supernatural agent is responsible for saving the life of the baby sleeping under the chandelier, why are other babies allowed to die in preventable circumstances? The answer would seem to be because the nature of the psi event is not supernatural in origin but normal, even if unexplained, or potentially mistaken as anomalous. Once again I acknowledge that the scope of this thesis is unable to do justice to the broader discussions in theology and philosophy regarding related issues such as the problem of evil. I reserve further discussion on this point for the future.

3.2.5 Experimental psi and the Supernatural hypothesis

Experimental psi poses some interesting problems in regard to the Supernatural hypothesis, namely, because the anomalous nature of the phenomena dictates that experimental controls are put in place that discount natural cause for the phenomena. The negative definition of ESP and PK as anomalous only when regular sensori-motor mechanisms cannot account for the effects, raises questions about what is actually obtained when psi effects are observed. Experimental evidence for psi is largely obtained through long-run experiments using normal, everyday situations or simple tests. The content itself is not important (nobody's life is at stake when a ganzfeld experiment participant makes a stab at guessing the target picture). However, as Michael Scriven points out, there are broader ontological problems when it comes to the evidence for psi because of its anomalous nature. He maintains that although there is

no difference in principle between showing that one has discovered a new natural phenomenon and showing that one has discovered a supernatural phenomenon, as far as the basic experimental design goes. The design is—can only be—set up so as to exclude all existing natural explanations. (Scriven 1976, p185)

The problem then is if one successfully runs a psi experiment and obtains an above chance result and all protocols have ensured that there is no normal means by which this should occur, then what is shown to have occurred is something that has no natural explanation. Has one then obtained proof of a supernatural phenomenon or a natural phenomenon that has, as yet, no natural explanation? Both of these instances would dictate that the phenomena be produced through non-normal means and if the experiment is successful this is what will have been shown to have occurred. The evidence will be the same. Scriven deals with this situation as follows:

It will be clear... that the only circumstances under which one might plausibly be said to have demonstrated the existence of a supernatural phenomenon are those in which one has met the criterion for showing that it is not a natural phenomenon of the types so far understood, and also shown that it is so 'different' from those so far understood that it appears to be a case of 'another order of existence', and that it involves some agent or personality. (Scriven 1976, p185)

Scriven then contents that because of the anomalous nature of psi, any experiment that is designed to show that a psi-effect is taking place will be showing that something is occurring that is currently outside of the materialist framework. If this were not the case then it would not be an instance of psi. However, he argues that he does not believe that this indicates science should abandon its materialist/physicalist approach; nor that supernatural (as in the sense of divine or 'outside' agents) should be invoked. Instead he maintains that because psi appears to involve human agency 'no differences in parapsychology appear greater than those in physics, and the mere involvement of human personality hardly persuades us that we should abandon materialism or naturalistic explanation' (Scriven 1976, p185).

In another more recent forum Scriven revisited this argument and when asked: 'So for something to be truly supernatural, it would have to in principle be unexplainable, even in term of the physics of the far-distant future?' He replied:

That's the problem. It then becomes very difficult to see how you would establish that such a thing existed. But there is another way. If in fact it was connected to the intervention of a divine being or a family of beings, then that's a conventional part of the connotation of supernatural, and so one might well say that this was a supernatural event because it was pulled off by the conductor who orchestrates the things that break

all the rules. If there was evidence for that, then I would be quite willing to talk about those phenomena as supernatural. (Scriven interview Mishlove1998, online)

So for Scriven the natural and supernatural are both logical options but psi, because it does not appear to require the intervention of a 'divine being' should be considered as a natural, even if unexplained, phenomenon.

Summary of natural/supernatural discussion

I have shown that the Supernatural hypothesis runs into problems on two counts, firstly because of the mundane and everyday nature of the events that are described or elicited through experimental procedure; one would not ascribe a supernatural explanation to other everyday phenomena, why do so for psi effects just because the mechanism is as yet unexplained?.

As well, I have shown that even more dramatic instances of psi cannot be ascribed a supernatural explanation. I showed apparent psi experiences that are popularly ascribed to supernatural origins, elicit the same response as arguments for god on the basis of religious experience. I realise that theologians might contest this issue further by countering that belief in God requires faith not empirical proof, but further discussion of these more general deist arguments are beyond the scope of this thesis.

3.3 Application of the supernatural assessment on the psi hypotheses discussion

The arguments against the Supernatural hypothesis have a two-fold effect on the psi hypothesis discussion. Firstly, and most obviously, it means that the Supernatural hypothesis no longer forms part of the discussion of the competing hypotheses for psi. Secondly, less obviously, the assessment can be used to show that the hardcore skepticism regarding psi is unfounded. Hardcore skepticism is based on the notion that the acceptance of psi as legitimate necessitates a reversion to supernatural explanatory schemes. I examine the hardcore skeptic approach to psi in more detail below.

3.3.1 Hardcore skepticism and the Supernatural hypothesis

The hardcore Skeptic hypothesis is not a theory as such, hence it does not feature in the presentation of psi theory that was undertaken in the last chapter. Instead it is an a priori assessment of paranormal phenomena such as psi on the basis that acceptance of the legitimacy of such phenomena is a reversion to illicit superstitious explanatory schemes. It is traditionally upheld by those who also hold views of extreme scientism and active promoters of atheism. Advocates of this position are vocal in non-academic mainstream science journals (for instance, Michael Shermer, who's views are outlined below, has a column in *Scientific America* (Shermer 2003) as well as in the popular press. Although a minority (there are not many who would advocate such extreme scientism) they are prominent and influential and responsible for promoting their view strongly, which then filters through to the mainstream reception of psi phenomena in the general interested public as well as academia.

I therefore think that it is pertinent to use the analysis undertaken in this chapter to review the hardcore skeptical approach to explanation of psi phenomena, as the historic account combined with the arguments against the Supernatural hypothesis are relevant to the assessment of psi promoted by the hardcore skeptics.

The hardcore skeptical approach is exemplified by the science commentator Michael Shermer, co-founder of the USA Skeptics Society in 1992, who explains it as follows:

...myths, religions, and claims of the paranormal are lures tempting us beyond rational, critical, and scientific thinking, for the very reason that they touch something in us that is sacred and important—life and immortality. (Shermer 2005, p65)

According to Shermer, the paranormal and the supernatural are the same type of category of explanation for anomalous phenomena such as psi. Furthermore he contends the acceptance of the phenomena as legitimate challenges the rationality of science. When the hardcore skeptic account is presented, there appears to be some confusion from about psi's status current status as paranormal and what it means ontologically to ascribe a supernatural explanation for the phenomena. It is evident in the following assessment of the goals of science:

Scientism is a scientific worldview that encompasses natural explanations for all phenomena, eschews supernatural and paranormal speculations, and embraces empiricism and reason as the twin pillars of a philosophy of life appropriate for an Age of Science. (Shermer 2002, online)

For Shermer, psi, whether considered supernatural or paranormal, is something that just can't possibly exist. No matter what it looks like fraud or other normal explanations must be employed to account for the phenomena. (Shermer 2005, p63). The approach is different to the Explanation by Fraud Argument and the Modern Miracle Argument. Instead it appears to be founded on notion that if psi is accepted as legitimate, then society is in danger of reverting to superstitious explanatory schemes.

James Randi, a magician and professional debunker of the paranormal, is another such proponent. Randi is not a scientist, however, he is still called upon by the mainstream press to comment on the scientific evaluation of psi even though

his expertise is in magic and he has no scientific training²³. Randi and Shermer are both advocates of atheism and sometimes present themselves as defenders of 'science' and 'rationality' (Shermer 2005, p63).

The historic account sheds some light on how this confusion regarding psi's problematic explanatory status in regard to science has eventuated. I suggest that the historic account gives us a hint as to the motivation of this group of radical psi commentators. The explanatory history of psi as a supernatural phenomena most likely informs the hardcore skeptic set up of the assessment of psi, which is to present a false dichotomy: namely, when one is presented with what appears to be psi one must choose between reversion to the supernatural explanation for such phenomena, or ascribe fraud to account for the phenomena.

The historic account indicates psi was once determined to be a supernatural phenomena and explained as such. In much of the mainstream literature that discusses psi there is confusion regarding the difference between psi's current status as paranormal and its former status as supernatural. Sometimes the words supernatural and paranormal are used interchangeably. I suggest that psi's explanatory history might inadvertently inform the hardcore skeptic's apparent concern that re-acceptance of psi as produced by any other than fraudulent means would entail a reversion to older systems of supernatural belief.

Even if legitimately anomalous psi, it would appear, is mundane in nature. If the evidence can't be explained readily through any of the three Fs (fraud, fluke or flaky methodology) then it should be treated as a natural, even if anomalous, phenomena. I conclude then that the hardcore skeptic proposes a false dichotomy based on a faulty assessment of the explanatory status of psi which does not take into account the history of the explanation of the phenomena.

We do not need to view psi as a challenge to scientific rationality on the basis that acceptance of the phenomena entails supernatural beliefs. Psi certainly poses an explanation challenge to science; it is not readily accounted for by any

²³ For instance when there was a controversy regarding the British physicist Brian Josephson's statements regarding the legitimacy of evidence for telepathy, it was Randi who was interviewed on BBC radio. James Randi presents his view on telepathy and quantum physics as follows:

There is no firm evidence for the existence of telepathy, ESP or whatever we wish to call it, and I think it is the refuge of scoundrels in many aspects for them to turn to something like quantum physics, which uses a totally different language from the regular English that we are accustomed to using from day to day, to merely say, oh that's where the answer lies, because that's all very fuzzy anyway. No it's not very fuzzy, and I think that his [Josephson's] opinion will be differed with by the scientific body in general ... (MacGregor 2001, online)

known scientific theory. The challenge now is to come to terms with the anomalous nature of the phenomena. This can be perceived as less problematic if the current assumptions stemming from the creation of the modern world view are reconsidered using knowledge from contemporary philosophy of science. This challenge is one I take up in Part II of the thesis where I further examine the three remaining psi hypotheses, the skeptic hypothesis and the two realist psi hypotheses, in relation to issues of explanation in the philosophy of science.

Part II: **Beyond Beliefs**

To make a policy of bewilderment is surely the worst form of defeatism.

John Beloff

Part I of *Beyond Beliefs* leaves us in a position to make an assessment of issues pertinent to psi theory and explanation. The purpose of the next three chapters is to undertake an analysis of the competing three hypotheses in relation to theoretical development and explanatory issues in the philosophy of science.

In Chapter 4, *Boundless Sea*, I start by examining a recent discussion between proponents representative of two of the three competing hypotheses. I show that the discussion is undertaken at cross purposes and examine the issues in the context of Larry Laudan's research traditions. I use the analysis to show that explanatory issues are important to making a comparison between the competing hypotheses.

I then go on in Chapter 5, *Explanation*, to focus on the dominant hypothesis (skeptical) and make a case that an outdated explanatory theory (the covering law model) has influenced the reception of psi in philosophy to this day. I argue that a re-analysis of psi in terms of current explanation theory is in order.

This re-analysis is undertaken in the last chapter, *Terra Firma*, where I show that the reasons that the covering law theory declined are pertinent to psi because of the changes to explanation theory and, most particularly, the status of laws of nature within contemporary explanation theories. It is at this stage that I undertake a re-evaluation of how to express the psi explananda without emphasising their anomalous nature. I then use this analysis to examine the competing hypotheses in relation to current explanation theories. I conclude that I have prepared some cleared ground from which further comparison of the psi hypotheses discussion can take place. Consequently the apparently unresolvable psi debate and the problematic mainstream philosophical arguments that deal with psi that were outlined at the beginning of the thesis in *Terra Incognita* have been re-appraised and presented in a form that is open to further discussion as science, explanation theory and psi theory progress.

Chapter 4 - Boundless sea

Data and theory. Evidence and mechanism. These are the twin pillars of sound science. Without data and evidence, there is nothing for a theory or mechanism to explain. Without a theory and mechanism, data and evidence drift aimlessly on a boundless sea.

Michael Shermer

This chapter will continue to examine the competing hypotheses in relation to pertinent issues involved with theory development. I will first make a case that development of psi theory is important. I then analyse a current example in which scientists discuss two representatives of the competing hypotheses (the Skeptic hypothesis and a small natural change hypothesis). It is rare that psi is discussed in mainstream science so I use this unique contemporary example to further explore the explanatory issues at play when scientists and philosophers discuss psi today.

The proponents of the competing hypotheses in the radio discussion are shown to be representative of opposing positions regarding the use of psi in science. I use this to demonstrate how recouping the psi debate as competing hypotheses is beneficial to coming to understand how a dialogue about psi can progress. It becomes apparent that one hypothesis is driven by data and the other by conservative explanatory issues already flagged as problematic in the analysis of the mainstream psi arguments.

I suggest that this indicates the various proponents are approaching the phenomena from different research traditions that give different weight to issues of data and explanation in science. I use Larry Laudan's work on research traditions to put the discussion into perspective and use it constructively to tease out issues that require further evaluation. Due to recent developments in explanation theory I maintain that a review is in order. This will be commenced in the next chapter.

4.1 The importance of the development of psi theory

The unresolved tensions that the psi debate has given rise to have created a problem. As I mentioned in the introduction, a Catch 22 situation has developed whereby mainstream scientists and philosophers criticise psi theory development because no single theory has become clearly dominant, however, if this type of theory is ever to be developed it will no doubt require development in conjunction with mainstream disciplines such as neuroscience, biology, cognitive science and physics.

I should note here that some philosophers have tackled the problem of psi theory development in the past. For instance in C.W.K. Mundle's thoughtful essay on 'Strange facts in search of a theory' (Mundle 1972). And, of course, Stephen E. Braude deals with various theories in his books on the philosophy of psi (1979, 1986, 2003). I do not mean to diminish the importance of these intelligent philosophical discussions of psi theory. However, despite these contributions to the philosophical discussion of the evidence, psi theory development remains problematic. Firstly, there are many competing theories with various ontological implications; the formulation of one working theory acceptable to the mainstream has remained elusive. Secondly, the dominance of the mainstream arguments has very comprehensively rendered the less mainstream investigation of psi on the fringe. However, I have shown that the mainstream arguments are problematic and, more importantly, that they are based on some assumptions that should be brought out into the open. The upshot of the situation is that one working theory is unlikely to develop, if it ever does, unless it is undertaken in conjunction with mainstream scientific theory development. Given this situation, at this stage the discussion between various interpretations of the evidence, rather than the promotion of one working theory itself, should be considered progress.

The philosopher H.H. Price also made a similar case in 1940. He appealed for wider discussion of psi in philosophy and the sciences and that as scientific investigation of psi was fledging area of inquiry. He wrote that:

it was a mistake to lay down a hard-and-fast distinction between a scientific investigation of the facts and philosophical reflection about them (or, if you like, about the terminology in which they are formulated). At the later stages the distinction is right and proper. But if it is drawn too soon and too rigorously those later stages will never be reached. (Price 1940, p109)

In the next chapter I outline why it might be that philosophical interest in psi diminished subsequent to H.H. Price's appeal in 1940. I argue that it is most likely due, in part, to the publication of Hempel and Oppenheim's seminal paper on

covering law theory in 1948 and the subsequent dominance of the covering law theory. But briefly, here I note that I think that because the fraud hypothesis has dominated the philosophical discussion of psi in contemporary philosophical analysis, the type of speculation that Price called for in 1940 never substantiated. This thesis is an attempt to further productive discussion of the competing hypotheses. I commence in the section below by analysing an example of contemporary debate.

4.2 Example of contemporary discussion about psi

In this section I use an example of contemporary discussion about psi to highlight the issues involved when current scientific discussion occurs between proponents of competing hypotheses. This serves to develop an understanding of how best to proceed in developing psi theory for all hypotheses. The comparison is used to tease out the various theoretical and explanatory issues involved. I show how sometimes professionals who undertake discussion of psi theory compare competing hypotheses at cross purposes because different values of explanatory worth underlie their assessment of the phenomena. It is argued that these should be brought to the fore and this initiates further discussion of psi in relation to explanation theory. First I present the details of the radio discussion.

4.2.1 The radio discussion in context

A recent radio show on Radio National (ABC²⁴) featured a discussion between a psychologist, a cognitive scientist and a philosopher. The topic was the use of psi in developing cognitive theory. To put this into context I will first make some comments about why this radio show caught my attention and I defend the use of it in this thesis.

First of all it is unique to have current mainstream scientists engaging in psi theory development. It is even rarer to have a discussion between proponents of competing hypotheses. This is because, currently, the development of psi theory is carried out mainly in the parapsychology literature or psi-oriented literature (such as the work of Dean Radin or Dick Bierman) which is not widely accessed by

²⁴ In Australia, the ABC stands for the Australian Broadcasting Commission and it is the government-funded national broadcaster. It has a national television station, a national radio station as well as a youth station and numerous local stations that draw on the national service as well.

mainstream scientists and philosophers. There is a handful of mainstream philosophers and other academics who contribute to the discussion on a philosophical level. I have mentioned before that Stephen E. Braude is the most prolific of these in philosophy having published now three substantial works on philosophy and psi as well as numerous articles. But his work is rare in the philosophy arena. It is interesting to note that many of the journal articles he has written on psi have been published in psi-oriented parapsychology journals whereas mainstream journals carry his articles on less controversial topics such as self identity. This is not meant as a criticism, but rather a comment on the fact that even an expert on philosophy and psi is presumably unable to combine the two research interests in the mainstream forums for publication.

Secondly, I have mentioned before that psi is almost invisible in philosophy. My analysis of research into psi indicates that psi is most often published in forums dedicated solely to that activity in, for instance, parapsychology journals or books solely dedicated to the topic of psi. In 2002 I surveyed philosophy texts in a major university's book store and revealed that only one text had an indexed reference to psi and the comment regarding psi in the text was quite derogatory. Though the radio show discussion lacks a certain rigour because of the medium, I justify its use because it is unusual to find a realist psi theorists and the mainstream in conversation. Furthermore, the radio discussion I draw on exemplifies two of the hypotheses with regard to current issues in science which can then be used as a relevant case to study the pertinent issues raised in philosophy of science. I therefore proceed to by outlining the discussion before I reword the content into representative stances, relevant to this thesis, so that further discussion can follow.

4.2.2 The setting

The radio discussion is taken from a transcript of an ABC program which airs weekly called 'All in the Mind'. In this particular week it aired a show called *The Paranormal and Quantum Theory - Beyond the realms of scientific respectability?* (Browning 2005, online). Julie Browning is the host of the show which was produced by Gretchen Miller. The participants in the interview for that program were:

Dr Peter Slezak – philosopher
School of History and Philosophy of Science, UNSW, Sydney, Australia

Dr Diane Powell – psychiatrist
*Cambridge Hospital (formerly) - currently director
of the John E. Mack Institute*

Dr Ken Hennacy – cognitive scientist
Computer Science Department, University of Maryland, USA

The main content involved a discussion between Dr Powell and Dr Slezak regarding the use of psi in constructing theory. Their two views are representative of the problems that are encountered when comparing competing hypotheses for psi and will provide a basis for further examination of psi theory in this chapter. The discussion commenced as follows:

Today we explore speculation that quantum physics may account for some of these unusual phenomena of the mind. And I have to give a warning - that the following ideas most regard as way off the wall, beyond the boundaries of respectable science, and we'll come to that later. But at a recent international conference on the science of consciousness psychiatrist Dr Diane Powell and computer scientist Dr Ken Hennacy from the University of Maryland argued the case for the paranormal and quantum mechanics.

The introduction acknowledges that the topic matter²⁵ is considered 'off the wall' and 'beyond the boundaries of respectable science' which voices a common perception about the study of psi. They use the word paranormal, but the content of the subsequent program indicates that they are referring to anomalous communication. The program becomes more relevant to the psi hypotheses discussion once the conversation between the psychologist and the philosopher starts to deal with the potential use of psi in current speculation about models of the mind.

²⁵ The radio show does not use the word 'psi' but their example and the discussion are clearly about this aspect of the paranormal rather than the broader category of such phenomena which usually includes ghosts or UFOs. So the ensuing discussion will use the word 'psi' in place of their 'paranormal'.

4.2.3 The psychologist and the cognitive scientist

The psychologist, Dr Diane Powell, commences the discussion by outlining how she became interested in using psi to develop cognitive theory. She relates how her interest in the phenomena was instigated because on two occasions, when apparent psi phenomena were exhibited in her presence. Following these experiences she says she felt that ‘they were so compelling and I, being a scientist, believed that you need to be open minded to changing your paradigm or your theory if you have data that just will not fit in it’ (interviewed in Browning 2005, online). Consequently, in collaboration with cognitive scientist Dr Ken Hennacy they have developed a new model of how the mind functions. In a paper which outlines her new theory she explicates:

I’ve been collaborating with Ken Hennacy, a physicist with expertise on quantum mechanics and artificial intelligence, to create a new model for understanding savant abilities. Our model suggests that there are two modes of processing information within the human brain. The processing we are consciously aware of is what we call “classical.” It is slow, linear, and capable of handling only a limited amount of information. It solves problems by using abstract concepts, relies upon neural network connectivity and occurs in the neocortex. “Quantum” processing, by comparison, is extremely rapid, parallel, and capable of handling exponentially more information than classical processing, but it usually operates outside of conscious awareness. It takes place in all brain regions and becomes more evident when classical processing is turned down or off. (Powell 2005, p17)

Powell has developed her theory to explain the ability of savants to perform mental feats that are beyond the capability of the average person. The memory feats include the ability to calculate complex equations quickly or ability to play complex music by ear. Powell also believes that the model might be applicable to psi. It is a theory that adds the quantum level of processing into a regular brain model.²⁶

The radio show contrasts Powell’s model to the more widely accepted model for mind which maintains that ‘the mind is like an algorithmic computer and the brain’s vast neural network is the key to the mind’s complexity’ (interviewed in Browning 2005, online). I am unsure whether this statement refers to a connectionist or computational theory of mind or whether it is referencing both modes, but I take it

²⁶ I note here that even without psi, this is a controversial step in itself, given the explanatory gap that must be negotiated to explain how the micro and macro levels of the model interact. However, this is not unique to psi theory. It has already been mentioned that mainstream mind theories contain just such assertions, such as the theories of Roger Penrose which I mentioned earlier. The theories are problematic because they require some answer as to how to explain the micro/macro interaction between the micro quantum level and the macro level. I address this issue in relation to contemporary explanation theory further in Chapter 6.

that that they are referring to some kind of dominant mainstream mind theory that advocates a physicalist account of mind where mind is equated to brain states.

The radio show host points out that Dr Powell risks her reputation by including psi in her theory development. The host then asks that given this is a controversial manoeuvre, why is it that she takes the contentious step of including both psi and quantum theory in her proposed on mind models? Tellingly Dr Powell answers:

... because I really think that even though it is very, there are going to be a lot of sceptics, it's very controversial, I think that it's necessary to put it out there to stretch people, to get them to start thinking about some of these things that for a long time people have really been puzzled by and are not explained by the current model. And so the way that science evolves is by proposing new models that explain the data that's out there and then generating hypotheses and testing, testing the model and then refining it and moving forward.
(interviewed in Browning 2005, online)

Her defence of the use of psi is very pertinent to theory development and competition in philosophy of science. These will be examined in much more detail shortly. But first a brief summary of the opposing point of view taken from the same program.

4.2.4 The philosopher

A philosopher from the University of New South Wales, Dr Peter Slezak, was asked onto the show in order to respond to the new model of mind which Dr Diane Powell and Dr Ken Hennacy were developing. His first point was about the mention of paranormal (psi) phenomena that the theory postulates as part of its explanatory scope. He comments:

If one is going to introduce the whole idea that there are paranormal phenomena the first thing that has to be said is that there's not the slightest empirical grounds to believe that such phenomena exist. So before one resorts to explanations that invoke paranormal abilities one would have to have some grounds for believing that there's evidence that warrants these claims.

Further to this he does not think that there is any need to introduce another level of process into the model of mind. Slezak says:

The area of quantum physics as an explanation of either the abilities of savants or other forms of consciousness is, I think, fair to say, speculative but it's again on the wild fringe end of speculation in this area. The question that has to be asked is whether the existing understanding of conventional physics and in fact, just the understanding of the brain and its neural networks is adequate to explain these behaviours. And there's not the slightest reason to think that current models are inadequate.

He then goes on to make a comment regarding the introduction of quantum physics into the model of mind and questions the reasons why this is necessary:

There's lots of things we don't understand but it doesn't mean that you invoke immediately some, what I have to say is, sort of a wild level of explanation that goes well beyond what is currently within the existing framework.

Dr Peter Slezak makes it clear that although the problem of consciousness is very much discussed (What is there to explain? Will science ever be able to explain it?) in the philosophy of mind, he believes that science will eventually understand the brain in the same way that it understands the functions of other parts of the body. His statement does not take into account that there are dualists who might disagree with such an assertion, but given that in Australia materialism is the dominant tradition he is voicing an opinion that would be upheld by many, if not all, Australian philosophers of mind. Dr Slezak concludes by saying that the main difference between his point of view and that of Dr Ken Hennacy and Dr Diane Powell:

is whether one has to resort to what I think one would say are extreme alternatives, as opposed to working within the framework of our current understanding, which appears to be adequate and which we are racking our brains to kind of solve these problems.

Dr Slezak's position is therefore at odds with Dr Powell's. At the point at which the radio show ends the discussion, they are in a situation whereby they just have to agree to disagree. The situation is similar to the psi debate which I outlined in the introduction to this thesis. One cannot expect much more from a radio discussion on the subject, however, I will use this example to clarify some of the issues that inform the discussion. The points of views expressed on the show between these disparate views are very telling. I outline the main positions represented below.

4.2.5 Discussion of competing hypotheses

The example of how a scientist and a mainstream philosopher respectively assess psi theory in a mainstream medium will be used to explore relevant issues of theory development in philosophy of science and hence provide a better understanding of the issues involved in comparing the competing hypotheses. The arguments for each side advocated in the discussion deal with theories, anomalies, problem-solving, and evidence. They are therefore pertinent to issues in the philosophy of science, and I will show how they can elucidate the issues regarding the psi hypotheses discussion.

The respective views of each of the contributors on the radio show will now be honed down to two representative stances. I call them the pro-psi and anti-psi stances. Dr Slezak is representative of the anti-psi approach and Dr Powel and Dr Hennacy of the Pro-psi approach. Here they are in point form:

Pro-psi

- Apparent psi phenomena (ESP) require an explanation
- It is also apparent that the phenomena are anomalous
- The evidence for psi is apparently legitimate and science should try to explain the data
- A new model of mind has been developed to explain another unsolved (but not anomalous) phenomena (skills of autistic savants)
- Psi mechanisms can possibly be explained by this new model of the mind (which introduces QM)

CONSEQUENCE The data for psi require an explanation. The new theory proposes a radical new model of mind functioning (because it involves adding another level of operation) which, if correct, potentially explains how psi might work.

The pro-psi approach is representative of the reductive realist approach to explaining psi phenomena. This is because it advocates a theory that accounts for psi as an anomalous phenomena which requires explanation. It does this by introducing a new model of mind, which though controversial, does not add any new ontological category to the connectionist model. In terms of progress of theory development in science the pro-psi account considers the generation of the more problematic, radical theory worthwhile because it has greater explanatory capacity. According to this

view, theory-generation is considered more important than maintaining a conservative approach and it is based on the perceived need to explain psi data.

Anti-psi (AP)

- Evidence for psi is weak or nonexistent therefore it most likely does not require an explanation
- The current (connectionist/computational) mind models are adequate and the best working models so far, even if there are some phenomena as yet unresolved (e.g. savants).
- The evidence for psi does not warrant reconsideration of the current model.

CONSEQUENCE The current theory remains unchanged with the anticipation that it is capable of solving any currently unsolved problems. (though there is disagreement about what problems require a solution)

Slezak states clearly that ‘there’s not the slightest empirical grounds to believe that such phenomena (anomalous communication) exist’ (ABC radio 2005, online). I suggest therefore he is a representative of the anti-psi approach and a proponent of the eliminativist view that there is therefore no phenomena that require explanation. In earlier chapters I have shown that the debate over the body of evidence for psi is complex and involves beliefs about the phenomena based on explanatory considerations. More specifically to make the statement along the lines of ‘there is no evidence for psi’ is to either display ignorance about the state of play of the evidence or (more likely) to be making an assessment of the phenomena based on the mainstream arguments for psi which I have shown to be problematic. So the anti-psi proponent who states that ‘there is no evidence for psi’ is really making a claim regarding conservative explanation and theory development.

Slezak’s own statements appear to support this analysis as he sees the main difference between himself and Hennacy and Powel as making a differentiation between ‘whether one has to resort to what I think one would say are extreme alternatives, as opposed to working within the framework of our current understanding which appears to be adequate and which we are racking our brains to kind of solve these problems’ (interviewed in Browning 2005, online).

In summary, the anti-psi approach denies there is a problem to solve in regard to explaining psi and consciousness and advocates the adequacy of current models to eventually explain current unknowns such as the behaviour of savants. On the other hand the pro-psi proponents believe that there are phenomena that require explanation (psi, abilities of savants) and that these phenomena can be accounted for by developing a new, more complex, scientifically problematic, more radical model of mind functioning with the hope that the roughness of the new theory will be smoothed in time.

The example taken from the *All in the Mind* radio program exemplifies the explanatory trade-off that is required for each option to be maintained. In the analysis of the main psi arguments in Chapter 1, I mentioned that there was no way to determine which of the two alternatives (copied below) would eventually be shown to be the most reasonable when, as is the case with psi, a body of evidence for a phenomenon is anomalous.

E_n - psi cannot be explained currently as a natural phenomenon therefore the fraud hypothesis is the most rational
over

E_{ψ} - psi does not fit into current scientific theory, but, given the apparent evidence, some kind of explanation is required regardless of the ontological outcome

The radio discussion presents a case where we see discussion about psi between proponents who are representative of both the E_n and E_{ψ} approaches. The anti-psi proponents maintain a conservative, more simple approach at the expense of explanatory scope (E_n), versus the pro-psi proponent's more radical and more complex theory, but one which has greater explanatory power (E_{ψ}). However, these two stances will remain at loggerheads unless the discussion can be ameliorated. In the broader picture these are different approaches to theory development in science that are relevant to explanation theories in philosophy of science which will be discussed in more detail in Chapter 6. For the time being in this chapter I will continue to examine the competing hypotheses and focus on issues pertaining to theory development in science.

I suggest that the most important question now to consider is: when should conservative explanatory concerns give way to the development of new, even if radical, theory? The pro-psi approach maintains that the data that indicate psi effects

means that a theory should be developed to explain them and they have started to formulate some ideas that involve quantum mechanics to explain psi which they have developed to explain another unsolved problem in cognitive science. Their approach is considered radical according to contemporary mind theory, and is even more radical because it is used to explain psi phenomena.

On the other hand the anti-psi approach maintains that current theory is adequate to the task at hand and will eventually be used to explain the unsolved problems such as the ability of savants to calculate quickly and they question the addition of psi as a phenomenon that requires explanation because the evidence is believed to be unsubstantiated.

I therefore suggest that the pro and anti psi stances represented on the radio show, are better understood if it is shown that the discussion confuses two important issues. The pro-psi approach is data-driven whereas the anti-psi approach is theory-driven. Both of these issues are important to explanatory considerations. I will explain this further in the next section when I use the work of Larry Laudan to clarify this point.

4.3 Research traditions

This chapter will continue to explore the anti-psi and pro-psi stances using relevant areas in philosophy of science. In particular it will look at Laudan's analysis of research traditions to provide an avenue to understand how the competing hypotheses can be understood with this broader context in mind. Laudan's work is pertinent because, as I started to indicate in the section above, the two camps can be seen to represent different conflicting approaches to the body of evidence for psi. Laudan's theories on research traditions give a framework to try to understand some of the issues that inform the discussion. First I will outline Laudan's notion of research traditions and then apply it to the discussion. I will also draw on the analyses of psi undertaken previously in Part I of this thesis (especially the historic account) and tie any relevant issues into the discussion of research traditions in this chapter.

4.3.1 Research traditions and the radio discussion

I note at the outset briefly that Laudan himself appraised ESP phenomena as follows:

Most scientists today would claim to be unsure that there is *any* evidence of ESP which is in need of theoretical explanation. The so-called “pseudo-sciences” (as well as newly emerging sciences) generally flourish on just such cases, where it is unclear whether there is, at the outset, any problem which needs to be solved. (Laudan 1977, p33)

I hope that I have shown in the earlier chapters of the thesis that there is a problem. The outline of the radio discussion further gives weight to the problem when competing hypotheses are compared. I think that they are representative of different research traditions and will use Laudan’s work on such to further understand the issues involved.

Laudan’s notion of research traditions was developed because of criticisms of both Kuhn’s idea of paradigm change and Lakatos’s postulation of research programs. Laudan defines a research tradition as follows:

A research tradition provides a set of guidelines of the development of specific theories. Part of those guidelines constitute an ontology which specifies, in a general way, the types of fundamental entities which exist in the domain or domains within which the research tradition is embedded. (Laudan 1977, p79)

Further to this:

The function of specific theories within the research tradition is to explain all the empirical problems in the domain by ‘reducing’ them to the ontology of the research tradition. (Laudan 1977, p79)

He gives the example:

If the research tradition is behaviourism, for instance, it tells us that the only legitimate entities which behavioristic theories can postulate are directly and publicly observable physical and physiological signs. (Laudan 1977, p79)

According to Laudan then, research traditions dictate what is acceptable science at any one time. They are a way of understanding that science is informed by current beliefs, history and general consensus regarding what is appropriate in terms of methodology and (importantly for psi) content. They are ‘a set of ontological and methodological “do’s” and “don’t’s”’ (Laudan 1977, p80). This can change over time as has been witnessed by major developments in science over the years. The usual examples are the over throw of Aristotelian physics by Newton’s physics and then later, the changes to scientific theory after Einstein’s relativity theories gained favour.

A dominant research tradition is considered:

A set of general assumptions about the entities and processes in a domain of study, and about the appropriate methods to be used for investigating the problems and constructing the theories in that domain.' (Laudan 1977, p81)

I will now apply the notion of a research tradition to psi. The study of psi uses the accepted methods of investigation that are required by the current dominant research tradition. However, the actual subject of the study is what is open to question in this regard. The current dominant research tradition declare psi to be paranormal (as shown in Chapter 3). This is where the historic account comes in and helps to put the competing psi proponents into perspective. For Laudan also advocates that:

Because these larger systems (which I have called "research traditions") function at any given time as the effective units of acceptance (or rejection), it follows that the intellectual historian—in so far as he wants to explain the evolving vicissitudes of belief—must take such traditions as his fundamental units for historical analysis. (Laudan 1977, p182)

Once the historic account is brought to bear on the example of the discussion between the anti-psi and pro-psi stances, the issues become clearer. Remember that the historic account made a case that psi is currently considered paranormal because of its explanatory history as a supernatural phenomena at the time the modern world view was formed. Thus, the limits of science which were roughly sketched in those times impact on its status according to current day science. Despite the changing status of the explanatory category of the phenomena and the consequent assessment of psi as anomalous to current science, the data that requires explanation has persisted.

There has been a continued build up of evidence for psi. Evidenced, for example, by the continuing collation of anecdotal evidence as well as the increasing experimental evidence. There must be a point at which the apparent need to account for the evidence will convince some that conservative explanatory considerations must eventually be put to one side. I think that the discussion on the radio station indicates that we are seeing such a change now.

Anti-psi proponents, who represent the dominant research tradition, maintain that the current framework works too well to be upset by the introduction of phenomena that appear to be unexplainable within the framework. Pro-psi proponents consider the reverse and maintain greater explanatory scope is required in order to encompass the data that the current framework provides *even if it is anomalous to that framework*. One is a conservative theory-driven approach (anti-psi) which puts its hopes on current theory to eventually resolve the problems the data have given rise to.

The other (pro-psi) is data driven and regards the anomalous data associated with the body of evidence as being substantial enough to warrant a more radical development in mind-theory.

Therefore the discussion on the radio was carried out at cross purposes and was not, in fact, a discussion of similar concerns regarding mind models and psi phenomena, but instead the presentation of two conflicting points of view regarding explanation. They will remain unreconciled until it is realised that they represent these two different approaches representative of the dominant mainstream research tradition and a minor data-driven research tradition. Each stance (pro-psi and anti-psi) is equally worth investigating at a meta-level which compares them with these issues upfront. An analysis of the approaches as competing research traditions helps to tease out the explanatory issues that inform the discussion. So I now turn to Laudan's work on comparing research traditions to further tease relevant issues in the psi hypotheses discussion.

4.3.2 Comparing research traditions

According to Laudan 'a successful research tradition is one which leads, via its component theories, to the adequate solution of an increasing range of empirical and conceptual problems.' (Laudan 1977, p82) It is important to note that he also believes that a successful research tradition is not necessarily more or less correct in its assessment of the world than an unsuccessful one. In fact a strong research tradition may be ontologically or methodologically flawed in comparison to competing traditions but may remain dominant for other reasons. So the anti-psi research tradition, which represents the mainstream take on psi phenomena, has remained strong, despite the empirical disadvantage that it cannot explain certain apparent anomalous events (psi) and so has no alternative to rejecting the mass of evidence that I outline in Chapter 2 as having been produced by fraud, self-delusion, flaky methodology or flukes of coincidence. It could be considered flawed in this regard (because of the amount of fraud etc. that must be postulated in order to explain the evidence in such a fashion), but according to Laudan this wouldn't necessarily diminish its status as the dominant research tradition. What his analysis helps us to do is understand that such traditions can remain dominant despite such problems.

Trevor Pinch is a sociologist of science with an interest in 'fringe science'; he makes a pertinent point about the fraud hypothesis in his paper 'Normal explanation of the paranormal: the demarcation problem and fraud in parapsychology.' He questions 'what makes the 'fraud' hypothesis a better scientific explanation for the results of the parapsychologists than the 'paranormal' hypothesis?' (Pinch 1979, p330). During the course of answering this question he makes a case that 'the fraud hypothesis can be rejected as unscientific for the same sorts of reasons that have been used to reject parapsychology' (Pinch 1979, 334-335). He does this on the basis that the fraud hypothesis is not generalisable (that is, showing one instance in which a fraudulent activity has produced an apparent psi effect does not mean that this is the case for all psi effects) nor is it falsifiable. Finally he suggests that it is theoretically inadequate, that is, there is no successful theory that explains why so many people would engage in fraudulent activity. His answer as to why, what he calls the fraud hypothesis, is dominant despite these problems is:

The 'normal' hypothesis is, almost by definition, more central than the paranormal hypothesis: hence the weight of the demarcation process has been directed towards denying scientific status to the claims of the parapsychologists. (Pinch 1979, p343)

His analysis gives weight to my notion that the pro and anti-psi stances are representative of different research traditions, one more radical than the other (pro-psi) because of how far it varies from the central tenets of contemporary science. As a social constructivist Pinch maintains that he is 'pessimistic about the possibility of establishing independent standards of rationality' (Pinch 1979, p344) leaving the question about determining which hypothesis is the most reasonable unanswered. Though I find his analysis of the fraud hypothesis relevant, I think otherwise. I suggest that teasing out the explanatory considerations and showing what beliefs about theory development and data inform each hypothesis,, allows us to at least understand how to go about making a comparison of the hypotheses.

I will therefore turn back now back to Laudan's work which outlines a similar scenario in which 'if a theory is closely linked to an unsuccessful research tradition then – whatever the problem solving merits of that particular theory – it is likely to be regarded as highly suspect' (Laudan 1977, p83). This appears to be what is occurring in the discussion between the pro-psi and anti-psi proponents. It is borne out by the reception that the pro-psi stance was given in the radio discussion by the upholder of the status quo anti-psi proponent. More specifically the pro-psi theory was considered

suspect because it was speculative and involved data from a questionable area of scientific research according to the anti-psi (mainstream) proponent's hypothesis which maintained that it was more reasonable and was based on the need to maintain the dominant mind theory at the expense of representing a conservative approach to theory development.

The question now remains: if we are not to accept the status quo, how does an independent analysis of the two positions come to a conclusion regarding the most appropriate approach to developing psi theory? I don't think that at this stage we can determine resolutely whether we go with the more radical, less accepted pro-psi approach or the conservative theory-driven anti-psi stance. I suggest what we can now see is that different issues guide the development of each theory and the hypotheses are not well-matched for comparison; one is data-driven, the other theory-driven.

4.3.3 Summary of radio discussion

I have used an analysis of a radio program regarding psi to show that discussion in science and philosophy between representatives of the competing hypotheses is complex, and involves comparison of different research traditions. It is not a mere matter of epistemologically evaluating the body of evidence. Even with the historic account taken into consideration it is not normatively clear which of the anti-psi or pro-psi advocates is the most reasonable path to follow. What is clear is that the discussion of the competing psi hypotheses requires further analysis which takes into account various stances regarding how science explains anomalies. I therefore take up the task of assessing psi in relation to explanation theory in philosophy of science in the next two chapters.

Chapter 5: **Explanation**

It is better to be attacked than it is to be ignored.

J.B. Rhine

In Chapter 4 the theoretical and explanatory issues of the psi debate were teased out and it was concluded that a re-evaluation of the hypotheses in terms of explanation theory is warranted. In this chapter I continue to explore the discussion of the psi hypotheses with particular focus on the Skeptic hypothesis and explanation theory in science. I think it is pertinent to understand what has informed the dominant hypothesis in order to gain perspective on explanatory issues involved when comparing the competing hypotheses.

To commence, I tie together points made earlier in the thesis regarding the currently dominant mainstream assessment of psi, and re-iterate the importance of explanatory considerations to understanding the background issues that inform the Skeptic hypothesis. I then outline the main tenets of the covering law explanation model before explaining why the covering law theory is problematic for psi. I go on to show that the covering law model of explanation was dominant shortly after the experimental data from the early laboratory-based psi research was first brought to wider mainstream public and academic attention. It is suggested that the Skeptic hypothesis assessment of psi was influenced by the covering law theory, which was the 'received view' in the philosophy of science until the early 1970s. I show that despite a brief flurry of renewed interest in psi after this time, the assessment made when the covering law theory was the dominant model still prevails today. Finally, it is concluded that because the covering law theory is no longer dominant, but appears to have influenced assessment of psi, it is pertinent to review psi in the context of contemporary explanation theory. I use the work of C.D. Broad on mind-theory and causation as a philosophical precedent to support the case for reassessment. A re-analysis of psi and explanation theory is then undertaken in the next chapter.

5.1 The Skeptic hypothesis

As I have shown in discussions during the course of the thesis, the Skeptic hypothesis maintains that psi phenomena are most reasonably explained by normal means. Fraud, self-delusion, coincidence or flaky experimental methodology are thought sufficient to account for psi phenomena. I have already indicated that the Skeptic hypothesis is informed by certain explanatory assumptions. If the hypothesis is to be a genuine attempt to explain psi then the assumptions should be made explicit. In this section I briefly summarise these points in order to tie together previous points that are pertinent to furthering the discussion.

In Chapter 1 I flagged that conservative explanatory considerations were responsible for the assessment that fraud was the most rational explanation for the body of evidence for psi. I also showed that some proponents make a case that as the phenomena exhibited are so counter to what is expected according to current science, they are most reasonably accounted for by fraud or self-delusion, despite apparent evidence for psi effects. The intricacies of the relationship between anomalous phenomena and explanation will become more prominent in this chapter and the next.

In Chapter 3 I presented the historic account which showed that psi's problematic position as paranormal had roots in the way the supernatural/natural divide developed at the time the modern world view was formed. The historic explanatory situation has impacted on the current assessment of psi because the theories that were developed to explain psi under the supernatural scheme had become defunct and unable to cross over into current mainstream theory development. I flagged that the psi hypotheses discussion should be understood with the history of pertinent issues of explanation in mind.

Finally, in the last chapter I concluded that explanatory issues inform different research traditions. Such competing approaches to psi produce conflicting assessments of the data and take different strategies regarding the potential to use psi in developing scientific theory. In particular, I showed that proponents against the use of psi in new theories made their case on the basis that it was unnecessary to introduce such 'wildly speculative' theories, even if those theories appear to have more coverage. In essence, the discussion highlighted the fact that different values were placed on explanatory considerations. More explicitly, the status quo that

maintains the Skeptic hypothesis was shown to be driven by conservative explanatory considerations and the proponents for the use of psi in current theories were driven by the apparent data for psi, which they claim requires scientific explanation. The scientists who do undertake psi theory development, who are in a minority, also usually claim that psi cannot be explained successfully unless new theory is developed.

Two main themes have become clear during the analysis of the dominant Skeptic hypothesis over the course of this thesis. I have argued that there are two main concerns that inform the assessment of the body of evidence for psi in mainstream philosophy, namely they are:

- 1) Conservative explanatory considerations
- 2) Assumptions about the anomalous and unlawful nature of psi phenomena.

In contrast proponents of the Small and Big Change Natural hypotheses are informed by the need to explain apparent evidence for psi regardless of the consequences, even if new theory is required.

In this chapter I am concerned with making a case that the explanatory issues that I have shown inform the current discussion require reassessment. I commence by showing that the Skeptic hypothesis was formed at a time when the covering law explanation model was dominant. Furthermore I maintain that the rejection of psi theories, on the basis that they cannot be explained adequately, was informed by the strictures of the covering law theory, which required a general law as part of the scientific explanatory scheme. The covering law theory is no longer the received view in contemporary scientific explanation theory, which provides a case to make a re-evaluation of the body of evidence for psi. The ensuing discussion will substantiate this claim by first outlining the main tenets of the covering law theory and then analysing the mainstream assessment of psi prior to and shortly after the point in time when the covering law theory emerged as the received view of scientific explanation.

5.2 The covering law model

This section lays the foundations for the subsequent discussion of psi in relation to contemporary explanation theory. I focus here on the covering law model of explanation and discuss it in relation to anomalous phenomena. The covering law model of explanation was developed in philosophy of science in the middle of the last century and was dominant, even if still debated, for three decades afterwards (Salmon 1990, pp8-10). 'Studies in the logic of explanation' written jointly by Carl Hempel and Paul Oppenheim in 1948 is most often referenced as the article which first brought the covering law theory to wide attention.²⁷

I chose to focus on the deductive nomological (DN) explanation model because the publication of Hempel and Oppenheim's 1948 version of the theory is considered an 'epoch-making' moment in explanation theory in the sciences (Salmon 1990, p3) and therefore contains the sort of import that I require when I go on to use the analysis of psi and covering law explanation theory to suggest that the model has informed the currently dominant Skeptic hypothesis.²⁸

The section starts with an outline of the main tenets of the covering law model as expounded in Hempel and Oppenheim's seminal paper. I draw on both the 1948 article and 1965 book *Aspects of Scientific Explanation* by Hempel to outline the main tenets of the covering law model when earlier points made in the 1948 are presented in a clearer fashion.

The 1948 paper contains a discussion of vitalism and how the covering law model deals with explanations which contain no general law such as those postulated to explain vitalism. I show that the situation is similar for psi as there are no known laws that can be appealed to that explain the phenomena exhibited as psi effects. I use the comparison to show how such problems are dealt with under the covering law model. I conclude that under the covering law model such lawless explanations are

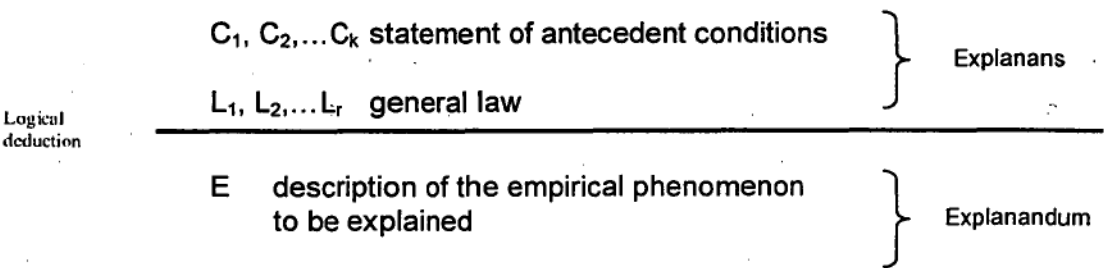
²⁷ The publication of Hempel and Oppenheim's paper in 1948 is considered the seminal presentation of the covering law theory, however, prior to this publication Hempel had published versions of the theory which are drawn on in the 1948 paper. So, there were intimations of the theory prior to 1948. In the reference list for the 1948 paper Hempel refers to 'The function of general laws in history' which was published in *The Journal of Philosophy* in 1942 (Hempel & Oppenheim 1965, p289).

²⁸ Some evidence for psi is statistical in nature and would equally warrant discussion using the theories of statistical explanation that Hempel later developed (Hempel 1965). However, I exclude discussion of other aspects of the Hempel's explanation theories in this thesis because of the timing of the publications the effects of the deductive nomological model were already impacting on the mainstream assessment of psi, thus making assessment of the later theories redundant in my argument.

considered lacking in empirical meaning because they cannot provide theoretical understanding.

5.2.1 Outline of the deductive nomological (DN) argument structure

The DN model of covering law explanation theory was developed by Hempel and Oppenheim as part of a broader assessment of explanation in the sciences. According to Hempel and Oppenheim ‘to explain the phenomena in the world of our experience, to answer the “why?” rather than only the question “what?”, is one of the foremost objectives of all rational inquiry’ (Hempel & Oppenheim 1948, p 135). Answers to why questions ‘may be regarded as an argument to the effect that the phenomenon to be explained, *the explanandum phenomenon*, was to be expected in virtue of certain explanatory facts’ (Hempel 1965, p336) Under the DN model the fact in question is explained by an argument in the following form:



(Hempel & Oppenheim 1948, p138)

Lines one and two are the premises and the third line is the logically deduced conclusion. The argument is the explanation and must be both valid and sound. So, for an event E to be explained there must be a statement of antecedent conditions and at least one general law (the explanans) which are used as premises in order to conclude E (the explanandum). Because of its structure and reliance on a general law ,this form of scientific explanation has become known as deductive nomological (DN) model of explanation.

There are certain conditions that must be met for an argument of the DN type to be considered an explanation. Hempel further explains that:

a DN explanation answers the question 'Why did the explanandum-phenomenon occur?' By showing that the phenomena resulted from certain particular circumstances, specified in C_1, C_2, \dots, C_k , in accordance with the laws L_1, L_2, \dots, L_r . By pointing this out, the argument shows that, given the particular circumstances and the laws in question, the occurrence of the phenomenon *was to be expected*; and it is this sense that the explanation enables us to *understand why* the phenomenon occurred. (Hempel 1965, p337)

Hempel and Oppenheim divide them into two categories: the logical conditions of adequacy and the empirical condition of adequacy (Hempel & Oppenheim 1948, p137). The logical conditions of adequacy that must obtain if the argument is to provide a valid explanation are threefold:

- | | |
|---------------------|--|
| (derivability) | the explanandum must be logically derived from the explanans |
| (lawlikeness) | at least one of the explanans must be a general law |
| (empirical content) | the explanans must be empirically testable |

And the empirical condition makes a fourth criterion that must hold if the argument is to serve as an explanation for the event in question:

- | | |
|---------|--|
| (truth) | the sentences of the explanans must be true. |
|---------|--|

Only if all of these criteria are fulfilled can the argument be considered a legitimate explanation for the why question originally proposed (Hempel & Oppenheim 1948, pp137-138). Further to this, Hempel and Oppenheim explain that the model they have developed is also intended to predict what will happen if the same initial conditions are encountered. The predictive aspect is important to science and to their theory of scientific explanation. They state that:

it is this potential predictive force which gives scientific explanation its importance: only to the extent that we are able to explain empirical facts can we attain the major objective of scientific research, namely not merely to record the phenomena of our experience, but to learn from them, by basing upon them theoretical generalizations which enable us to anticipate new occurrences and to control, at least to some extent, the changes in our environment. (Hempel & Oppenheim 1948, p138).

So if the deductive argument is both valid and sound, contains at least one general law and is empirically testable, then one should be able to use it as both an explanation and a means to predict the outcome of a similar situation.

As an illustrative example, take a question:

Why was there water all over the floor of my apartment this morning?

Then put it into the DN format of explanation:

Logical deduction	The metal pipes in the block of apartments were full of water The temperature was below zero (statement of antecedent conditions)	Explanans
	All water expands in volume if its temperature drops below freezing point at normal pressure (general law)	
	Therefore, last night the water pipe ruptured because the pipe was too small to contain the water when it froze and expanded.	Explanandum

I have then an explanation for the flood in my apartment in the form of a deductive argument. It looks like I should call a plumber, but if I really want to make sure that my explanation is a reasonable assessment of the situation I double check to see if this argument fulfils Hempel and Oppenheim's requirements for an explanation.

(derivability) the explanandum must be logically derived from the explanans

Yes, the explanandum is logically derivable from the explanans. You can see that if the metal pipes are filled with water and the water freezes then the water will expand and consequently the pipes will burst.

(lawlikeness) at least one of the explanans must be a general law

Yes, the second premise is derived from a general law ($\Delta V = \beta V_0 \Delta T$)

Where ΔT = temperature change and ΔV = volume change and 'the constant β , which characterizes the volume expansion properties of a particular material, is called the temperature coefficient of volume expansion, or the coefficient of volume expansion.' (Sears et al 1987, p349)

(empirical content) the explanans must be empirically testable

Yes, I can freeze some water and measure its expansion rate.

(truth) the sentences of the explanans must be true.

Yes, the sentences are true: the pipes were full of water and the temperature did drop below zero. I can also verify the law regarding the expansion of water when frozen through empirical means.

The covering law model can be used to provide an answer to a why question in the form of a deductive argument and has practical application as the example above exemplifies, it was subsequently to become the dominant conception of explanation in the sciences.

5.2.2 The ‘received view’

Notwithstanding criticism (Angel 1967, Scriven 1962) the DN explanation model described in the subsection above is acknowledged as the dominant model for some decades. Its dominance was such that in an essay on ‘Scientific explanation: How we got from there to here’ Wesley Salmon called the model ‘the cornerstone of the old consensus’ (Salmon 1998, p302). And it is widely acknowledged as the ‘received view’ of explanation until the early 1970s, after which the explanatory territory in philosophy of science became much more complex.

I suggest that the dominance of the covering law explanation theory at a time when psi research became more prominent in the mainstream press resulted in an assessment of psi phenomena which is the undercurrent to the Skeptic hypothesis and the dominant mainstream view of the phenomena today. I do not claim that this is the only influence, but I think that the connection made is significant. I make a case for this in section 5.4. But first I show why the covering law model is problematic for psi theory and why it has such an impact on the assessment of psi.

5.3 Lawless psi and the covering law model

It is not hard to see how the covering law model of explanation is going to pose problems for anomalous phenomena such as apparent psi effects. If the covering law theory is correct, then a law of nature is required for any acceptable scientific explanation. However, putative psi phenomena are *anomalous*; outside accepted scientific law by their very definition. Moreover, psi theorists themselves acknowledge that they are in no position to state generally accepted universal or statistical laws to cover ESP or PK. It follows that if the covering law model is correct, no scientific explanation can be given for psi phenomena. It is a point which

gives the Skeptic hypothesis strength, for no matter what evidence there appears to be for the phenomena, another, more prosaic law-based explanation must be used to account for the apparent effects. The situation is not revisable unless either the covering law model is shown to be problematic or subsequent laws are discovered that explain psi. Put in terms of an outline of an argument, the situation for psi under covering law theory is as follows:

PREMISE 1	Acceptable scientific explanations require that the explanandum is derived from a covering law and other conditions.
PREMISE 2	Psi is not covered by any known law, nor have any psi-specific covering laws been found (or are likely to be found)
CONCLUSION	Therefore, we have (and are likely to have) no scientific explanations that are inconsistent with the Skeptic hypothesis (namely that fraud, flawed methodology, flukes or self delusion explain psi effects).

If either the covering law model does not hold or if psi can be explained in terms of natural laws, this argument is unsound and I will discuss the issue further on in the thesis when I address the more general problems that the covering law model eventually encountered in the next chapter in section 6.1 For the time being, however, I am concerned with the ramifications for psi theory under the covering law model.

The result of the analysis is important because, as I show in the next section, the covering law theory was dominant at just that time when the experimental data for psi was published prolifically. I suggest that the dominance of the covering law model most likely influenced the mainstream assessment of psi and gave rise to the notion that psi cannot be accounted for by contemporary science.

5.3.1 Psi and vitalism

In their seminal 1948 paper, Hempel and Oppenheim discuss a similar scenario to the problematic position psi is currently in. They anticipate the problem of there being apparent evidence and theory to support a hypothesis, but for which there are no covering laws to appeal to. To explicate, they outline their response to a phenomenon

which, like the position psi is in at the moment, cannot be explained by appeal to a general law. Because of this similarity the case provides a test case for the assessment of psi under the DN model of scientific explanation. The case they discuss is vitalism and they contrast it to that of gravitational fields:

A case in point is the neovitalistic attempt to explain biological phenomena by reference to an entelechy or vital force. The crucial point here is not—as it is sometimes made out to be—that entelechies cannot be seen or otherwise directly observed; for that is true also of gravitational fields, and yet, reference to such fields is essential in the explanation of various physical phenomena. (Hempel & Oppenheim 1948, p145)

Then they make the point that is so vital to understanding the predicament that psi faces when attempts to explain it are made using the covering law model:

The decisive difference between the two cases is that the physical explanation provides (1) methods of testing, albeit indirectly, assertions about gravitational fields, and (2) general laws concerning the strength of gravitational fields, and the behavior of objects moving in them. Explanations by entelechies satisfy the analogue of neither of these two conditions. Failure to satisfy the first condition represents a violation of (R3)*; it renders all statements about entelechies inaccessible to empirical test and thus devoid of empirical meaning. Failure to comply with the second condition involves a violation of (R2)**. It deprives the concept of entelechy of all explanatory import; for explanatory power never resides in a concept, but always in the general laws in which it functions. (Hempel & Oppenheim 1948, p145-146).

**R3 is the requirement that the explanans are empirically testable*

***R2 is the requirement that at least one of the premises contains a general law.*

So the lack of a general law deprives a theory of explanatory power under the DN model. This is obviously problematic for psi. Even more poignantly the conclusion to this analysis is that:

Therefore, notwithstanding the flavor of familiarity of the metaphor it invokes, the neovitalistic approach cannot provide theoretical understanding.
(Hempel & Oppenheim 1948, p146)

Psi does not fall to the same empirical problem as vitalism. There *appears* to be evidence for psi events, even if it is debated as to what this entails, whereas vitalism is a theory about natural phenomena. However, if one considers that workable theories are still vying for consideration to explain the anomalous phenomena associated with psi the situation is similar. Therefore under a covering law model efforts to explain psi will be discounted for the same reason: *lack of theoretical understanding* due to lack of a general law to appeal to when constructing an explanation that is acceptable to the tenets of covering law explanation.

5.3.2 A note on psi and laws

For this section of the thesis when I refer to general law I intend the traditional notion of 'general law' that prevailed during the time the covering law was dominant. (I reserve discussion regarding the now widely acknowledged problematic notion of 'law' in science for the next chapter.) Hempel and Oppenheim realised that the notion of 'law' was critical to their explanation model and defined a general law as 'a statement of universal conditional form which is capable of being confirmed or disconfirmed by suitable empirical findings' (Hempel 1965, p 231). Contemporary developments in philosophy of science aside, using the covering law era definition of a general law it is apparent that the theory spells doom for phenomena like psi.

Psi, as we have seen previously, is currently anomalous to science. Despite the best efforts of the Big and Small Change Natural hypotheses, there is no claim that, as yet, psi phenomena have been dealt with sufficiently by reference to a general law. The phenomena exhibited in both spontaneous cases and laboratory-based experiments continue to remain problematic to science because there is no dominant theory that has been proposed that accounts for the phenomena. As a consequence, psi remains anomalous. In the section below I show that the perceived unlawful assessment, combined with the covering law model, could be the foundation for the current dominance of the Skeptic hypothesis in mainstream philosophy and science today.

5.4 Psi publications and the 'received view'

In this section I make a case that the Skeptic hypothesis is currently dominant in philosophy is at least partially informed by the chance congruence of two events. Firstly, the developments in psi research started to reach a mainstream academic audience, and secondly the rise of the covering law explanation model as the received view of scientific explanation.²⁹

²⁹ The analysis is of the mainstream assessment of psi and is not intended to include discussion of the evidence that has been undertaken within the discipline of parapsychology itself. (e.g. the discussions of the meta-analyses between Richard Wiseman, Julie Milton and other members of the parapsychology community (Milton & Wiseman 1999, Storm & Ertel 2001). Neither am I concerned here with the often discussed debate about the status of the evidence for psi that has been undertaken between parapsychologists and prominent skeptical psychologists. The discussions

I also made a case that it is detrimental to both parties to leave the debate in this state and this thesis is an attempt to unravel some of the background issues that inform the debate and to recouch the issues as a discussion between competing hypotheses. The aim is to produce a more constructive dialogue between the different approaches to explanation of the anomalous phenomena.

I am concerned in this part of the thesis with the *mainstream* assessment of psi and to reassess psi theories in the light of changes in the philosophy of science over the post-positivist period. I will focus on this as I proceed to discuss the dominant mainstream hypothesis (the Skeptic hypothesis) in relation to explanation theory in philosophy of science. Accordingly, in this section I look at the literature that shows how the mainstream reacted to the new developments in psi research. And draw on works published prior to, during and shortly after the covering law theory was considered the received view of explanation.

5.4.1 Psi publications

As mentioned in Chapter 2, research into parapsychology in the 40s, 50s and 60s was dominated by the laboratory experiments first conducted by J.B. Rhine at Duke University in the 1920s and shortly thereafter replicated in other laboratories. Publication of the results of the new approach to psi research renewed mainstream interest in the phenomena. Between the late 1930s and the 1960s Rhine published five books, including *Extrasensory Perception* and *New Frontiers of the Mind*, which were both published in the 1930s. By 1977 he had enough laboratory experiments to draw on to publish *History of Experimental Studies*. Louisa Rhine's catalogues of spontaneous psi events were also published during this time – *Hidden Channels of the Mind* was first published in 1965, followed by *ESP in Life and Lab* in 1967. Also notable as part of this research was the publication of *Modern Experiments in*

between the views are well documented in the psi literature and, as I showed in the introduction to the thesis, the pro-psi and anti-psi theorists have, in the main, just 'agreed to disagree' and have each continued their respective research programs accordingly. The focus is on the mainstream academic assessment of psi and I therefore look at mainstream journals for the assessment.

Telepathy in 1954 by S.G. Soal and Frederick Bateman³⁰. The effect of the publications was tangibly apparent when the American Parapsychology Association was founded in 1957. The organization became an affiliate of the American Association for the Advancement of Science in 1969 and this elicited much discussion in mainstream science regarding the evidential status of psi phenomena.

5.4.2 Mainstream discussion of psi

During the same period, and perhaps because of the novel nature of the parapsychological publications, the work of the parapsychologists was also being discussed in mainstream journals in disciplines outside of parapsychology and more generally in the popular press. Testament to this is provided in a 1938 article from *The American Journal of Sociology*, in which Harold O. Gulliksen writes:

The immediate practical result of Rhine's experiments has been a wave of popular interest in the Duke University work. *New Frontiers of the Mind* has sold 110,000 copies. Rhine is also issuing special sets of ESP cards and score pads... The Zenith Foundation, established by the Zenith Radio Corporation, broadcasts each week startling instances of ESP and conducts "scientific tests" to answer their frequent question "WHAT-is it?" The *Journal of Parapsychology*, edited by William McDougall and J.B. Rhine, has been recently established to take care of experimental studies in ESP. (Gulliksen 1938, p624)

So it appears that the work of Rhine and other early parapsychologists was being examined and explored by interested parties in both the academic and lay areas. More specifically the ESP experiments were being evaluated by academic disciplines for their scientific rigour and as a social phenomenon and, as the mention of the Zenith Radio program above indicates, there was enough popular interest to sustain a reality radio program on the topic.

In philosophy too, the work of the parapsychologists did not go unnoticed. In 1938 the journal *Philosophy of Science* published a lengthy article by H. Rogosin entitled 'Telepathy, psychical research and modern psychology' in which the author notes that psychical research '...has been frowned upon for many years; the very thought of it, in fact, has been anathema to a great number of scientists. But the attitude of both laboratory workers and laymen toward this field has been changing in

³⁰ Soal was accused of fraudulently producing experimental data in the experiments he carried out during WWII with Shackleton and spent much of his career defending himself against allegations of fraud. See Haynes 1982 for details of this incident.

the last few years' (Rogosin 1938, p472). The Rhines and fellow psi researchers were certainly being recognised and their research discussed and debated.

Other notable philosophical publications were the collection of essays by the prominent philosopher C.D. Broad, collated into the book *Religion, Philosophy and Psychical Research* in 1953. The collection includes essays based on papers given to the Society of Psychical Research between 1935 and 1938 (Broad 1953, p1). Broad, who, as I mentioned earlier, held the presidency of the Society for Psychical Research from 1935-6 and 1958-60, was among a small group of mainstream philosophers who wrote in support of the evidence for psi and used it in the development of their philosophical theories.

It is interesting to note that Broad's analysis of psi as seriously contravening, what he defined as, basic limiting principles (Broad 1949) was used in turn by George Price (1955) to support his version of the Modern Miracle Argument. The irony did not escape another philosopher, Michael Scriven, who, in an extensive review of the experiments cited in Soal and Bateman's *Modern Experiments in Telepathy*, noted that the notion that psi does not fit with the mechanistic world view 'is clearly a two-edged weapon, and the opponents of ESP, such as Dr George Price, employ it to cast doubt on ESP research' (Scriven 1956, p248). The review was published in a mainstream philosophical journal (*The Philosophical Review*) and is evidence that research into psi was considered a topic worthy of discussions in mainstream philosophy at this time. Comments like this also indicate that the status of the evidence and its consequences for science and philosophy were debated.

At this time some academics thought that the evidence for psi was substantial enough to warrant theoretical consideration. For instance, consider Alan Turing's comments on telepathy in his 'Computing machinery and intelligence' (Turing 1950). This is the well-known article in which Turing addresses the question 'Can machines think?' He reworks the question and proposes a test for machine intelligence based on a game in which a machine and a person are shielded from a third player, the interrogator, who can ask questions and receive answers from both the machine and the person and whose task is to guess correctly which is which. Turing's proposal was that we have

³² In this section I have focussed on the literature regarding ESP as it was the most prominent aspect of psi that was discussed during this era. This is most likely because of Rhine's focus on his work on telepathy experiments in his early publications. Although he and others did publish results of PK experiments they were not as great in volume or appeared to elicit such interest as the ESP experiments.

sufficient evidence that machines can think when the interrogator correctly sorts the pair at no better than chance rate. The set up came to be known as the Turing Test, and is prominent in the literature in the history of discussion of artificial intelligence (Turing 1950, pp433-434). For the purposes of this thesis I am interested in the section in which Turing makes a specific reference to ESP. In objection (9) The Argument from Extra-Sensory Perception he states that:

I assume that the reader is familiar with the idea of extra-sensory perception, and the meaning of the four items of it, viz. telepathy, clairvoyance, precognition and psychokinesis. These disturbing phenomena seem to deny all our usual scientific ideas. How we should like to discredit them? Unfortunately the statistical evidence at least for telepathy, is overwhelming...if telepathy is admitted it will be necessary to tighten our test up. The situation could be regarded as analogous to that which would occur if the interrogator were talking to himself and one of the competitors was listening with his ear to the wall. To put the competitors into a 'telepathy-proof room' would satisfy all requirements. (Turing 1950, pp453-454)

It is evident that Alan Turing, who was primarily known as a mathematical logician, believed that there was enough evidence for telepathy to warrant discussion of its confounding possibilities in this landmark paper. It seems to indicate that the work of parapsychology was being taken seriously and beyond the small community of psi researchers.

Another commentator on psi was the engineer-come-controversial logician George Spencer Brown, who also entered into discussion about psi phenomena in the mainstream academic arena. In 1952 he published an article in *Nature* which, among other issues critiqued the use of statistics in long-run psi experiments. It is a short article that had a large impact because of its wider implications on the use of random numbers in statistical theory. Brown wrote that:

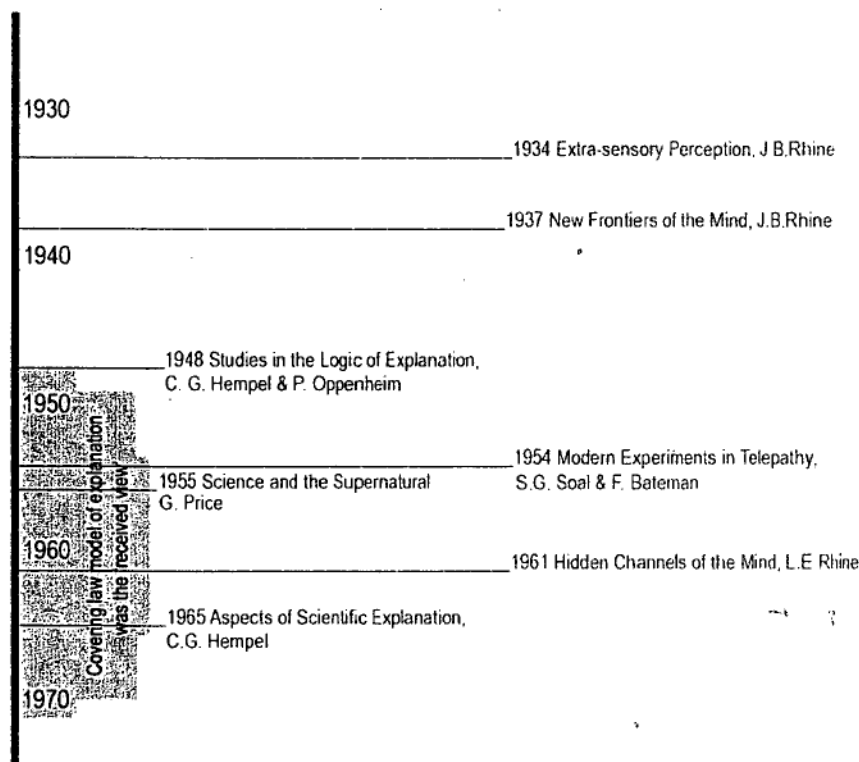
Since it is clearly meaningless to speak of 'influencing' random-producing agents on evidence which is nothing more than statistically significant, and since there nevertheless exist a number of highly 'significant' results in the best designed and most rigorously observed experiments, the simplest explanation left open to us is that the calculus which leads us to interpret these results as significant is itself misleading. (Brown 1952, p155)

His comments elicited some debate from those interested in the use of statistics in science in general. There were some concerns that if his criticisms were valid then not only would the situation be problematic for confirming the validity of the evidence for psi, but that 'Brown's arguments could in principle raise serious doubts against the use of statistics in the interpretation of facts in any field of research (including psychology) which employs empirical means of randomization.' (Wasserman 1955, p135). History shows that this did not eventuate; ordinary statistical methods are still

widely used in the sciences, and Brown’s other criticisms have also been shown to be problematic (Wasserman 1955). However, these articles do indicate that the evidence for psi was at least thought to be sufficiently strong to warrant exploration of the implications for other fields of inquiry of psi phenomena.

The salient point that I hope I have shown is that there was a considerable amount of mainstream discussion and publication regarding the results from the early experimental literature about psi (especially ESP³²).

In the next section I make a case that after the covering law model became the ‘received view’ regarding scientific explanation, the tone of criticisms against the possible use of psi changed and this eventually leads to the situation that we encounter today, namely that discussion about psi registers little in mainstream scientific or philosophical literature. I suggest that interest in psi dwindled most likely in part as a result of the difficulty involved in explaining anomalous phenomena under the covering law model which, as I showed in the previous section, is problematic for realist psi theorists. To help put the above discussion into perspective, here is a chart that indicates the timing of the major publications mentioned in the chapter in relation to the time the covering law theory was dominant:



I further discuss the consequences for psi in the section below.

5.5 Consequences for psi theory

I have already shown that the Skeptic hypothesis is the currently dominant philosophical stance in mainstream discussion regarding psi in both the sciences and philosophy. The question I entertain now is: what continues to inform the assessment? I suggest that concerns as to the explanatory worth of theories that have been proposed to explain psi inform the current mainstream assessment of psi. And that this assessment continues to dominate in philosophy today. I have shown previously that the explanatory concerns are an important component of the Skeptic hypothesis and when the arguments are presented they are rarely made explicit.

To back up my suggestion I will provide illustrative examples in three steps: firstly, the change in tone of the discussion regarding psi prior to the publication of the initial outline of the covering law theory is examined; then secondly, it is shown that after the problems of the covering law theory became more widely acknowledged in the 1970s there was a brief flurry of new mainstream philosophical discussion of the anomalous phenomena. Finally, I show that this interest quickly subsided.

In the previous section I presented the bare bones of the major publications of psi research, and showed that prior to and shortly after the 1948 publication of Hempel and Oppenheim's covering law theory, there was some level of mainstream interest, from philosophy as well as other disciplines, regarding the evidence for psi and its implications. The Skeptic hypothesis maintains that the evidence for psi can be best explained by appeal to fraud, fluke, flaky methodology or self-delusion, however, I have also shown that this assessment is not made in relation to an evaluation of the body of evidence for psi as such. It is in fact informed by a variety of influences: conservative explanatory considerations; the history of psi as a once supernatural phenomena; assessment of the phenomena as counter to basic certainties in science. The Skeptic hypothesis is the dominant stance in mainstream science and philosophy today. In this section I make a case that the congruence of interest in laboratory-based psi research quickly followed by the rise of the covering law theory as the dominant explanatory model that was the 'received view' for the subsequent two decades influenced further assessment of psi as unexplainable. Hence the dominance of the Skeptic hypothesis continues.

Once again I note that I am focussing on mainstream assessment and discussion of psi, not the psi-specific literature. I have therefore used the 'jstor' database of journal articles as my source for an assessment of mainstream publications with reference to psi. It includes archives of relevant publications such as *Mind*, *The Journal of Philosophy*, *Nous*, *Philosophical Review*, *Philosophical Quarterly*, *The American Journal of Sociology* among many others. I list the entire selection and the database details in Appendix I.

5.5.1 The Skeptic hypothesis prior to 1948

Prior to 1948, the year that Hempel and Oppenheim's covering law explanation model first gained considerable attention, there was a flurry of interest in psi phenomena due to the success of J.B. Rhine's book *Extra-sensory Perception* amongst other publications that detailed the results from psi experiments and which were considered novel at the time. The mainstream academic discussion regarding the phenomena was varied. Some, like Turing (mentioned above) thought that the evidence for phenomena such as telepathy was 'overwhelming' (Turing 1950), however, others were more guarded. Representative of the latter point of view is H. Rogosin who criticised reports of evidence for psi, amongst more mundane and widely debated analysis of statistics and procedure, on the basis of the anti-materialist conclusions Rhine advocated if his experiments were to be accepted. (Rhine was indeed an avowed dualist (Rhine 1954).) Rogosin summarises as follows:

Scientific progress in the physical sciences does not support the argument for a fundamental change of direction. The experiments at Duke University and elsewhere, upon "extra-sensory perception" and "supernormal cognition" are based upon faulty assumptions regarding probability theory, the nature of proof, the place of mathematics in the development of Science; in short, faulty assumptions regarding philosophy of science. (Rogosin 1938, p 48)

Rogosin is concerned throughout the article with the use of psi to support an anti-materialist account of nature as well as with experimental procedure and use of statistics (something which, if a valid criticism, would have to apply more broadly). In the literature critical of Rhine's work were similar discussions regarding methodology and use of statistics as well as analyses of the possibility of sensory leakage. The kind of searches I undertook were for any articles that discussed or mentioned psi data, but as far as I can glean from the articles that I found, during the

pre-1948 era, fraud was usually suggested as one of other possible explanations for the psi phenomena reported in the experimental psi literature. However, the main focus was on experimental methodology and the use of statistics, a fledgling part of science itself.

5.5.2 Skeptic hypothesis post 1948

The mainstream assessment of psi does not change immediately after the publication of the covering law theory by Hempel and Oppenheim in 1948. However, once the covering law theory gains ground and becomes the received view it is interesting that a different assessment of psi is presented in mainstream philosophical assessments of the anomalous phenomena.

I mentioned earlier that George Spencer Brown published a paper in *Nature* in 1953. The paper provided a controversial assessment of psi that was widely critiqued at the time. It is a good example because it was published in such a high-profile mainstream scientific journal and created much interest. Brown's assessment of psi was as follows:

The recent aim of research workers setting out to demonstrate the occurrence of telepathy, etc., has been to devise experiments to give statistically significant results which might reasonably be interpreted as evidence for the phenomena claimed. They have succeeded in doing this, but with important limitations. In the first place, although some of the experimental results appear by statistical reasoning 'highly significant', identical experimental conditions do not as a rule bring about their repetition. Thus, in an important sense, the phenomena remain undemonstrated.

The other serious limitation in the so-called demonstrations of telepathy, etc., is the lack of satisfactory control series. (Brown 1953, p154)

Like the pre-48 discussion, Brown's assessment examines the methodology of the experiments and involves analysis of wider implications for science. However, the discussion of psi markedly changes not long after in the mid-1950s when George Price published his influential paper in *Science*. Price's *Science* article provided the first airing of the Modern Miracle Argument which I detailed in Chapter 1. The argument was structured along the lines of Hume's 'ever-lasting check' for the status of miracles and was presented as a definitive statement on psi. The argument concludes in favour of the fraud hypothesis.

The timing of the new approach to psi coincides with the years that the explanation theorist Wesley Salmon maintains the covering law theory became the

‘received view’ of scientific explanation. In *Four Decades of Scientific Explanation* Salmon states that Hempel and Oppenheim’s covering law paper in 1948 ‘was more of a harbinger of the second decade than a representative of the first. (Salmon 1999, p11). So, although the covering law theory was first proposed in the late 1930s it wasn’t until the mid-late 1950s that the influence of the theory gained wider ground.

I have shown earlier in the thesis that this is the main philosophical argument regarding psi phenomena and it has been re-iterated in mainstream philosophy subsequent to this first representation of the argument in 1955. The argument is in striking contrast to previous critiques of the newly emerging psi data, such as those of Rogosin who was quoted above. George Price, for instance, mentions the problem of laws for psi specifically (Price 1955, p361) and, as we have seen, introduces Broad’s analysis of Basic Limiting Principles into a modern interpretation of Hume’s Miracle Argument.

It is interesting to note also that broader changes in concepts of scientific explanation also occurred at this time. During the 1930s and 40s the era of logical positivism was at its height. Under this school of thought explanation was not a goal of science. For the logical positivists, science developed theories and built on truths which were cumulative; knowledge grew as science progressed (Pitt 1988, p5). However, post World War II the logical positivists lost the dominant ground and logical empiricists such as Hempel dominated the mid-latter half of the century. They were instrumental in changing the assessment of explanation as an important goal of science (Salmon 1999, pp338-339).

The change of focus is tangible in the discussion of psi in general philosophical literature. The earlier assessments do not use the notion of a law of nature (or BLP) or psi’s apparent contravention of such to argue against the plausibility of psi phenomena. Instead they focus on more pragmatic issues of experimental methodology and use of statistics, as well as on investigation of the implications for mainstream philosophical thought if the evidence for psi is considered valid. The mention of psi by Turing and the investigation of implications for materialism by Broad (mentioned in the section above) also indicate that, speculation regarding the implications of psi effects were appropriate discussion topics in mainstream philosophy. The speculation that the evidence was produced by fraudulent means was but one of many varied interpretations of the evidence.

It is also pertinent that Scriven, a critic of the covering law model of explanation during the time it was the received view, is also a philosopher who subsequently went on to contribute to the psi-specific philosophical literature (for instance, his discussion on supernatural explanation and psi which was drawn on earlier in the thesis).

Of course the psi debate (evidenced through the history of its study as a putative natural phenomena) continues and there has never been any one single consensus as to the best approach to exploring the phenomena further. But it can be seen that the nature of the arguments against the acceptance of psi phenomena that was presented in the work of the early laboratory-based experimenters changed in the mid 1950s, as evidenced by Price's influential paper in *Science* in 1955, and which continues to be re-iterated in more recent assessments of psi.

Price's article on psi advocating an everlasting check, mirrors the concerns that the change in focus in philosophy of science exhibited at the same time. For instance Price acknowledges that there is evidence for psi effects, however, he argues for a modern form of the Humean miracle argument rather than accept the plausibility of the data. He rests his case on the anomalous nature of psi (for more details see the presentation of his theory in detail in Chapter 1).

Price himself does not mention the covering law theory in his paper, so I am not suggesting that such an obvious connection can be made, but rather that even if it is not explicit in Price's paper, the content of the argument regarding psi is such that when combined with a covering law explanation theory it provides support for the lack of explanation for the phenomena, which I have shown discounts it under the covering law model.

It would be imprudent to claim that the only factor that was relevant to this change was the burgeoning dominance of the covering law explanation theory, but it would seem reasonable to suppose that it was a significant contributor, especially given the problems that I have shown are encountered by psi under the covering law model of explanation. It is an important consideration especially when it is shown that the tone of the arguments (Price's was intended as an 'everlasting check') have indeed been carried through to this day, as the dominance of the Skeptic hypothesis attests. I will discuss this point in more detail in the next section.

5.4.3 Psi research in the 1970s, 80s and onwards

If the covering law model was influential on the mainstream assessment of psi then one would expect that when it became clear that there were serious problems with the model then there would be renewed interest in psi phenomena³³. And to a certain extent this is borne out by the flurry of publications that covered the philosophical aspects of psi in the 1970s. Significantly, three philosophical compilations that deal specifically with psi and philosophical issues were published in the mid 1970s. These are *Philosophy and Psychical Research* (1976) edited by Shivesh Thakur, *Philosophy and Parapsychology* (1978) edited by Jan Ludwig and *Philosophical Dimensions of Parapsychology* (1976) edited by James M.O. Wheatley and Hoyt L. Edge. These compilations concentrate on issues of theory development and explanation and the relation of anomalous phenomena to science, amongst other topics. Price's Modern Miracle Argument is represented in one of the books (*Philosophy and Parapsychology*) along with subsequent discussions by Meehl and Scriven³⁴ and J.B. Rhine.

The publications of these compilations is also an indication that psi was gaining wider mainstream attention. There was even a positive review regarding the potential to use similar approaches in marketing as are used to research psi (in 'Non-science is not non-sense' published in the *Journal of Marketing Research* in 1970). Along with the Skeptic hypothesis, the other realist hypotheses appeared to be the topic of discussion and interest for those outside the parapsychology community.

In psi literature the renewed mainstream interest in psi is attributed to the effects of the publication of Thomas Kuhn's *Structure of Scientific Revolution* in 1962. Psi, as anomalous, can be viewed as the potential instigator for the crisis stage of a Kuhnian-style scientific revolution. And by the 1980s it was noted that 'today the vast majority of parapsychologists still highly esteem or more or less explicitly subscribe to Kuhnian opinions' (Hövelmann 1984, p105). Whether this is so outside of the parapsychology community is more difficult to gauge. What is clear is that

³³ There were also more general changes in philosophy at the end of the 1960s. There was a greater metaphysical tolerance as a result of challenges to the logical empiricists account of linguistics in which philosophy consisted of an analysis of language in, for instance, Kripke (1980).

despite this initial renewed interest by the mainstream in psi, by the 1980s psi was assessed in a similar fashion to earlier assessments, like Price's, made during the time the covering law theory was dominant.

The change in focus and tone is evidenced by the publication of another anthology of philosophical research into psi (*Readings in the Philosophical Problems of Parapsychology* (1987) edited by Anthony Flew. This is a comprehensive collection of many different views and issues that the evidence for psi gives rise to, but most notably for my current concerns, it featured a section which reprinted the 1955 Price article, along with a snippet from Hume's original miracle argument and Flew's own argument based on a similar formula. The modern form of the miracle argument presented earlier by the philosophers Keith Campbell and Anthony Flew remained present even when changes in philosophy of science made some of the work on psi more appealing. However, even after the demise of the dominance of covering law theory the Skeptic hypothesis continued to provide a counterpoint (or perhaps a response) to the renewed interest in psi post 1970. The situation indicates to me that the 'fraud hypothesis' assessment of psi (notably absent from two of the three 1970 compilations) assumes a certain understanding of psi in relation to science that is crucial to understanding the foundations of the Skeptic hypothesis.

It would seem then that the assessment of psi as most rationally attributed to fraud or self-delusion on the part of parapsychologists is informed by an assessment of the phenomena that was at least partially influenced by the covering law model of explanation. More specifically my contention is that prior to the dominance of the covering law theory, commentators assessed the experimental merits of the psi experiments. Post the mid-1950s the scenario changed dramatically and blanket arguments using psi's anomalous nature dominated the literature. I believe that the covering law theory played a role in the change of emphasis and still influences the dominance of the Skeptic hypothesis today. Of course there has been discussion all along the way and the dominant view has not been the only one to be presented in mainstream forums. However, if this analysis is reasonable then a case can be made that a re-evaluation of psi in relation to explanation theory in philosophy of science is warranted. I make this case in the last section of this chapter, but first I shall take a quick look at the representation of psi in mainstream contemporary philosophy.

As I noted earlier, psi is almost invisible in mainstream psychology and philosophy textbooks and my own experience continues to be that when I mention psi to scientific professionals or other philosophers, it is often assumed that the Skeptic hypothesis is the only valid hypothesis, that the experimental evidence for psi was some aberration of the free-wheeling 70s. I cannot claim too much from this kind of personal assessment of the situation. What I can claim is that there is a small group of researchers who have continued to study psi (In Chapter 2 there is a summary of current activities and publications). There is also no doubt that the Skeptic hypothesis is the currently dominant assessment of psi. There has also been a marked change in tone by philosophers regarding the use of psi in theoretical explanation. For instance, contemporary philosophers consider Alan Turing's discussion of telepathy in his work on artificial intelligence as an odd, perhaps eccentric aberration. Some even speculate that he was joking. For instance in the entry on Turing in the online Stanford Encyclopedia the philosophers Graham Oppy and David Dowe mention that:

The strangest part of Turing's paper is the few paragraphs on ESP. Perhaps it is intended to be tongue-in-cheek, though, if it is, this fact is poorly signposted by Turing. Perhaps, instead, Turing was influenced by the apparently scientifically respectable results of J. B. Rhine. (Oppy & Dowe 2005, online)

Then they provide their assessment of psi:

Leaving aside the point that, as a matter of fact, there is no current statistical support for telepathy—or clairvoyance, or precognition, or telekinesis—it is worth asking what kind of theory of the nature of telepathy would have appealed to Turing. (Oppy & Dowe 2005, online)

These philosophers assume that there is no evidence for psi and that Turing was most likely mistaken in his assessment. Daniel Dennett and Douglas R. Hofstadter also thought Turing might have been joking; they remark with surprise in their collection *The Mind's I* that:

Apparently Turing was convinced that the evidence for telepathy was quite strong. However, if it was strong in 1950, it is no stronger now, thirty years later—in fact, it is probably weaker.

They go on to say:

But it is safe to say that the majority of physicists—and certainly the majority of psychologists, who specialize in understanding the mind—doubt the existence of extrasensory perception in any form.

They do not give a reason why they doubt the existence of ESP, so it is hard to gauge on what basis they make this claim. It could be that they do not think the evidence stands up to scientific scrutiny or that they found their assessment in a similar fashion to that of Price and Campbell. Either way it is an indication that the Skeptic hypothesis remains dominant in contemporary philosophy. Hofstadter and Dennett finally conclude that:

Turing took “cold comfort” in the idea that paranormal phenomena might be reconcilable in some way with well-established scientific theories. We differ with him. We suspect that if such phenomena as telepathy, precognition, and telekinesis turned out to exist (and turned out to have the remarkable properties typically claimed for them), the laws of physics would not be simply amendable to accommodate them; only a major revolution in our scientific world view could do them justice. One might look forward to such a revolution with eager excitement—but it should be tinged with sadness and perplexity. How could the science that had worked so well for so many things turn out to be so wrong? The challenge of rethinking all of science from its most basic assumptions on up would be a great intellectual adventure, but the evidence that we will need to do this has simply failed to accumulate over the years. (Hofstadter and Dennett 1988, p67-68)

Once again there is little justification regarding an assessment of the actual evidence and statements regarding psi’s contravention of known science along with a statement regarding the problems this would likely cause current science. Their words suggest they are unconvinced that the inductive or statistical evidence has been obtained. The final paragraph of this example indicates that they are concerned that current day readers will be swayed by Turing’s authority in other matters to rethink the mainstream assessment of psi. If the assessment is, as I tentatively suggest, based on conservative explanatory considerations, it is pertinent to remark that, as noted earlier in the thesis, appeals to epistemic conservatism can easily pre-empt an inference to the best explanation by illicitly ruling a theory out of consideration altogether. There has to be further justification for taking this step, especially as the evidence for apparent psi effects is generally considered to be convincing.³⁴

I hope I have shown that the assessment of psi is much more complex than the short dismissive statements in contemporary philosophy indicate. And that the

³⁴ Daniel Dennett, in fact, has a very personal reason for dismissing the evidence for psi as valid. The parapsychologist Dick Bierman has published that in personal correspondence Dennett has promised that he would ‘commit suicide if paranormal phenomena turned out to be real’ (Bierman 2001, online). This surely is not meant to be a serious threat to take his own life, but rather a joke or perhaps a statement that shows how strongly Dennett feels about the possibility that psi could be real. Dennett is infamous for some of his over-the-top rhetoric and controversial views so perhaps it is wrong to read too much into this kind of statement. However, I think that the comment at least highlights the type of intense response that psi elicits in some contemporary prominent philosophers and perhaps, even if a joke, indicative of the kind of intense emotion-driven response that psi seems to elicit from some mainstream philosophers.

mainstream understanding of psi, as presented by thinkers such as Dennett and Hofstadter and, as was mentioned in the last chapter, by Paul Churchland who dismissed psi because of lack of a dominant working theory (Churchland 1998, p3 19), has been at least partially influenced by a now outdated covering law model of explanation.

This is good news for the realist psi theorists, because it means that the situation should be reassessed taking into consideration current developments in explanation theory. I make a case for this below based on a similar philosophical problem addressed by C.D. Broad in the philosophy of mind.

5.6 A case for reassessment

Like many philosophical theories, the covering law model has had its critics since the first major publication outlining the main tenets in 1948. However, since the 1970s the model has been challenged and has generally been considered significantly flawed from this time onwards. The DN model was criticised on three main counts: the problem of irrelevance; the problem of symmetry and, most pertinent to psi, on account of the problematic use of laws. These criticisms and their relevance to the psi hypotheses will be detailed in full in the next chapter. Explanation theories that have attempted to address these problems and which are currently vying for dominance will also be discussed in the next chapter in relation to psi explananda. The salient point for this part of the thesis is that the covering law theory is no longer considered a valid means to assess the legitimacy of explanation of phenomena.

In section 5.3 I noted that although the covering law theory posed difficulties for any non-normal explanation of psi given the apparent lack of a law that covers the anomalous phenomena. If the covering law theory does not obtain, then the criticism that psi is unlawful cannot be used to dismiss the evidence. In this section I make a case that as the mainstream assessment of psi in terms of explanation is outdated, the explanatory considerations that inform the discussion of competing psi hypotheses require reassessment.

There is precedent for such re-analysis in philosophical literature. For instance C.D. Broad made a similar case in his discussion of mind theory in his book *Mind and Its Place in Nature*. In a discussion about the theory of mental interaction, Broad

points out that 'the problem of Interaction is generally discussed at the level of enlightened common-sense; where it is assumed that we know pretty well what we mean by 'mind', by "matter" and by "causation"' (Broad 1968, p96). Under this view it is assumed that the mental interaction required by a dualist conception of mind is problematic because there is no known mechanism by which the interaction of mind and matter can be explained. More explicitly there is no known causal chain between a mental event and a brain event which created a problem for interactionist dualism for many years. Broad points out, the commonsense notion of causation is outdated, given Hume's critique in *Treatise on Human Nature*. Therefore the causal objection to dualism is reasonable only if ordinary assumptions about causation are retained. However, if the Humean causation accounts holds and causation is thought to be no more than constant conjunction then there is no reason why such conjunction could not obtain between mental and physical events as well as between two physical events. Changes in the empiricist epistemology can be used to unravel earlier empiricist rejection regarding metaphysical theorising regarding mind theory (Broad 1968, p96-98).

In other words, Broad argues that there is good reason to reassess the philosophical assessment of the plausibility of the mind/matter interaction problem. His case is made on the basis that the assessment of mental interaction continued to be influenced by an outdated notion of causation.

In exactly the same fashion, I argue that there is good reason to reassess explanatory issues that inform that assessment of psi. I made the case on a similar basis which understands that the covering law objection to psi theorising is reasonable, however, it is only good if Hempel and Oppenheim's assumptions about the nature of explanation are retained. If an empiricist rejects these, the objection falls away. Again, the change in empiricist philosophy of science can be used to unravel earlier empiricist rejections of psi theorising. I therefore undertake a re-evaluation of psi in the context of contemporary explanation theory in the next chapter.

Chapter 6 – Terra Firma

Facts which at first seem improbable will, even on scant explanation, drop the cloak which has hidden them and stand forth in naked and simple beauty.

Galileo Galilei

In Chapter 6, I consider the remaining psi hypotheses against the backdrop of contemporary explanation theory. The aim is to prepare the explanatory territory for subsequent discussion of psi in philosophy, rather than resolutely resolve the discussion in favour of one hypothesis over another. I show that this is not possible at this stage. Instead, I open up the discussion to allow an examination of all three hypotheses in relation to each other, informed by an updated assessment of explanatory concerns. The analysis I give serves two functions: it will provide a contemporary assessment of the contentious body of evidence for psi; and it will also provide an interesting case study to test the ways in which various explanation theories respond to issues raised by anomalous phenomena.

I will first of all place the discussion in the context of the revised IBE (Inference to the Best Explanation) model that has been advanced in this thesis. Then I briefly outline the problems that the covering law model of explanation encountered, and what eventually lead to its demise as the dominant standard for scientific explanation in philosophy of science. I explore the issues at stake here with particular reference to two concerns especially pertinent to the psi hypotheses discussion: the problem of laws; and the problematic nature of explanation and anomalous phenomena.

I argue that the way the psi explananda have usually been presented has assumed explanatory problems with regard to the anomalous nature of the phenomena and the current limits of scientific explanatory scope. A review of the psi explananda is subsequently undertaken which presents the psi explananda in the form of interrogative statements. A deliberate attempt is made to formulate the questions with as little assumed about the anomalous nature of the phenomena as possible. A fictional example is used to create a grid of questions and answers. The questions

are phrased in the revised interrogative form and answers to the questions are drawn from the various theories supported by the competing hypotheses. The resulting grid of questions and answers is then examined in the light of the three major contemporary theories of scientific explanation: pragmatic, causal and unificatory.

Finally, it is argued that although psi theory is still problematic for contemporary explanation theory, there is more scope for development of all three hypotheses now than under the covering law model. It is acknowledged that it is not possible at this time to gauge which hypothesis is most certainly the 'loveliest', but I have a hunch the Small Change Natural hypothesis shows the most promise.

6.1 Review of IBE process

The case was made in Chapter 1 that a reassessment of the mainstream arguments was necessary on the basis that they are pre-emptive inferences to the best explanation (PIBE). I argued that the IBE structure should be used as a template to re-analyse the situation and make a more thorough assessment of the body of evidence for psi. The IBE process has been undertaken in the following three stages:

- | | |
|---|--|
| E | The evidence, data or phenomenon that requires explanation is examined. |
| {H₁,...H_n} | A group of possible hypotheses is compiled which is guided by background beliefs and explanatory considerations that should be made explicit. |
| H_i | The loveliest hypothesis is chosen from the group of hypotheses such that it has the greatest subjective probability of being true of the group. |

The three stages are represented in graphic form below in relation to the relevant sections of the thesis:

IBE stage	Section of thesis	Brief content summary
Stage 1 - E Evidence	2.2	Outline of evidence and theory, discuss issue of testimony
Stage 2 - $\{H_1, \dots, H_n\}$ Compilation	2.6	Compile the hypotheses based on current psi theory and comparison to the hard problem of consciousness
Stage 3 - H_n Process of selection	Chapter 3	Discuss background beliefs, present the historic account
	Chapter 4	Discuss competing hypotheses
	Chapter 5	Discuss dominant hypothesis
	Chapter 6	Compare remaining hypotheses

What can be seen here is the progress of re-examining the philosophical argument for psi in terms of a legitimate Inference to the Best Explanation³⁵. I have taken care to address the concerns regarding the mainstream philosophical arguments regarding psi that I outlined in Chapter 1. Firstly, I outlined the body of evidence for psi, secondly I compiled the hypotheses by making a comparison to a similar contemporary problem in philosophy – the hard problem of consciousness. I then argued that the Supernatural hypothesis was problematic, which narrowed the group of competing hypothesis down to: the Skeptic hypothesis, the Small Change Natural (SCN) hypothesis and the Big Change Natural (BCN) hypothesis.

Subsequent discussion of explanatory concerns has ensued: the explanatory background that informs the current assessment of psi was outlined in Chapter 3; and then, in Chapter 4, a discussion between two of the competing hypotheses (skeptical and SNC) was analysed which helped pin point further explanatory issues. I have then argued that a reassessment of the dominant hypothesis is warranted because it is likely that the mainstream assessment of psi in philosophy has been partially informed by an

³⁵ It could be argued that as some explanation theorists do not think that the IBE process is a legitimate means of evaluating hypotheses (for instance van Fraassen 1980, p20), the re-examination of the body of evidence for psi should not be undertaken as an IBE. However, I do not think that this poses a problem for this thesis even though I re-examine psi as a 3-stage IBE process. I could also argue a case for a re-analysis of psi in terms of contemporary explanation theory even without undergoing the 3-stage process as I could show that unfounded conservative explanatory bias of the mainstream arguments requires reassessment in a contemporary explanatory context and a review could be undertaken without necessarily going through the same assessment procedure.

out-moded explanatory theory – the covering law model. Below I outline the problems that eventually caused the demise of the model.

6.2 Problems for the covering law model

I showed in the last chapter that the covering law model of scientific explanation was problematic for realist psi theorists. However, it is generally understood that the covering law model, though dominant during the 40s-60s, finally fell victim to significant problems in the 1970s (Salmon 1990, p10). I argued that because the covering law model most likely informed the mainstream assessment of psi a re-evaluation should therefore be undertaken. I outline below the main problems that the covering law model fell to: the problem of irrelevance, the problem of symmetry and the problem of laws.

6.2.1 The problem of irrelevance

The problem of irrelevance was first raised by Wesley Salmon in 1970 using the following example:

John Jones avoided becoming pregnant during the past year, for he has taken his wife's birth control pills regularly, and every man who regularly takes birth control pills avoids pregnancy. (Salmon 1971, p.34)

The example can be represented as deductive argument which looks like this:

John took the contraceptive pill last year

People who take the pill correctly don't get pregnant

John didn't get pregnant last year

The argument is of the form acceptable to the covering law model of explanation as it follows the format stipulated by Hempel and Oppenheim as follows:

C_1, C_2, \dots, C_k statement of antecedent conditions
(John took the contraceptive pill last year)

L_1, L_2, \dots, L_r general law
(people who take the pill correctly don't get pregnant)

E description of the empirical phenomenon
to be explained
(John didn't get pregnant last year)

The conclusion that John didn't get pregnant because he took the pill is clearly absurd, as the fact that John took the contraceptive pill is not the reason he did not become pregnant. However, the argument is a legitimate explanation under the covering law model as both premises are true, one is a general law and the argument is valid. The covering law model is thus unable to cope with the subtleties required in order to exclude absurd explanations of this type. It is widely agreed that the example shows a flaw in the covering law model as 'this explanation seems unsatisfactory, and its conformity to the DN model has been an embarrassment to the model's advocates ever since' (Cartmill 1980, p383). If, as the 'John didn't get pregnant' example illustrates, the covering law model can be used to support a nonsensical answer to a why question, then it is problematic to use it as a model by which explanations in science are assessed.

6.2.2 The problem of asymmetry

The problem of asymmetry was first raised by Sylvain Bromberger in the 1960s. He uses the example of a building and a ray of light which emanates from the top of the building to illustrate that the problem. Bromberger's example runs as follows:

There is a point on Fifth Avenue, M feet away from the base of the Empire State Building, at which a ray of light coming from the tip of the building makes an angle of θ degrees with a line to the base of the building. From the laws of geometric optics, together with the "antecedent" condition that the distance is M feet, the angle θ degrees, it is possible to deduce that the Empire State Building has a height of H feet. (Bromberger 1966, p92)

In response to the question: Why does the Empire State Building have a height of H feet? I have placed the example in the form of a covering law model deductive argument to show that the example fulfils the criteria of an explanation under the model.

C_1, C_2, \dots, C_k statement of antecedent conditions
(‘the distance is M feet’, ‘the angle θ degrees’)

L_1, L_2, \dots, L_r general law
(the laws of geometric optics)

E description of the empirical phenomenon
to be explained
(The height of the Empire State Building is H feet high)

As both premises are true, one contains a general law and they together with the conclusion they form a valid deductive argument, Bromberger’s example is shown to provide a legitimate covering law model explanation. However, intuitively the path of the ray of light does not explain the height of the building, rather it is the height of the building that explains the path taken by the ray of light.

In subsequent philosophical literature on explanation theory and the problem of asymmetry a similar example was used. Instead of the Empire State Building and a ray of light, a flagpole and the shadow cast by the pole is used to illustrate the problem for covering law theory. In a later discussion of the problem Wesley Salmon points out that:

Clearly the interaction between the photons and the flagpole temporally precedes the interaction between the neighboring photons and the ground. The reason that the explanation of the length of the shadow in terms of the height of the flagpole is acceptable, whereas the “explanation” of the height of the flagpole in terms of the length of the shadow is not acceptable, seems to me to hinge directly upon the fact that there are causal processes with earlier and later temporal stages. (Salmon 1971, p72)

But the DN model is unable to account for the temporality for, as both of the examples above indicate, a legitimate covering law deductive argument can be made that ‘explains’ the height of the building or flagpole in explanatory terms that are obviously counter intuitive.

6.2.3 The problem of laws

According to the covering law model, for a deductive argument to serve as an explanation, one of the premises must contain a general law or a law derived from one. The notion of a natural law that is universal is therefore crucial to the covering law theory. I mentioned before that for Hempel and Oppenheim a general law is 'a statement of universal conditional form which is capable of being confirmed or disconfirmed by suitable empirical findings' (Hempel 1965, p 231). That science is able to provide such laws has subsequently been questioned by philosophers of science and has given rise to another criticism that eventually proved problematic to the covering law theory of explanation.

In a paper on the problem of general laws for the covering law theory, David Gruender argues that laws of nature pose a problem for the covering law theory because covering law theory is 'wrong in setting spatial and temporal universality as a standard for laws to be accepted in science' (Gruender 1984, p97). He bases the assessment on an historic account of laws of nature. Gruender analyses the notion of a natural law from the time of Euclid and argues that geometry has historically informed 'the very ideal of our understanding of the laws of nature' (Gruender 1984, p95). and furthermore that 'one of the important characteristics of geometry in this classical period is that its laws are universal both with respect to space and to time' (Gruender 1984, p95).

Gruender then argues that the general concept of a law based on the universal nature of geometric statements has changed over time; an epistemological shift has occurred. Rather than relying on the traditional notion of universal applicability derived from the laws of geometry, the contemporary discussion regarding natural laws now focuses on 'how to distinguish between an "accidental regularity and a "causal" one' (Gruender 1984, p96). And he points out that 'the contemporary discussion focuses on the logical, syntactic, and semantic devices it is thought might make the necessary discriminations.' (Gruender 1984, p97). In short Gruender argues that as it is far from agreed upon that science is able to provide universal laws, and the covering law model requires a general law as one of the premise of a deductive argument, the covering law model is therefore problematic.

In support of Gruender's assessment I draw on the work of David M. Armstrong who outlines the state of discussion regarding laws of nature in philosophy. Armstrong gives a summation of the situation that obtains between theories of laws of nature when he discusses laws of nature in relation to his theory of universals and contrasts it with that of David Lewis. Armstrong argues that his theory of universals solves some problems regarding laws of nature (such as accounts of laws in terms of regularity) as he can use his notion of universals to explain laws as 'irreducibly higher-order relations (or necessitation or probabilification) holding between universals' (Armstrong 1989, p138). For him laws of nature 'exist independently of the minds which attempt to grasp them' (Armstrong 1983, p7).

Armstrong contrasts his account against those such as David Lewis who maintains that laws of nature are regularities that are derived from the best theories in science. Armstrong mentions that Lewis, as a Sophisticated Humean, thinks that Armstrong's account of 'relations between universals is a mystery whose link to the unobserved cases is magic' (Armstrong 1989, p.139). Ontological and epistemological discussion regarding the laws of nature and related notions is ongoing. In the end Armstrong concludes that the fate of the contrasting theories and their various notion of laws will be determined at a later date:

Drawing a figure from the game of chess... a suitably sophisticated theory of universals and a suitably sophisticated theory of tropes can only be decided in the end game. Maybe. We are probably only at the beginning of the middle game as yet. (Armstrong 1989, p.139)

In philosophy there is still much to be worked out in regard to the role of laws of nature in science and how we can account for them. Thus, any explanation theory, such as the covering law theory, which depends on laws of nature as universal runs into difficulties and explanation theories have developed which do not rely on such a strong notion of a law of nature.

To further back up the claim that the discussion regarding laws of nature is far from resolved I note that there are other accounts of laws of nature. For instance Nancy Cartwright maintains that laws of nature are descriptive statements about reality (Cartwright 1983, p55) and that they are not necessarily statements with general and universal applicability. In contrast to the critical position that the strength of natural laws was given under the covering law theory, for Cartwright:

Laws, read literally as descriptive statements, are false, not only false but deemed false in the context of use. This is no surprise: we want laws that unify; but what happens may well be varied and diverse. We are lucky that we can organize phenomena at all. There is no reason to think that the principles that best organize will be true, nor that the principles that are true will organize much. (Cartwright 1983, p52-53)

The discussion regarding laws, how they are assessed, to what extent they can be used to explain and how science goes about discovering them will, no doubt, be a topic of philosophical speculation that impacts both on explanation theory and the status of anomalous phenomena such as psi. I go on to discuss this latter point further in the section below.

6.3 Psi and scientific explanation

It is clear that the covering law account of scientific explanation encountered significant problems; the problem of irrelevance, asymmetry and laws are three of the major challenges that posed critical problems for the theory. However, as Charles Adams points out, 'even if Hempel's DN and IS models have fallen from grace, it is not clear what has taken (or should take) their place' (Adams, 1991 p58). Wesley Salmon, also agrees. In answer to the question regarding the state of post covering law explanation theory in philosophy: 'Is there a new consensus concerning scientific explanation?' Salmon answers 'At present, quite obviously, there is not. I do not know whether one will emerge in the foreseeable future...However that may be, I am convinced that we have learned a great deal about this subject in the years since the publication of Hempel's magisterial "Aspects" essay. To my mind, that signifies important progress' (Salmon 1998, p317).

As there is no theory that dominates the territory in the way that the covering law model did and it is therefore not possible to perform a similar analysis on any one theory in the philosophy of science. I will therefore focus subsequent analysis of psi and explanation on three major explanation theories—pragmatic, causal and unificatory—as all three are well-represented in contemporary discussion of scientific explanation. However, I turn now to further discussions of explanatory issues with specific reference to psi-related issues and make a case that the psi explananda require reworking.

6.3.1 Psi and laws of nature

The basic objection that pro-psi proponents encountered when the covering law model was dominant was that as all scientific explanations require universal laws and given that there are no laws that explain psi—nor does it appear as if any are immediately forthcoming—there was therefore little or no prospect of a scientific explanation for psi. At best, current research into psi produced a set of apparent anomalous oddities and were conceded to be such. However, law-dependent models of explanation are problematic and are no longer dominant in contemporary philosophy of science. Michael Scriven, in a similar fashion to Cartwright, argues the point in his 1962 article ‘Explanation, predictions, and laws’ where he points out that:

The examples of physical laws with which we are all familiar are distinguished by one feature of particular interest for the traditional analysis—they are virtually all known to be in error. Nor is the error trifling, nor is an amended law available which corrects for all error. The important feature of laws cannot be their literal truth, since this rarely exists. It is not their closeness to truth which replaces this, since far better approximations are readily constructed. Their virtue lies in a compound out of the qualities of generality, formal simplicity, approximation to the truth and theoretical tractability. (Scriven 1962, p212)

According to Scriven then, laws are only ever approximations of our current understanding of the workings of the world. In terms of their relation to issues in explanation, Scriven goes on to claim:

Laws provide a framework for events which we use as a convenient grid for plotting phenomena that may need explanation. When we are trying to locate events with respect to what we know and understand, we often look to see whether they represent departures from patterns we know and understand, and these patterns are the laws. Their importance lies not in the precision with which they trace the characteristics of events or substances but in the fact that they provide a readily identifiable pattern. The event in question either conforms to a known pattern or it does not. If it does not, it probably needs explaining; if it does, then either it is not puzzling or the puzzle involves the origin or relation of the patterns. (Scriven 1962, p212-213)

Scriven is not the only philosopher to have taken issue with the problematic role of laws to the covering law theory. But his analysis is particularly pertinent to issues relevant to explanation and psi in the contemporary era when the covering law theory no longer obtains. As Scriven’s analysis above indicates, the fact that a phenomenon is counter to what is currently understood to be lawful does not logically exclude it from the possibility of explanation.³⁶ The fact that no law can currently be used to

³⁶ Hempel and Scriven engaged in discussion regarding the role of laws in explanation (for instance Hempel’s defence against Scriven’s comments in *Aspects of Scientific Explanation* 1965, pp359-364). However, as I have already shown that laws of nature were a problem for the covering law

explain apparent psi effects could demonstrate that a new law is required, or it might indicate that there is a problem with the way that laws are appealed to as a requisite for scientific explanation. Scriven's analysis is supported by instances in the history and philosophy of science whereby previously anomalous phenomena have subsequently been explained in terms of laws as the phenomena became better understood. Contemporary views regarding the role that laws of nature play in explanation theory indicate that unlawfulness is not a strong enough reason to exclude the need for an examination of explanations for apparent psi events. I therefore continue the discussion of the psi explananda in relation to three contemporary explanation theories shortly, but first I cover more general issues regarding scientific explanation pertinent to anomalous phenomena.

6.3.2 Anomalous phenomena and scientific explanation

Anomalous phenomena pose special problems for scientific explanation. The phenomena are anomalous for a reason, usually because they cannot be readily explained using any known currently acceptable explanations. There are various levels of anomalousness and they range from events that are merely unusual or unexpected to events that are considered anomalous because they are counter to what is thought possible. Psi is anomalous in the latter sense.

However, there is an important point to be made regarding how the anomalousness in question is characterised. Usually psi phenomena that are to be explained are characterised in terms of statements that are already prejudiced against any possible scientific explanation of the phenomena. This is problematic because the statements presume a particular explanatory model which the phenomena, given their description as anomalous, cannot satisfy. I suggest that the psi explananda should be recast and phrased as interrogative statements in such a way that they do not anticipate explanatory problems because of the anomalous nature of the phenomena; that is, they are not explained before the fact. I flesh out this argument in the sections below.

theory I will not enter into an extensive discussion of this issue in this thesis. Instead I focus on the psi explananda and contemporary explanation theory.

Psi explananda

In the introduction to this thesis I mentioned that psi phenomena are defined by what they are not. So, for instance, ESP is only apparent when all five regular sensory means of obtaining the information are ruled out. An apparent ESP event is only detected when, say, a subject of an experiment correctly guesses that the target object was the Queen of Hearts and all normal sensory means of obtaining the information could apparently be ruled out. Only in this negatively derived fashion does the event qualify as an instance of apparent anomalous acquisition of knowledge. Thus if an apparent psi event has occurred it is usually described as an event that is anomalous in the strictest sense. And it follows that, given fraud or sensory leakage can reasonably be ruled out, there is no obvious explanation for the event. Therefore it is tempting to represent the psi explananda as contravening all known sensori-motor mechanisms.

Indicative of a typical contemporary assessment of the psi explananda is the work by Charles Adams (1991) in a paper on psi, explanation and social change. In the paper Adams poses the question:

Let us now suppose that science has accepted parapsychology's contributions of extrasensory perception (ESP) and psychokinesis (PK). Just what is it that we may say science has accepted? (Adams 1991, p45)

He then suggests that:

...at the very least, we must assume that science has embraced the elementary assumptions, findings, conclusions, and predictions that underlie, constitute, and make useful the ideas of ESP and PK. Some of these, at present, would be an embarrassment to science in that they would appear to contradict some of the most fundamental beliefs that many scientists have formed from cumulative experimental evidence. (Adams 1991, p.45)

Adams then lists the phenomena that require examination in the context of assumptions already made about the phenomena by science, i.e. the contraventions that make the phenomena anomalous in the first instance. He then goes on to list all the claims that can be made which warrant the psi explananda as unexplained, noting first of all that: 'It will be useful to recognize just how polarizing a representative sample of such claims is' (Adams 1991, p45). The list contains some of the following statements:

...all information about the external world that is possible for living organisms to have is acquired via the five recognized sensory systems.(Adams 1991, p45).

...science rejects any suggestion that...mental events can be expressed in physical events independently of the brain... (Adams 1991, p45)

...because cause and effect still holds for explanation and theories in macrophysics, the intuition that a cause must precede its effect is stoutly defended. (Adams 1991, pp46-47)

The list is reminiscent. if updated) to the list of basic limiting principles outlined by C.D. Broad (1949) which I discussed at length in Chapter 1. The same criticisms can be applied. It is understandable why it is tempting to continue to represent the psi explananda in such a fashion. Psi is so obviously antithetical to current scientific expectations of what is possible that it seems the most sensible place to start.

However, I claim that it is detrimental to present the psi explananda in terms that anticipate explanatory problems, as this move assumes too much based on the anomalous nature of the phenomena in question. I claim therefore that it is prejudicial to continue to construct the explananda assuming the phenomena cannot be explained.

I give further support to the claim by referring to the historic account that was presented in Chapter 3 in which I noted that psi is currently considered paranormal most likely because of the explanatory history of the phenomena as once considered supernatural. The limits of science were set at a time when psi was considered supernatural, thus there might be scope to either expand science or modify expectations of what is explainable given the history of the phenomena.

I suggest then that a re-analysis of the psi explananda should be undertaken and phrased as neutrally as possible, without assuming anything about the potential to explain the phenomena based solely on the anomalous nature of the event. In this way the anomalous nature of psi is presented as a puzzle to science as would any unexpected, but not necessarily unexplainable phenomena.

Explanation, explananda and psi

I showed earlier in this chapter that the covering law theory is not currently considered a viable theory of explanation in the sciences. Instead other theories have developed. Although I will present these theories in more detail shortly, here I focus briefly on how each of the theories (causal, pragmatic and unificatory) deal with one of the most basic questions in explanation theory: what counts as an explanation? This

in turn helps ascertain how, according to the contemporary explanation theories, to best recast the psi explananda.

For Wesley Salmon, a causal theorist, an explanation is a set of statements. 'On my view, an explanation is a set of probability statements, qualified by certain provisos, plus a statement specifying the compartment for which the explanandum event belongs' (Salmon 1971, p75). The statements address the question of a certain form: 'Why does this x which is a member of A have the property B?' (Salmon 1971, p75). Bas van Fraassen, who is a philosopher associated with the pragmatic account of explanation, agrees that explanations are answers to 'why' questions. But for him 'an explanation is not the same as a proposition, or an argument, or a list of propositions; it is an *answer*' (van Fraassen 1980, p134). However, Philip Kitcher, a proponent of the unification theory, proposes that 'an explanation is an ordered pair consisting of a proposition and an act type' (Kitcher 1981, p509). And though he does not limit the explananda to statements involving 'why' questions, he does include 'why' questions as a legitimate means of posing questions that require explanation (Kitcher 1989, p435). Therefore there is a general agreement, at least among the theorists with which this thesis is concerned, that explanations involve postulating competing answers, probabilistic statements or propositions to *questions*. I therefore recast the psi explananda in the form of interrogative statements.

Summary - a case for revision of psi explananda

I have shown why it is explanatory prejudicial to present the psi explananda as anomalous to scientific orthodoxy. I have also shown that according to the three contemporary explanation theories it is appropriate to cast the psi explananda as interrogative statements. The task now, therefore, is to make an assessment of the evidence for apparent psi events and couch the explananda as questions which do not assume any explanatory problem in relation to the current limits of scientific explanation. I will then draw on the theories that support each of the competing hypotheses to answer the newly constructed questions. In this way the ground is prepared for an examination of competing answers to the questions which can be analysed in the context of contemporary explanatory theory.

6.4 Psi explananda recast

The outline of the body of evidence for psi that was made in Chapter 2 will now be drawn upon to sketch the phenomena that require explanation. As an intellectual exercise I will now assume that the evidence for psi requires an explanation.

According to the case made in the section above, I will now recast the psi explananda as a set of questions.

6.4.1 Psi explananda posed as interrogative statements

There are two distinct phenomena that are covered by the word psi: anomalous information acquisition and anomalous action at a distance. Anomalous information either involves another person, or an object or objects in the physical world. There is an added temporal dimension to both types of anomalous phenomena in that they are thought to occur in either the present, past or future. I have already outlined the apparent evidence for occurrence of these phenomena, so I will not reiterate that here. Instead I construct a make-believe story based on the laboratory evidence for psi that can be used to phrase the questions and give them a frame of reference.

Suppose that you are an under funded, underfed PhD student. You want a bit of extra cash to attend a conference that is being held in a city far away enough to need to fly there, but you haven't got the airfare. You see a notice up at the Psychology department. It is advertising for participants in an experiment. It will take a couple of days out of your study time, but the pay is good and should help significantly towards your trip. You decide to sign up.

The first day you are told that you are going to take part in a staring experiment. You are paired up with another student and each of you takes turns staring at the other from distant rooms, by viewing an image of the person in real time on a screen. The lab worker explains that the results indicate that shortly before the other student starts to focus on the image of you, the electrodermal reader that you are hooked up to has measured a reaction on your skin.

You are then shuffled off to another room. This time you are asked to try to influence the swing of a ball that is hooked up like a pendulum to the roof of the room. You are asked to think about making it swing towards the left of the room, the right and sometimes asked to let it swing in the centre, as it would if left untouched.

You are surprised to see that the ball, which you are unable to touch due to the glass pane between you and the pendulum, appears to move according to your mental commands.

Finally, you are asked to sit back in a comfy chair and let random thoughts enter your head. You relax (it has been a long day) and stretch out your feet. You start to drift into a day dream about dropping your PhD and becoming a ski bum for a year. The lab worker then requests over the intercom that you look at the screen on the wall in front of you. You are then shown four pictures: one of flowers in a vase, the next of a car on a windy road, another of a smiling old lady and one of a skier making tracks down a mountain covered in

snow. You are asked to choose which one most resembles the thoughts that were just recently in your mind. You choose the snowy mountain. Well done! That's a hit, they say.

Then they ask you to 'send' the image to the student who was 'staring' at you earlier in the day. In a distant lab room that same student says 'I feel cold and see nothing but whiteness, I hear a crunchy sound like someone is walking in the snow...'³⁷

As you wander home, clutching your hard-earned cash in your hand, you begin to puzzle over the events during the psychology experiments. Previously you'd been a skeptic about psi but now you start wondering – why did I start thinking of a ski trip when relaxing in the chair? Was it just a coincidence that the target picture was a snowy mountain? Why did the ball apparently move to my command when I couldn't touch it? And how did I know when the other student was about to stare at my image in a distant room? You start to question how it is possible that any of this could have occurred; previously you'd thought it impossible.

The questions that the student raises are hard to answer. The whole day sounds so implausible given how we are told the world works according to science and especially given that you can reasonably rule out an obvious case of fraud or trickery. However, I will now recast the psi explananda exhibited by the make-believe psi experiment in terms of questions which do not assume any particular explanation in relation to current science. I will avoid the use of negative terms such as 'without normal means of communication' and such like.

At first this manoeuvre might appear trivial. Some might argue that I just substitute 'apparently screened off' for 'without any known force or sense'. However, in terms of explanation theory the move is significant. According to the pragmatic account of explanation, for example, the setting up of the question which requires an explanation is important and already has context-dependent ramifications depending on who is asking the question as well as the emphasis in the phrasing of the question itself (van Fraassen 1980, p126-129). I am cautiously rephrasing the questions to keep them as unbiased as possible. I acknowledge that this already indicates that I do not immediately buy into the mainstream view of psi. However, I defend this move by drawing on work done during the course of the thesis. I have argued that it is necessary to provide a place to compare competing hypotheses for psi, rather than immediately assume that fraud or fluke or flaky methodology can account for the phenomena.

³⁷ Please note that the description is based loosely on experiments in the psi literature. It is intended to illustrate the phenomena apparently exhibited as psi effects, not as a detailed description of any real or potential psi experiments. The story is used as a thought experiment to explore explanation issues related to the phenomena commonly cited in the psi literature.

As an illustrative example of how the phrasing of the question must be carefully constructed, take a case of apparent clairvoyance between a person X and a randomly selected target picture in computer W. Now, according to the usual way in which the psi explananda are presented, the question normally asked would run something akin to the following:

Why is it possible that X could gain information from W given science currently maintains that it is impossible to obtain information through any other means than the five senses?

Instead, I suggest a more neutral formulation of the question regarding the apparently anomalous clairvoyant event as follows:

Why is it that person X, while apparently screened off from all normal sensory channels, is tracking remote events at W with an accuracy ratio that is statistically significantly above that predicted by chance?

The use of the less presumptive syntax that does not emphasise the anomalousness of psi upfront has a three-fold benefit: firstly, the anomalous nature of psi is not counted against itself when an explanation is first called for; secondly the question is not biased towards any particular explanation from any one of the competing psi hypotheses; and thirdly the phrasing does not assume fraud as the most reasonable explanation up front. I think that the third point is especially important, because the body of evidence for psi cannot be ruled out per se by such an explanation, even though the contemporary representation of psi might lead some to believe that is the case. If fraud really could account for the body of evidence without any doubt, then there would be no debate about the evidence for psi (as I pointed out in the Introduction).

I have created a question grid (see the chart below) which recasts the psi explananda as cautiously as possible. I draw on the student's questions after the fictional day of psi experiments to pose one for each type of psi phenomena³⁸. Below is a chart listing the apparent psi effect, the student's question and the question recouched using the neutral syntax which I outlined above:

Psi effect	Student question	Why question
Precognition	Why did my skin register on the electrograph shortly before the student in a distant room stared at my image on a screen?	Why does an electrographic reaction on person X's skin correlate (at a statistically significant level) with the moment just prior to person Y's concentration on an image of person X when both X and Y are apparently screened off from any normal means of communication?
Psychokinesis	Why did my thoughts influence the swing of the pendulum?	Why did a person's X's intention to influence object P correlate with the movement of object P when X was apparently screened off from any normal contact with object P?
Clairvoyance	Why did I know that the snowy mountain picture was the correct one?	Why is it that person X, while apparently screened off from all normal sensory channels, is tracking remote events at W with an accuracy ratio that is statistically significantly above that predicted by chance?
ESP	Why did the student in a remote room know that I was thinking about snow at that moment in time?	Why did person X correctly identify, at a statistically significant level, images that correlated with the pictures that person Y viewed and when person X and person Y were apparently screened off from any normal sensory contact with one another?

³⁸ I don't include retrocognition as the time-related issues involved in that type of psi phenomenon are similar to apparent precognitive events and the grid is intended as a thought experiment only which will then be used to further the psi hypotheses discussion.

6.4.2 Psi questions and hypotheses

I will now postulate possible answer to the questions that were constructed using the student's story. I am careful to ensure that each of the competing hypotheses is represented: the Skeptic hypothesis; as well as both Big and Small Change Natural hypotheses. Before we go any further I remind that the Small Change Natural (SCN) hypotheses regard the evidence for psi as genuinely anomalous draw on theories in current science in order to explain the phenomena. (An example is the Powell/Hennacy theory which was discussed in Chapter 4.) The Big Change Natural (BCN) hypothesis also regards the evidence for psi as genuinely anomalous, however, theories that explain psi are proposed which require additional ontological commitments (e.g. the dualism). In contrast to the SCN and BCN psi realist hypotheses, the Skeptic hypothesis proposes that apparent psi events are successfully explained by one of the following: deliberate fraud; coincidence; sloppy experimental methodology; or, that they are the product of self-deluded witnesses or psi researchers.

I realise that some of these answers may appear trite: the skeptic may sound overly naive; the psi realists too credulous. However, it needs to be remembered that my aim here is to set the stage for a discussion between hypotheses, if I am successful the potential to explore more comprehensive answers and to develop more workable theories can take place. The chart should therefore be read as a thought-experiment; it does not represent a thorough examination of the merits of the contrasting psi theories. Rather I have constructed the grid so that the competing answers can be used more readily to further the discussion in relation to contemporary explanation theories.

Why question - PK

Answers derived from psi hypotheses

	Skeptic hypothesis	Small change natural	Big change natural
Why did person X's intention to influence object P correlate with the movement of object P when X was apparently screened off from any normal contact with object P?	The person and/or experimenters mistakenly thought that their thoughts were affecting the pendulum.	An electromagnetic force was discharged from the brain of the subject and influenced the movement of the pendulum	Psi-ons are emitted from the brain when a person focuses their intent on a physical object. These psi-ons are able to interact on both a macro and micro scale and they carry the force from the brain to the object.

Why question - Precognition

Answers derived from psi hypotheses

	Skeptic hypothesis	Small change natural	Big change natural
Why does an electrographic reaction on person X's skin correlate (at a statistically significant level) with the moment just prior to person Y's concentration on an image of person X when both X and Y are apparently screened off from any normal means of communication?	The electrograph must be faulty or the experiment procedure flaky. Or perhaps temperature changes in the airconditioning unit could account for the changes.	An indication that humans register events on their skin before they occur. It would be an evolutionary advantage for a species to have a warning of imminent danger.	There is one collective mind to which we all have access, even if subconsciously. When a person focuses their attention on another it registers in the collective mind where time and space do not exist.

Why question - Clairvoyance

Answers derived from psi hypotheses

	Skeptic hypothesis	Small change natural	Big change natural
Why is it that person X, while apparently screened off from all normal sensory channels, is tracking remote events at W with an accuracy ratio that is statistically significantly above that predicted by chance?	The use of statistics to determine the significance of the outcome is flawed.	On occasions when the regular senses are dimmed another sense is able to pick up on information from physical objects at a distance from the viewer	The mind is able to exist independent of the brain. If a person is relaxed and allows their consciousness to wander, they are able to perceive remote objects.

Why question - Telepathy

Answers derived from psi hypotheses

	Skeptic hypothesis	Small change natural	Big change natural
Why did person X correctly identify, at a statistically significant level, images that correlated with the pictures that person Y viewed and when person X and person Y were apparently screened off from any normal sensory contact with one another?	It was a set up and the participants in the experiment are tricksters.	Quantum entanglement theories can be used to explain how mind-mind knowledge acquisition occurs at a distance.	Topological folding of space/time occurs allowing for information to pass from one person to another instantaneously.

In constructing the questions and possible answers to the questions I have tried to avoid assumptions about the anomalous nature of the phenomena. I have also been wary of favouring one hypothesis over another. I hope that the hypotheses at issue can now compete on even ground. It has taken some time to develop the discussion to this stage: the philosophical arguments were critiqued and a new analysis in the form of an IBE was undertaken; further explanatory considerations were teased out; and finally a new set of psi explananda has been cast along with answers that represent each competing hypothesis. I will now discuss the relative merits of each in the context of contemporary explanation theory.

6.5 Psi explananda and contemporary explanation theories

The pragmatic, causal and unificatory theories will be taken in turn. They each have a different method of determining how to assess the relative merits of competing answers to explanation-seeking questions. I will first outline the basic tenets of each explanation theory. Then the grid of questions and answers is used to determine which, if any, answers are reasonable explanations to the psi questions.

6.5.1 Pragmatic explanation theory

Bas van Fraassen is the philosopher currently associated with work on the pragmatic theory of explanation. (It should be noted that the pragmatic theory of explanation is different from the philosophical tradition of pragmatism such as that of William James). Van Fraassen's explanation account is strongly empiricist. Most importantly, the conception of explanation that the pragmatic theory developed is that the process depends on contextual and relevance relations. Even the same question can be asked in different contexts and elicit different explanations, each of which is a legitimate explanation depending on the situation. Van Fraassen explains as follows:

The discussion of explanation went wrong at the very beginning when explanation was conceived of as a relationship like description: a relation between theory and fact. Really it is a three-term relation, between theory, fact, and context... In addition, the background theory plus data relative to which the question is evaluated, as arising or not arising, depends on context. (van Fraassen 1980, p156)

So the context of the questions and the background theory will all have an impact on determining the accepted explanation. Van Fraassen goes on to explain that:

The description of some account as an explanation of a given fact or event, is incomplete. It can only be an explanation with respect to a certain *relevance relation* and a certain *contrast-class*. These are contextual factors, in that they are determined neither by the totality of accepted scientific theories, nor by the event or fact for which an explanation is requested. (van Fraassen 1980, p.130)

The contrast class list is a list which determines: Why X rather than say Y or Z?

The answer to the question in the form of a proposition is the explanation, which is context-dependent. The proposition is also informed by background issues. According to the pragmatic account, the elements of the explanation are set in generic terms as follows:

the 'why' question Q expressed by an interrogative in a given context, will be determined by three factors:

The *topic* P_k

The *contrast-class* $X = \{P_1, \dots, P_k, \dots\}$

The *relevance relation* R (van Fraassen 1980, p42-43)

The relevance relations are derived from causal statements regarding the topic P_k and are drawn from a 'causal net' which is 'whatever structure of relations science describes' (van Fraassen 1980, p124). The way that one explanation is selected amongst others is determined in three ways: whether it is acceptable and likely to be true; whether it is favoured over other members of the contrast-class; and if, when in comparison to the other options, it is more probable—taking into consideration background theory and beliefs, the topic, and considerations of irrelevance in comparison to other answers (van Fraassen 1980, p146-7). According to pragmatic theory these factors will determine which explanation is the most appropriate given the situation, but above all the process is contextual.

In an outline of his explanation theory presented in the book *The Scientific Image* (Chapter 5) van Fraassen relates a tale called 'The Tower and the Shadow'. The story was constructed to show how the pragmatic theory deals with the problem of asymmetry that befell the covering law model. It also uses structures and shadows and it is worth relaying as it helps also helps elucidate some of the critical tenets of pragmatic theory.

In the story the narrator is troubled as to why the tower casts a shadow onto a balcony that would otherwise continue to catch the sun. The owner of the tower says the tower was constructed 'in 1930 to mark the exact spot where it is said that [an

ancestor of the owner] greeted the Queen when she first visited this house, and presented her with a peacock made of soap... Since the Queen would have been one hundred and seventy-five years old in 1930, had she lived, I had the tower made exactly that many feet high' (van Fraassen 1980, p136). Later that evening while dallying with a maid the narrator mulls over the same question, but she provides him with a different account: 'The truth is quite different, and has nothing to do with ancestors. That tower marks the spot where he killed the maid with whom he had been in love to the point of madness... he vowed that shadow would cover the terrace where he first proclaimed his love, with every setting sun- that is why the tower had to be so high' (van Fraassen 1980, p136).

According to van Fraassen's analysis each explanation will be an answer based on background theory which will differ from context to context. In the Tower Story it is sensible that the narrator makes a hasty departure, given the explanation the maid gave and the activity he was engaging in at the time, but does it mean that the maid's explanation has any more validity than the host's? I think that the point is that it does not and that when we are comparing competing explanations for the same 'why' question it is prudent to act on the one that has the most import on any given particular situation. Instead explanations are assessed according to factors determined by the context within which the original question is posed.

However, The Tower Story as an exemplification of van Fraassen's explanatory scenario has been criticised for failing to solve the traditional problem of the asymmetries of explanation (Salmon & Kitcher 1998, pp179-80). In terms of the Tower Story, for instance, further delving could find out which of the answers to the innocuous query about the height of the tower was, in fact, the correct explanation. One could look for historical back up to the host's account or question the host further or ask other people who might have known about the maid incident to corroborate that explanation. Some theorists such as Salmon and Kitcher have developed other, rival, explanation theories that are in contrast to the pragmatic account. I outline the causal and unificatory accounts in the subsections below.

6.5.2 Causation explanation theory

The causal theory of explanation essentially maintains that to 'explain an event is to identify its cause' (Salmon 1998, p69). The deceptively simple statement has been the focus of much discussion in philosophy of science. An assessment of the voluminous literature on causation is far beyond the scope of this thesis. Instead, the causation theory of explanation as developed by Wesley Salmon with some reference to the development of the theory in its early stages by Michael Scriven will form the focus of this section of the thesis.

There are certain assumptions about the causal nature of explanation that are learnt by us because of our everyday dealings with the world around us. One learns early on that a certain trail of events has causes and that they are a means of obtaining an explanation about certain situations. Think of the child saying 'I didn't do it' while the parent pieces together the trail of evidence around them - the cricket bat hidden under the armchair, the ball on the path outside and the broken glass of the window— 'Yes you did' says the parent. 'I can see the bat that you used to hit the ball which flew through the window smashing the glass. How many times have I told you not to play cricket inside!' The child does not have much recourse! It is obvious to the parent that the child hit the ball towards the window thus causing the glass to smash, and that this explains the evidence the parent is confronted with. Michael Scriven gives a similar every day example:

Let us take a case where we can be sure beyond any reasonable doubt that we have a correct explanation. As you reach for the dictionary, your knee catches the edge of the table and thus turns over the ink bottle, the contents of which proceed to run over the table's edge and ruin the carpet. If you are subsequently asked to explain how the carpet was damaged you have a complete explanation. You did it by knocking over the ink. The certainty of this explanation is primeval... This capacity for identifying causes is learnt, is better developed in some people than in others, can be tested, and is the basis for what we call judgments. (Scriven 1959, p456)

The notion of cause and effect is basic to our conception of how things work in the world and it is confirmed everyday by actions and the resulting consequences.

Theories that use causation as means of determining valid explanation have consequently developed. Causation theories of explanation must make a case regarding how to define a cause as they depend on the notion if they are to ascribe explanatory worth to causes. Salmon has developed a notion of causation as a 'process' in which 'an intersection of two processes is a causal interaction if both processes are modified in the intersection in ways that persist beyond the point of

intersection, even in the absence of further intersections' (Salmon 1998, p71). He goes on to say that causal processes are local (I take that to mean contiguous) and the processes are 'restricted in spacetime region, and processes transmit in spatiotemporally continuous fashion' (Salmon 1998, p71). He concedes that quantum theory poses problems for it violates local causality (I understand this to be referring to Bell's theorem and the problem of non-locality). However, despite this difficulty at the quantum level he argues that explanation is to be conceived of as causal/mechanical. Under this view explanations 'exhibit the ways in which nature operates' (Salmon 1998, p71) which is undertaken by learning the causal processes that lead to an event.

As I understand it then, according to the causal account of explanation, as developed by Salmon, to explain an event 'E' is to cite its cause 'C' and, using Salmon's notion of causation as a process it is to understand the causal history that leads from C to E. Before discussing the causal view in relation to the psi hypotheses I turn now briefly to the other significant explanation theory that was mentioned earlier – the unification theory of explanation.

6.5.3 Unification theory

Unification theory, as developed by Philip Kitcher, is based on the notion that the aim of science is to account for as many facts with as few theories as possible (Kitcher 1981, p508). According to his theory we choose a particular explanation from a store of arguments which are, for Kitcher, supplied by science. The success of an argument pattern is determined by how many phenomena it can be applied to. Kitcher spells this out:

Science advances our understanding of nature by showing us how to derive descriptions of many phenomena, using the same patterns of derivation again and again, and, in demonstrating this, it teaches us how to reduce the number of types of facts we have to accept as ultimate (or brute). So the criterion of unification I shall try to articulate will be based on the idea that $E(K)$ is a set of derivations that makes the best trade-off between minimising the number of patterns of derivation employed and maximizing the number of conclusions generated. (Kitcher 1989, p432)

The basic aim is to generate as many explanations for phenomena using the least amount of argument patterns where K is the 'set of statements endorsed by the scientific community' (Kitcher 1989, p431). and E(K) is 'the set of derivations that best systematizes K' (Kitcher 1989, p431) Kitcher mentions Darwin's theory of evolution as a highly successful explanation because so many questions could be answered using the same pattern. He states that:

Darwin's theory of evolution by natural selection addresses a number of general questions about the characteristics of life. These questions include problems of biogeography, of the relationships among organisms (past and present), and of the prevalence of characteristics in species or in higher taxa... Darwin's principal achievement consisted in his bringing these questions within the scope of biology, by showing, in outline, how they might be answered in a unified way. (Kitcher 1989, p443)

So the more facts a theory can account for, the more successful it is at explaining. If a theory can explain a once-off occurrence of an event it has less explanatory worth than if it can explain many other occurrences of similar events.

It is interesting to contrast the unification in relation to my earlier discussion on laws of nature and covering law theory. One of the three major problems for the covering law theory was that it relied on a universal law. Kitcher argues, however, that his account of explanation reverses the situation. Because the unification theory of scientific explanation provides an account for 'acceptable' rather than 'correct' explanations assessed on their ability to explain more facts, it does not fall victim to a reliance on universal natural laws as was the case with the covering law theory. He suggests further that the unification account actually indicates there may be no need for such a strong notion of laws in relation to explanation as he claims that the unification account of explanation when applied to examples in science allows for the 'possibility that sciences may have no maxi-laws, and that their generality may consist in the patterns of derivation that they bring to the explanation of the phenomena.' (Kitcher 1989, p447). The point about laws is especially pertinent to anomalous phenomena such as psi and I will come back to it shortly.

The three explanation theories that I have focussed on for this part of the thesis are complex. I have only been able to sketch out the basic notions that they have each developed in order to aid in understanding how it is we make a judgement about evaluating scientific explanations. Much more work can be done in this area, but for now I intend to provide an outline of the explanatory territory and most

importantly start the task of re-evaluating the status of the psi discussion. I start this process in the section below.

6.5.4 Psi hypotheses and explanation theories

I now tie together much of the work done earlier in the chapter when I recast the psi explananda as interrogative statements and formulated some example answers taken from theories proposed by the competing psi hypotheses. I compare the theories that support the various hypotheses for psi and I use the outline of the contemporary explanation theories to assess the situation. A question and answer from the grid constructed earlier (p178) will be used to illustrate how each of the pragmatic, causal and unificatory explanation theories deal with the competing answers to the questions constructed from the student's story. I start with the pragmatic account of explanation.

Pragmatic theory and psi

I will use the following question from the chart and place it into a form of explanation as set out in the pragmatic theory section above. The example involves an ostensible occurrence of precognition:

Why question - Precognition	Answers dervied from psi hypotheses		
	Skeptic hypothesis	Small change natural	Big change natural
Why does an electrographic reaction on person X's skin correlate (at a statistically significant level) with the moment just prior to person Y's concentration on an image of person X when both X and Y are apparently screened off from any normal means of communication?	The electrograph must be faulty or the experiment procedure flaky. Or perhaps temperature changes in the airconditioning unit could account for the changes.	An indication that humans register events on their skin before they occur. It would be an evolutionary advantage for a species to have a warning of imminent danger.	There is one collective mind to which we all have access, even if subconsciously. When a person focuses their attention on another it registers in the collective mind where time and space do not exist.

I then put the scenario into a form acceptable to pragmatic theory:

The 'why' question Q expressed by an interrogative:

Why does an electrographic reaction on person X's skin correlate (at a statistically significant level) with the moment just prior to person Y's concentration on an image of person X when both X and Y are apparently screened off from any normal means of communication?

The topic P_k

The skin of student X registered a charge shortly before student Y stared at an image of student X and they were at a remote distance from one another.

The *contrast-class* $X = \{P_1, \dots, P_k, \dots\}$

{the skin of student X registered a charge prior to student Y looking at an image of student X, the skin of student X didn't register a charge, the skin of student X registered a charge occasionally whether or not student Y was looking at an image of student X from a remote location}

The *relevance relation* R (van Fraassen 1980, p42-43)

As I understand it relevance relations are statements in the form of an answer regarding the event in question; context determines which one is the most appropriate as do the relevance relations between the answers and the question. I assume for the purposes of this discussion that I have three possible answers, which I have taken from the chart of competing psi hypotheses. The possible answers are:

- | | |
|---------------------|--|
| SH Answer 1 | Because the electrograph is faulty and did not really register any change in the skin. |
| SCN Answer 2 | Because of a weak 'sixth sense' that has developed in some humans which gives them an evolutionary advantage. |
| BCN Answer 3 | Because both had access to the collective mind and were connected subconsciously to the event which the target person felt prior to our current ability to measure the physical effect of thought on remote regions. |

The pragmatic account of explanation does not rule out any of these answers per se, rather it is a question of whether or not each is empirically adequate in according to current scientific theory. A psi theory that is acceptable to science would be allowable as a legitimate explanation according to the precepts of this theory. The pertinent question then is: how then does the pragmatic theory make a judgement regarding the explanatory merits of each answer? I mentioned before that the theory emphasises the context-dependent nature of explanations. It also emphasises that the answers are examined in terms of relevance relations. Furthermore, as I mentioned earlier, relevance relations are legitimate only if drawn from a 'causal net' of relations which are acceptable to science (van Fraassen 1980, p124). It seems then that I must eliminate Answers 2 and 3 because current science does not support the legitimacy of either of these statements. Answer 2 is not allowed because there is no 'sixth sense' according to current science and Answer 3 for a similar reason regarding the

'collective mind'. This leaves the Skeptic hypothesis explanation as the only currently plausible account for the psi event in question under the pragmatic theory.

Under the pragmatic theory of explanation then, until realist psi theory can come with some kind of causal account for the phenomena that would be acceptable to the relations that current science allows, the realist psi accounts are not able to be considered plausible explanations for the psi. Because of the issues I have raised regarding the explanatory history of psi, I question whether or not it is wise to exclude the potential to develop psi theory on the grounds that it is not currently understood by the scientific orthodoxy. There seems to be scope to develop theories that will eventually explain the phenomena to some extent. I therefore question whether the pragmatic account leans too heavily on the current science at any one time to determine which explanation is most appropriate when assessing competing explanations.

Philip Kitcher and Wesley Salmon have made a similar point regarding the heavy reliance on science under the pragmatic account. They illustrated it with a discussion of the death of John F. Kennedy. The scenario has some resonance to the psi case so I think it is worthwhile making the comparison. Kitcher and Salmon first raise a problem for the pragmatic account by showing that an obviously unacceptable explanation (astrological) would suffice as an legitimate explanation. They illustrate the problem as follows:

Suppose S_q asks why John F. Kennedy died on November 22, 1963, where $P_k = \text{JFK died 11/22/63}$, $X = \{\text{JFK died 1/1/63, JFK died 1/2/63, ... JFK died 12/31/63, JFK survived 1963}\}$

and R is a relation of astral influence. (One way to define R is to consider ordered pairs of descriptions of the positions of stars and planets at the time of a person's birth and propositions about that person's fate.) An answer with core A might consist of a true description of the positions of the stars and planets at the time of JFK's birth. Moreover, using astrological theory as background, one might be able to infer (at least with high probability) that JFK would die on 11/22/63. (Salmon & Kitcher 1998, p178)

Under the pragmatic theory of explanation, they claim, the death of John F. Kennedy could be legitimately explained as due to the position of the stars at his birth. They challenge the pragmatic account to show how it would rule out this type of unacceptable explanation. Then they show that van Fraassen replies to the criticism by claiming 'astrological answers are debarred by his [van Fraassen's] (frequently repeated) remarks that explanation makes use of accepted scientific theories' (Salmon & Kitcher 1998, p186). Theories based on astrological calculations are not currently

considered acceptable scientific theories. Therefore the astrological account is not considered a legitimate explanation for the death of JFK.

A similar scenario would obtain in regard to the realist psi theories. Answers that are not scientifically acceptable theories will be ruled out. At least they will be considered untenable explanations until perhaps a time comes when such theories are acceptable scientific theories. And my analysis showed that this is indeed the case when the pragmatic theory of explanation was applied to make an assessment of the possible answers drawn from the competing hypotheses. Both big and small change theories would be considered ruled out because of their unsatisfactory status according to current scientific theory.

But I have shown that historically there are good reasons why the big and small change theories are considered 'outsiders' to mainstream scientific standing. I have also shown that it might be the influence of the previously dominant explanation theory that determined the status of psi and discouraged further development of psi theory. I suggest that under the pragmatic theory too much explanatory weighting is outsourced to science. I look now at the causal account which has some problems of its own in relation to explanation of quantum-level theory.

Causal/mechanical theory and psi explananda

I mentioned earlier that the causal account for explanation that is used in this thesis is as follows:

to explain an event 'E' is to cite its cause 'C'

and furthermore to cite cause 'C' is to relate:

the process of the causal history that leads from C to E.

To investigate how the causal theory of explanation deals with psi, I construct another example from the psi explananda table, this time using the psychokinesis example:

Why question - PK

Answers derived from psi hypotheses

	Skeptic hypothesis	Small change natural	Big change natural
Why did person X's intention to influence object P correlate with the movement of object P when X was apparently screened off from any normal contact with object P?	The person and/or experimenters mistakenly thought that their thoughts were affecting the pendulum.	An electromagnetic force was discharged from the brain of the subject and influenced the movement of the pendulum	Psi-ons are emitted from the brain when a person focuses their intent on a physical object. These psi-ons are able to interact on both a macro and micro scale and they carry the force from the brain to the object.

Question Why did a person X's intention to influence object P correlate with the movement of object P when X was apparently screened off from any normal contact with object P?

I draw on the answer to provide me with three possible explanations for the apparent PK event in question:

- SH Answer 1** Because there was a false assumption that the experimenters were correct.
- SCN Answer 2** Because at a quantum level the mental activity and the pendulum are entangled.
- BCN Answer 3** Because of the force of the psi-ons acting on the pendulum.

The causal account maintains that an event is explained when its causal history is able to be traced. Answers to the question posed by my analysis of the psi explananda would have to provide just such a causal history in order to qualify as statements that could be used to compare explanations. Therefore, the next step of evaluation is to ask: are any of the answers acceptable explanations on this count?

I suggest Answer 2 will be problematic because the causal model has been criticised for being unable to account for causal processes at a quantum level, thus, presumably discounting any answer that relies on quantum theory as a plausible candidate. Bas van Fraassen has pointed out that this is a flaw for the causal account of explanation. In response to Salmon's concerns regarding the pragmatic theory of explanation van Fraassen has challenged Salmon's account of causal explanation as being unable to account for quantum theory as a potential explanation. He says that the causal account of explanation is problematic in this regard because of the following points:

(1) the difficulties for the idea of the causal order arise at the level of the observable phenomena, and are independent of the intelligibility of the theory; (2) neither the phenomena nor the theory imply the possibility of empirically verifiable signals or action faster than light; (3) the non-classical correlations implied by quantum states may be described in terms of remote (nonlocal) conservation laws, but there is no sign of remote conservation mechanisms; (4) the temptation to see the phenomena as violating the classical logic and probability framework delineated by Boole and Kolomogorov is understandable enough, but also finds no warrant in the phenomena. (van Fraassen 1985, p651)

In contrast to the pragmatic account, which allows for quantum theories because they are part of the stock of acceptable scientific theories, the causal account has problems accounting the causal history of the phenomena at a micro-level. In the process of discussing issues of quantum mechanics and indeterminism Salmon addresses the problematic issue of understanding the causal process at the quantum level. He acknowledges that 'quantum mechanics poses two troubling problems, one concerning determinism, the other concerning causality' (Salmon 1998, p280). In response to the problem of causality (which is of more pressing concern to this thesis) he says that:

quantum mechanics seems to involve action-at-a-distance, but it is important to distinguish the two forms it might take. Consider two distinct principles. The first is *locality*—i.e., the principle that it is impossible to interact with a remote physical system. The second is *separability*—i.e., that it is possible to act on a part of a physical system that is extended in space without affecting the rest of that system... Any measurement that is made on either of the parts occurs by contact with the whole system; the condition of locality is satisfied. However, separability is violated. It is impossible to make a measurement on one part of the system that leaves the other part untouched. It is difficult to understand how the remote parts of the system can react instantaneously to a local interaction with one of the parts. This aspect of quantum mechanics suggests that the world is glued toher more tightly than we previously realized. (Salmon 1998, p280)

The analysis does not seem to address the problems that van Fraassen raised in regard to the problem of accounting for the causal processes at a quantum level. Salmon appears to concede that there is little understanding of the quantum processes in terms similar to macro descriptions of causal histories. I think that until this issue is resolved then quantum theories will remain problematic to the causal account of explanation. The situation will be resolved one way or the other, either the causal processes of events at the micro-level will be understood or the causal/mechanical theory of explanation will have to be revised.

Under the causal account of explanation Answer 3 is also problematic because it introduces a new ontological concept which is not described in sufficient causal process terms in order to qualify as an explanation. Answer 1 would be acceptable

because you could trace the events during the experiment and verify exactly how the participants assumed falsely that the experiment was legitimate.

However, I note here that under the causal model, the problem of laws is not an issue as it was for psi under the covering law model. If a psi realist account were to convincingly ascribe a causal process to a psi event then that explanation would compete with other potential causal process explanations for psi. There is the potential for the causal process to be investigated even without full knowledge of the history of the event.

To illustrate this point, just say, if on further investigation, Answer 1 proves to be insufficient and the apparent psi effects require further examination. It is possible to show what the causal path of the events was not like and to seek an explanation in terms of what did not cause the event. This would allow the phenomena to be investigated as unexplained, but not unexplainable, at least until further study revealed the causal process which elicited the apparently anomalous events. I think that this is a promising avenue to analyse further the apparent psi events which do not appear to be explainable successfully by the Skeptic hypothesis. I now look at another psi question with relation to the unification theory of explanation.

Unification theory and psi explananda

I turn finally to looking at how Kitcher's unification theory would assess various competing psi theories. I note that under this account an explanation $E(K)$ 'is a set of derivations that makes the best trade-off between minimising the number of patterns of derivation employed and maximizing the number of conclusions generated' (Kitcher 1989, p432). The method of assessing explanatory worth of explanations is as follows:

a derivation d is an explanation if and only if d belongs to the explanatory store $E(K)$ which constitutes the best systematisation (or best set of derivations) of a given set of beliefs K . Informally, an explanatory store $E(K)$ is the best systematisation of K just in case, compared with any other set of derivations which systematize K , it offers a better trade-off between the conclusions obtained and the efforts needed. Such efforts are not measured (as in earlier unificatory accounts) according to the number of facts we should accept as brute, but according to the number of patterns of derivations (argument patterns) utilized. (Sabatés 1994, p274)

I apply these concepts of explanatory worth to the question regarding ESP. I then perform a similar analysis on the answers as possible explanations for the apparent psi event and contrast them as I have done for the other two explanation theories.

Why question - Telepathy

Answers derived from psi hypotheses

	Skeptical hypothesis	Small change natural	Big change natural
Why did person X correctly identify, at a statistically significant level, images that correlated with the pictures that person Y viewed and when person X and person Y were apparently screened off from any normal sensory contact with one another?	It was a set up and the participants in the experiment are tricksters.	Quantum entanglement theories can be used to explain how mind-mind knowledge acquisition occurs at a distance.	Topological folding of space/time occurs allowing for information to pass from one person to another instantaneously.

So, to the question:

Why did person X correctly identify, at a statistically significant level, images that correlated with the pictures that person Y viewed and when person X and person Y were apparently screened off from any normal sensory contact with one another?

We have the following possible answers:

SH Answer 1	They didn't because it was a set up and the participants in the experiment were tricksters.
SCN Answer 2	Quantum entanglement theories can be used to explain the exchange of data.
BCN Answer 3	Space-time folded and allowed the information to pass from one person to another.

According to the unification theory, in order to count as a legitimate potential explanation the propositions must be statements drawn from K, which is the group of explanatory statements currently acceptable to science. They compete in terms of explanatory scope and one E(K) is selected which is the most acceptable in terms of unifying the science by reducing the amount of theories in science at the same time as covering more facts. Answer 3 would be ruled out on this basis as it is not currently accepted by K. I do not immediately disqualify Answer 2 because the discussion in Chapter 4 showed that there are working scientists who are developing just such a theory. However, I acknowledge that their theory is not necessarily part of K, if K is to be understood as mainstream science. Let's assume for the purposes of this exercise that we can allow Answer 2 to compete with Answer 1. In the example used for the purposes of this discussion then Answers 1 and 2 are allowable because they exist in K. Answer 1 will form part of an explanatory set of theories which also holds

that psi phenomena are paranormal and unexplainable. There are historic cases that could be referred to which show that some exhibitors of apparent psi effects have, in fact, been deliberately produced by fraud. Answer 1 would then fit into other theories, especially in psychology, which address the psychological reasons for this type of human behaviour.

Answer 2 could possibly be considered a successful explanation because 1) if tenable, it explains a body of evidence for psi that has previously been problematic and 2) it is a theory that is also being used to account for other phenomena that require explanation. Therefore if one theory has more extensive explanatory coverage over others in the store of explanatory arguments the unification account would possibly favour Answer 2 over Answer 1. This is because the potential for a revised quantum-level explanation has more coverage than the psychology-based fraud theory mentioned earlier. It is timely to remember that in Chapter 4 I examined a theory that was discounted by the anti-psi proponent as wild and speculative, but which was championed by the pro-psi proponent on the basis that it had the potential to explain more data. So it is plausible that a case could be made on this count.

Even as a thought experiment, it is hard to judge whether the psi quantum theories have more coverage in the same sense in which evolutionary theory is used to indicate a successful argument pattern in Kitcher's work and perhaps the real response is to acknowledge that the Hennacy/Powell theory would have a hard time making it into K in the first instance. In defence, however, I remind that much of philosophy of science uses past scientific examples to explicate their theories and I am trying to apply the explanatory concerns to a contemporary, unresolved, 'live' example in which competing hypotheses are compared, even as they are being developed. Hindsight will perhaps be the only way that we will find out for sure which explanation theory best accounts for what is the most sensible explanation for psi. This is a possible flaw when it comes to developing explanation theories that are able to analyse contemporary situations, such as the psi hypotheses discussion. Once again, as with the pragmatic theory, it appears that current thought regarding acceptable explanation allows science to determine what theories are allowed to compete as explanations. I think that the unresolved nature of the psi debate indicates that contemporary explanation theories should be able to allow for some speculative

discussion regarding potential explanations, even if the theories are currently unaccepted by mainstream science.

In this context it is interesting to consider that under the covering law account, the realist psi theorist was challenged to produce a law that explains the phenomena; the covering law theory was an obstacle to psi theories entering discussion in science. However, in terms of psi and laws under the unification account, Kitcher's theory promotes an evaluation of explanation on the basis of *acceptability* rather than *correctness* and it does not rely on laws to assess explanatory worth. Under the unification account then realist psi theories could be developed that would count as acceptable if they were to show explanatory worth as unifying our understanding in other areas of science, they do not need to be explained in terms of laws.

6.5.5 Summary of explanation theories and competing psi hypotheses

The examination of the contemporary explanation theories undertaken in the end part of this thesis is intended as an indication of how the psi hypotheses discussion fares within the context of current explanatory considerations. I undertook this analysis in order to achieve two functions:

- 1) to provide a contemporary assessment of the body of evidence for psi in relation to contemporary explanation theory; and
- 2) to provide an interesting case study to test the ways in which various explanation theories respond to issues raised by anomalous phenomena.

I hope that I have shown that the different explanatory approaches are encouraging that future discussion of the psi hypotheses discussion will elicit important developments for the discussion of psi theory. The assessment undertaken during the course of this thesis has shown that outmoded or illegitimate conservative explanatory considerations have allowed one psi hypothesis (the Skeptic hypothesis) to dominate at the expense of others. I have argued that a review is necessary in the light of relevant findings outlined in this theses, and the various hypotheses should compete on equal ground.

Before drawing this thesis to a close, I summarise some of the pertinent issues that have resulted from the discussion in relation to the aims of this chapter outlined above. I then make some concluding remarks about the final selection of one hypothesis over the others in order to bring the three-stage IBE process to a close.

1) Psi and contemporary explanation theories

What I hope has become clear from discussion undertaken in the latter part of this thesis is that when the body of evidence for psi is considered and it is asked 'what kind of work would be needed to meet the explanation goals of science?' the answer is now different to the one that would be given during the decades in which the covering law theory was dominant. The bar set under the covering law account was extremely high; psi researchers had to show that psi could be explained in terms of natural laws. I was particularly interested to show how the problem of laws was tackled by the contemporary theories, as I have shown previously that realist psi theories did not compete with the Skeptic hypothesis under the covering law theory because of the lack of a law that could be used to explain psi. However, the analysis above indicates that contemporary explanation theories are not reliant on lawful relations as a guide to what is considered a legitimate explanation and that the realist psi theories could still, pending further development, compete with the Skeptic hypothesis on a number of counts.

I think it is likely that some psi effects will be explained by one of the three F's (fraud, fluke or flaky methodology) but that it is hard to argue that all psi effects can be accounted for in this manner. I have shown that the need for psi to be explained with recourse to a law has diminished and that the concerns of the contemporary explanation theories in this regard do not discount psi phenomena on the basis that they are not explained by such universal statements. However, I do not claim that psi phenomena are any less problematic now than they were under the covering law theory. All proponents need to develop more sophisticated accounts if they are to be considered legitimate explanations under any of the contemporary explanation theories discussed in this thesis. For instance, according to the pragmatic account realist psi theories must be shown to be empirically successful; according to the causal account the process history must be accounted for; and under unification theory the theories need to be developed to encompass more explanatory territory.

2) Contemporary explanation theories and anomalous phenomena

Some issues particularly relevant to assessing anomalous phenomena have been raised by the analysis undertaken in the latter part of this chapter. I have shown that two of the theories (pragmatic and unificatory) rely on science to supply the statements that are allowed into the comparison stage of the assessment of competing explanations. I think that this is problematic in relation to anomalous phenomena. The history and philosophy of science indicates science has, in the past, changed and developed new theories, discarded old ones in order to encompass phenomena that were once considered anomalous. And I have argued elsewhere (Chapter 3) that the historic account indicates that there might be historic reasons why the explanatory scope currently can't account for psi. I suggest therefore that potential explanations for anomalous phenomena should not be ruled out at an early stage of development. They might, one day, become theories that are acceptable to science and they can then compete with various other explanations that may be posited at that time.

Under both the pragmatic and unificatory accounts, there does not appear to be a way of assessing the psi hypotheses taking such matters into consideration. To counter this issue I point out that there is reasonable evidence that 'the past success of science in discovering truths about the universe dissolves under scrutiny into the continuing failure of science to produce anything solid enough to last unchanged. As new theories are developed, the universal truths of yesteryear are either rejected out of hand or modified or contextualized so as to restrict their scope.' (Pitt 1988, p6). I maintain therefore, that there must be a place for discussion of theories that compete to explain an anomalous event, even if they are speculative and not yet acceptable to the body of science at any one time. I have shown that the covering law theory and the anomalous phenomena associated with psi influenced each other. The ostensibly unlawful nature of psi and the law-dependence of the covering law theory resulted in a bias toward a the Skeptic hypothesis that I have shown was subsequently unwarranted. I therefore suggest that the psi realist theories are allowed to develop and that they are compared again at a later stage.

I mentioned that the causal account was criticised for being unable to deal with explanations that use quantum theory. This problem is not specific to psi theories. It will be interesting to see what eventuates with developments in both

quantum theory and quantum-based psi theory and to relate the developments to progress with the causal account of explanation. I anticipate that in the future this issue will be resolved one way or the other: either quantum theory will develop an account acceptable to causal process theorists; or the causal account will be found to be lacking. The effects of such developments should then be applied to a re-analysis of psi theory at that time.

'Loveliest' explanation and the psi hypotheses discussion

In the discussion above I did not indicate which of the theories I think most likely will develop as the 'best' explanation. I concede that, given the state of psi theory development and continuing discussion regarding the nature of scientific explanation, there is no clear 'winner'. However, as we are at the end of the IBE process I feel I should at least make a stab at indicating which of the competing hypotheses I think is the 'loveliest'.

My hunch is that the Small Change Natural hypothesis will eventually dominate the explanatory territory because of its potential to explain other areas of science. The theories that are currently proposed require refinement, but they show promise. I find the Big Change Natural explanations too far fetched and committed to ontological categories that are potentially problematic. The onus should shift to the proponents of the Skeptic hypothesis to show how fraud (or fluke or flaky methodology) can account for the body of evidence for psi, and that the phenomena which can be accounted for in this manner should be excluded from further discussion. I anticipate that a rigorous assessment of the phenomena will leave some anomalous phenomena that require further explanation. As it appears that the methodology used to assess the evidence for psi is legitimate according to the current scientific methodology, I also suggest that any legitimate criticism of the methodology used in psi research (such as the use of meta-analyses to analyse data, for instance) should also be used to more generally critique other areas of science where similar processes occur. Above all I think that the history of psi as once subsumed under supernatural explanatory schemes, but now considered paranormal is the key to unlocking a more comprehensive understanding of psi as explainable in natural terms. Psi phenomena should be reviewed with this explanatory history in mind and related to the resulting current scope of science.

Conclusion: **Beyond Beliefs**

You know, these words, "anomalous", "supernatural", "paranormal", they propound to explain something by not explaining it. That's lazy!

John Doggett, The X-Files

The concern which prompted this thesis was the desire to understand the divide between the mainstream view that psi must be explained by fraud, and the persistent minority view which contends psi is genuine and therefore requires other types of explanation. I commenced with an examination of the mainstream philosophical arguments for psi and argued for a re-analysis in a contemporary philosophical context. The main aim of this thesis was therefore to provide a new platform for productive dialogue between the various plausible approaches to explanation of psi phenomena. Below I recap the key considerations and arguments put forward in the thesis, before making some concluding remarks.

Summary of key considerations

The critique of the mainstream arguments in philosophy regarding psi revealed problems on a number of counts: failure to recognise the structure and logic of the arguments as inferences to the best explanation (IBE); failure to consider the body of evidence in its entirety; implicit reliance on explanatory conservatism; and failure to acknowledge the role of background beliefs in coming to the fraud hypothesis judgement.

The remainder of the thesis took the form of a three-stage re-analysis of psi inspired by the IBE process: the evidence for psi was examined; a group of possible hypotheses was compiled; and finally, the process of selecting the 'loveliest' hypothesis was commenced. The psi debate had evolved into a psi hypotheses discussion. Four different approaches to explain psi were put forward. They were drawn from both the mainstream and psi-oriented literature: the Skeptic hypothesis;

two psi realist positions, which I called the Big and Small Change Natural hypotheses; and the Supernatural hypothesis.

Explanatory considerations guided the ensuing discussion. The background beliefs were discussed in relation to the history of explanation of the phenomena and it was shown that psi's explanatory history as a supernatural phenomena still impacted on its assessment today as paranormal. Arguments were made against the Supernatural hypothesis on two counts: firstly that, if legitimate, most psi phenomena are mundane in nature; and secondly, that phenomena of a more dramatic kind fall to the same criticism as the argument for theism based on religious experience.

The aim of the second part of the thesis was to allow an examination of the skeptic and psi realist hypotheses in relation to each other, informed by an updated assessment of explanatory concerns. I suggested that the Skeptic hypothesis assessment of psi was influenced by the covering law theory model of explanation, which was the 'received view' in the philosophy of science until the early 1970s. I concluded that because the covering law theory is no longer dominant, but appears to still influence the mainstream assessment of psi, it is pertinent to review psi in the context of contemporary explanation theory.

Further analysis of the three hypotheses was thus undertaken with particular focus on the problems associated with explanation of psi as an anomalous phenomena. The psi explananda were re-examined and it was found that the anomalous nature of the phenomena usually prejudiced the way the explananda were commonly represented. The explananda were therefore recast as interrogative statements with as little presumed about potential explanatory issues as possible. The competing hypotheses provided speculative answers to the questions which formed the basis for ensuing discussion undertaken in the context of contemporary explanation theory. The analysis fulfilled two functions: a place was constructed where the three hypotheses competed on equal ground; and it provided a case study to test the ways in which various explanation theories respond to explanatory issues raised by anomalous phenomena.

It was shown that the realist psi theories fall short of what is expected of acceptable explanations according to the pragmatic, causal and unificatory accounts of explanation. However, the point was made that unlike the situation that obtained

under the covering law theory, the psi realist theories were not ruled out on the basis that they were anomalous and unlawful.

The discussion also highlighted the problematic nature of explanation of anomalous phenomena, as it emerged that contemporary philosophical theories of explanation rely substantially on the body of science to provide the set of explanatory statements allowable. I suggested that as both explanation and scientific theory change over time we should be cautious not to rule out speculative theory that attempts to explain anomalous phenomena such as psi.

Concluding remarks

It has been shown during the course of this thesis that a blanket argument against the plausibility of psi based on explanation theory is unwarranted. Instead assessment of psi requires genuinely open-minded epistemic assessment of both the body of evidence for psi as well as the theories that attempt to explain the phenomena. However, due to the anomalous nature of the phenomena the process should be open to revisions as both scientific and philosophical explanation theories change and develop. The assessment of psi cannot be undertaken by a once-off argument that deals conclusively with all the evidence and theories at any one time. Updates and checks of the status of theory development and epistemic status of the evidence should be undertaken; philosophical discussion of the nature of explanation of anomalous phenomena should inform the discourse. Currently, all three hypotheses have more work to do in this regard: the skeptic hypothesis to develop accounts for how fraud, fluke or flaky methodology can really account for the phenomena; and the psi realist accounts need to develop a more plausible working theory that explains the phenomena substantially.

My assessment is that Small Change hypotheses, more particularly the quantum-theory based explanations, show the most promise. I base this on the notion that quantum theory poses more general problems to theories in science, philosophy of scientific explanation and mind theory. The area appears to be one of contemporary cross-disciplinary interest between physics, cognitive science, and philosophy and I anticipate interesting future developments in this area of inquiry that might be pertinent to quantum-based psi theories. I concede though, that this is an issue that

will have to be revisited and revised in the light of future developments. Whether or not this turns out to be the case, it is hoped that the ground has been prepared for further discussion regarding all three competing hypotheses. Developments in science, psi theory and philosophy are bound to impact on the discussion.

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Beyond Beliefs: Appendix I

The jstor database of journals [<http://www.jstor.org/>] was searched in order to assess the mainstream representation of psi, especially in philosophy, between the 1920s and 1980s. Jstor is an online searchable catalogue of arts and science journals. Access was granted through the University of Tasmania's library.

The entire catalogue contains 729 titles can be viewed at: <http://www.jstor.org/about/all.list.html>.

I will list the main arts and science catalogue that is most pertinent to this thesis.

I have separated out the philosophy journals from the other disciplines.

Philosophy

Philosophical Issues
Philosophical Perspectives
Philosophical Quarterly
The Philosophical Review
Philosophical Transactions: Biological Sciences
Philosophical Transactions: Mathematical, Physical and Engineering Sciences
Philosophy
Philosophy and Phenomenological Research
Philosophy and Public Affairs
Philosophy East and West
Philosophy of Science

Arts and Science I

African American Review
The American Economic Review
The American Historical Review
American Journal of International Law
American Journal of Mathematics
American Journal of Political Science
American Journal of Sociology
American Literature
American Mathematical Monthly
The American Political Science Review
American Quarterly
American Sociological Review
The Annals of Applied Probability
Annals of Mathematical Statistics
The Annals of Mathematics
Annals of Probability
Annals of Statistics
Annual Review of Anthropology
Annual Review of Ecology, Evolution, and Systematics (In 2003, the Annual Review of Ecology and Systematics became the Annual Review of Ecology, Evolution, and Systematics. Volumes published under this new title do not yet appear in JSTOR as our coverage presently ends at 2000.)

Annual Review of Sociology
 Anthropology Today
 Applied Statistics
 Biometrika
 Callaloo
 The China Journal
 Contemporary Sociology
 Current Anthropology
 Demography
 Ecological Applications
 Ecological Monographs
 Ecology
 Econometrica
 The Economic Journal
 Eighteenth-Century Studies
 ELH
 Ethics
 Harvard Journal of Asiatic Studies
 International Family Planning Perspectives
 International Organization
 Journal of African American History
 The Journal of American History
 Journal of Animal Ecology
 Journal of Applied Econometrics
 Journal of Asian Studies
 Journal of Black Studies
 The Journal of Blacks in Higher Education
 The Journal of Business
 Journal of Ecology
 The Journal of Economic History
 Journal of Economic Literature
 The Journal of Economic Perspectives
 The Journal of Finance
 The Journal of Financial and Quantitative Analysis
 Journal of Health and Social Behavior
 The Journal of Higher Education
 The Journal of Industrial Economics
 The Journal of Military History
 The Journal of Modern History
 Journal of Money, Credit and Banking
 Journal of Negro Education
 The Journal of Political Economy
 The Journal of Politics
 The Journal of Southern History
 Journal of Symbolic Logic
 Journal of the American Mathematical Society
 Journal of the American Statistical Association
 Journal of the History of Ideas
 Journal of the Royal Anthropological Institute of Great Britain and Ireland
 Journal of the Royal Anthropological Institute/Man
 Journal of the Royal Statistical Society. Series A (Statistics in Society)
 Journal of the Royal Statistical Society. Series B (Statistical Methodology)
 Mathematics of Computation

Mind
 MLN
 Monumenta Nipponica
 Nineteenth-Century Literature
 Noûs
 Pacific Affairs
 Perspectives on Sexual and Reproductive Health
 Philosophical Issues
 Philosophical Perspectives
 Political Science Quarterly
 Population and Development Review
 Population Index
 Population Studies
 Population (English Edition)
 Population (French Edition)
 Proceedings of the American Mathematical Society
 Proceedings of the American Political Science Association
 Proceedings of the Royal Anthropological Institute of Great Britain and Ireland
 Public Opinion Quarterly
 The Quarterly Journal of Economics
 Renaissance Quarterly
 Representations
 The Review of Economic Studies
 The Review of Economics and Statistics
 The Review of Financial Studies
 Reviews in American History
 Shakespeare Quarterly
 SIAM Journal on Applied Mathematics
 SIAM Journal on Numerical Analysis
 SIAM Review
 Social Psychology Quarterly
 Sociology of Education
 Speculum
 Statistical Science
 The Statistician
 Studies in Family Planning
 Studies in the Renaissance
 Transactions of the American Mathematical Society
 Transition
 William and Mary Quarterly
 World Politics
 Yale French Studies

Beyond Beliefs: Glossary

This is a glossary of terms that have been used specifically to highlight approaches or arguments that are discussed in this thesis. It also includes definitions of psi phenomena and psi-specific words and terms that were clarified in the introduction and used subsequently in the thesis.

Anti-psi proponent	A psi researcher who maintains that psi is best explained by normal means such as fraud, flukes of coincidence or flaky experimental methodology.
Big Change Natural hypothesis (BCN)	Psi phenomena are genuinely anomalous and best explained by introducing new ontological categories in order to account for the phenomena.
Clairvoyance	Information gained about an inanimate object or event without the use of the five senses.
Modern Miracle Argument (MMA)	The argument, based on Hume's miracle argument, that because we know men cheat and lie and can be self-deluded and we know that psi contravenes severely what is thought possible according to current science, psi phenomena are best explained as products of fraud or self-delusion. Put forward by George Price in 1955 in <i>Science</i> .
ESP	Extrasensory perception, anomalous communication. Commonly divided into three subcategories: telepathy; clairvoyance and time-displaced psi such as precognition and retrocognition.
Explanation by Fraud Argument (EFA)	The argument that we know people cheat and dissemble, but we don't know there are psi phenomena (in fact psi phenomena are unlikely) therefore fraud is the most rational explanation for psi. Put forward by Keith Campbell in 1970 in <i>Body and Mind</i> .
Historic account	An account of the history of the explanation of psi as once supernatural. Points out that psi is currently considered paranormal because the current limits of science were informed by the modern world view which were in turn influenced by an explanatory scheme that contained both supernatural and scientific explanatory categories. Contemporary mainstream science contains only one, scientific, which is important to understanding the anomalous nature of phenomena such as psi.
PK	Psychokinesis, anomalous action at a distance. The causal influence of an organism on the physical world without any known physical interaction.

Precognition/ retrocognition	Information about a person or event in the past (retrocognition), or future (precognition) without the use of the ordinary five senses.
Pre-emptive Inference to the Best Explanation (PIBE)	An illegitimate Inference to the Best Explanation (IBE) which has been undertaken without attending sufficiently to the examination of the body of body of evidence in question and without compiling the requisite hypotheses with sufficient attention to available plausible theories.
Pro-psi proponent	A psi researcher who maintains that the evidence for psi is indicative of an anomalous phenomena and should be explained by developing new theories.
Psi	A general umbrella term for anomalous phenomena associated with either anomalous communication (ESP) or anomalous action at a distance (PK). Coined in 1942 by B.P. Wisner and R.H. Thouless. Psi can be used as either a noun or adjective. It is the 23 letter of the Greek alphabet
Psi commentator	A journalist or author who comments on psi, usually in the mainstream press.
Psi researcher	A professional who undertakes research into psi.
Skeptic hypothesis	Psi is best explained by fraud, flukes of chance or flaky experimental methodology.
Small Change Natural hypothesis (SCN)	Psi phenomena are genuinely anomalous and best explained by using or extending current scientific theory.
Supernatural hypothesis	Psi is best explained with by ascribing the phenomena to a God, Gods, demon, spirit or other divine entity.
Telepathy	Information gained about another mind or minds without the use of the ordinary five senses.